Emergency Relief Items

Compendium of Generic Specifications

May 2000
The last few years have seen a growth in the number of emergencies all over the world. Along with the increasing number of disasters and their spreading human and economic consequences, especially in developing countries, the cost of relief and rehabilitation is also rising.

In the current economic climate, there is increasing concern about cost-effectiveness to enable relief and rehabilitation measures to be sustained. Mindful of this concern, the Office for the Coordination of Humanitarian Affairs (OCHA) as well as its predecessor, the Department of Humanitarian Affairs (DHA) have redoubled their efforts to increase the cost-effectiveness of international relief operations through improved emergency preparedness, cooperation and coordination. Within the framework of this task, OCHA has initiated projects and promoted and sponsored other programmes conducted by United Nations Agencies with the participation of governmental, non-governmental and other international organizations.

Given the direct impact of emergencies on national development processes, improvement of disaster management has also become an issue of growing importance. UNDP is consistently active throughout the relief-to-development process, with a priority focus on what the Secretary-General has called, "preventive and curative development" - sustainable human development in crisis-prone or post-crisis situations. In carrying out its mandate for coordinating UN system activities at the country level, UNDP manages the Resident Coordinator system which seeks to support governments in building national capacities for disaster prevention, mitigation and preparedness.

The present Catalogue of Items for Emergency Relief is the result of one such project, conducted by the Inter-Agency Procurement Services Office of the United Nations Development Programme (UNDP/IAPSO), with the aim of developing generic specifications for emergency relief items to be provided during the initial phase of a disaster. It has been built upon the years of expertise and experience accumulated within the United Nations system and the international relief community.

The catalogue is one of the three correlated practical tools envisaged in the joint DHA/IAPSO strategy paper "An Initiative to Improve Emergency Preparedness", elaborated following the Workshop on Emergency Stockpiles organized by DHA in Geneva on 3-4 March 1993. The two others are the Register of Emergency Stockpiles (established by DHA and managed by OCHA) and the database of commercial supply sources (developed by UNDP/IAPSO and released in December 1997) as the Database of Items for the Relief of Emergencies.

We are sure that the international community will find this catalogue, together with the other tools being made available, a useful instrument for proper planning and delivery of relief assistance in a rapid, concerted and cost-effective manner.
"Emergency Relief Items - Compendium of Generic Specifications" is the product of a unique international collaboration involving many UN and non-UN humanitarian aid organizations and individuals.

We are especially grateful for the advice and assistance of our many colleagues at UNOCHA, UNHCR, UNICEF, UNIDO, UNOPS, UNRWA, FAO, WFP, WHO, AICF (Paris), CARE INTERNATIONAL, Danish Red Cross, ECHO, ERIKSHJÄLPEN (Sweden), Folkekirken Nød hjælp (Denmark), GTZ, IACC (Geneva), ICRC, IFRC, ITU, MSF, Ministry of the Interior (Netherlands), Norwegian Trade Council, OXFAM, SIDA and USAID. Their advice in preparing the specifications of the various relief items and their diligent review of the drafts, often under time pressure, have been invaluable.

IAPSO takes this opportunity to express its gratitude to all cooperating organizations, for their continuous support in the preparation of this catalogue. It is hoped that this publication will assist the efforts of national governments and the international aid community for improved and cost-efficient emergency preparedness. Suggestions or information to be included in future editions should be addressed to:

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1. The need for improved standardization of emergency relief items has been expressed at various meetings of the Inter-Agency Procurement Working Group (IAPWG *), as well as more recently at the workshop attended by organizations operating stockpiles of disaster relief items, organized by UN/OCHA in Geneva from 4-5 March, 1993. Over the past twelve months, IAPSO in close cooperation with UN/OCHA and supported by major UN organizations as well as some international NGOs has coordinated the joint efforts towards this objective.

2. Various product groups were identified for which development of common specifications for individual emergency relief items would be particularly desirable. After numerous meetings, the participating organizations agreed on lists of specific items required in each product group, notably for the initial phase of an emergency, and finalized generic specifications for each item. This catalogue is presented as the first of a series and is intended to encourage the standardization of items covered in the following product groups:

- Telecommunications equipment
- Shelter, housing, storage and cooking appliances
- Water supply, equipment and supplies
- Food items
- Sanitation and hygiene items
- Materials handling equipment
- Power supply systems

3. An additional chapter (basic logistics) has been added to the catalogue to assist procurement personnel in contracting of most appropriate forwarding services, depending on commodities and circumstances.

4. To ensure incorporation of products most suitable for disaster relief, the product selection and technical specifications were based on experience gathered over the years by UN/OCHA, ITU, UNHCR, UNICEF, UNOPS, UNRWA, WFP and WHO, but likewise by such important relief organizations like MSF, Oxfam, ICRC and the IFRC, together with the input provided by ECHO of the European Community and information received from the government purchasing centres of Germany and Sweden.

5. The catalogue lists by product group the complete generic specifications for all selected items, together with information on shipping weight/volume. The relevant UNCCS identification number (United Nations Common Coding System) has also been allotted to assist in the interchange of information and statistical reporting.

6. The catalogue is intended to facilitate the acquisition of suitable relief items from as many qualified suppliers as feasible, in a cost efficient manner. To assist in the selection of the most appropriate equipment, a section on needs and recommended responses has been added to each product chapter.

7. The catalogue could provide guidance and assistance to:
- Donor governments as well as national governments and institutions in developing countries concerned with the planning, budgeting and execution of assistance in emergency situations.
- Procurement officials of the UN system and within NGOs and Donor Development Agencies involved in the acquisition of emergency relief items.

8. On the advice of colleagues and users a number of items have been updated and several new ones included in this version of the catalogue. A bracketed (a) has been included beside the UNCCS numbers to indicate which items have been updated. For new items "new" is stated beside the UNCCS number.

* These meetings are organized by IAPSO to facilitate exchange of experience among various organizations of the UN system concerned with procurement.
## ABBREVIATIONS

### Organizations

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<td>Action International Contre la Faim</td>
<td>dB</td>
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<td>ECHO</td>
<td>European Commission Humanitarian Office</td>
<td>VDC</td>
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<tr>
<td>FAO</td>
<td>Food and Agricultural Organization</td>
<td>VAC</td>
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<tr>
<td>GTZ</td>
<td>Deutsche Gesellschaft für Technische Zusammenarbeit</td>
<td>VA</td>
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<td>UN/ACC/SCN</td>
<td>United Nations Administrative Committee on Coordination, Subcommittee on Nutrition</td>
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<td>ICRC</td>
<td>International Committee of the Red Cross</td>
<td>ARQ</td>
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<tr>
<td>IFRC</td>
<td>International Federation of the Red Cross and Red Crescent Societies</td>
<td>AFSK</td>
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<tr>
<td>ITU</td>
<td>International Telecommunications Union</td>
<td>CTCSS</td>
</tr>
<tr>
<td>MSF</td>
<td>Medecins Sans Frontieres</td>
<td>FEC</td>
</tr>
<tr>
<td>SIDA</td>
<td>Swedish International Development Agency</td>
<td>FM</td>
</tr>
<tr>
<td>UNOCHA</td>
<td>United Nations Office for the Coordination of Humanitarian Affairs</td>
<td>FSK</td>
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<tr>
<td>UNHCR</td>
<td>United Nations High Commissioner for Refugees</td>
<td>HF</td>
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<td>UNICEF</td>
<td>United Nations Children's Fund</td>
<td>LSB</td>
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<td>UNIDO</td>
<td>United Nations Industrial Development Organization</td>
<td>RF</td>
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<tr>
<td>UNOPS</td>
<td>United Nations Office for Project Services</td>
<td>SSB</td>
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<tr>
<td>UNRWA</td>
<td>United Nations Relief and Works Agency</td>
<td>USB</td>
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<td>WFP</td>
<td>World food programme</td>
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<td>cal</td>
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<td>°C</td>
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<td>K</td>
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<td>MT</td>
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<td>N</td>
<td>newton</td>
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<td>ppm</td>
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<td>rpm</td>
<td>revolutions per minute</td>
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<td>s</td>
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</tr>
<tr>
<td>AC</td>
<td>alternating current</td>
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<tr>
<td>DC</td>
<td>direct current</td>
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### Multiples of SI units

- M: mega (10⁶)
- k: kilo (10³)
- h: hecto (10²)
- m: milli (10⁻³)
- μ: micro (10⁻⁶)

### Other abbreviations

- Ø: diameter
- bps: bits per second
- HDPE: high density polyethylene
- LDPE: low density polyethylene
- mph: miles per hour
- min.: minute
- Mb: mega byte
- PC: personal computer
- PE: polyethylene
- PET: polyethylene terephthlate
- PP: polypropylene
- PVC: poly vinyl chloride
- RAM: random access memory
- UV: ultra violet

### Standards / committees

- BS: British Standards
- CCITT: International Telegraph & Telephone Consultative Committee
- ISO: International Standard Organization

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NEEDS AND RECOMMENDED RESPONSES

General

The success of an emergency relief operation is highly dependent on an efficient communications network. Since the public telecommunications network will, during an emergency situation often be saturated or out of order, the communications network for a relief operation should be based on equipment which is brought into the disaster area and which can work independently of local support. It is therefore extremely important that all the communications equipment to be used in the field is able to operate from a 12 VDC power supply, possibly supported by a solar power system or small portable generating sets (with output 12 VDC) as backup. The different communications systems needed in a disaster relief operation can normally be divided into three categories, each of which require different kinds of equipment:

Short-Range Communications

Hand-held VHF radio systems to be used locally within a very limited distance from the base (2-10 KM depending on the terrain).

a) Public Addressing (PA) Equipment

As one-way communications equipment, the hand-held power megaphone can be very useful when a large number of people assembled in a small area need to be informed simultaneously.

b) Hand-held & Base Station VHF Equipment

For short-range communications between individuals in a local area (normally within "line of sight"), and between these individuals and a base, it is essential to have a reliable, foolproof and professional radio-telephone system installed (often called a "walkie-talkie" system). Attention should be paid to the confidentiality/privacy of all communications which are not encrypted.

Medium-Range Communications

Portable and mobile HF radio equipment. VHF equipment with possible use of a repeater station can be used in a regional area.

When communications beyond the immediate area around the base is needed, the equipment described above needs to be supplemented with additional equipment. In order to cover a larger region around the base and overcome the "line of sight" limitations for the VHF equipment, it will often be necessary to use VHF repeater station equipment and make use of mobile VHF and HF equipment.

The mobile equipment is often the same as that used at the base station, but with the hardware modified for vehicle installation.

Long-Range Communications

HF radio and satellite equipment for communications with the outside world, HQ etc.

For long-range communications there are basically two different methods to choose from: HF-radio systems or satellite systems. Each method requires completely different types of equipment with advantages and disadvantages as explained below.
NEEDS AND RECOMMENDED RESPONSES

a) HF-Radio Systems

HF-radio (shortwave radio) is the traditional method for medium and long-range voice and telegraphic communications. HF SSB communications is more reliable than VHF or UHF communications, especially where mountainous terrain or distances over 14 miles are encountered. HF radio signals (2 - 30 MHz) may be received at distant locations using either ground wave or sky wave signals. Ground wave signals follow the contour of the ground in hilly regions for 1 to 90 miles, depending on frequency. At distances greater than 50 miles to several thousand miles, sky signals which bounce off the F2 layer of the ionosphere are involved.

While communications within your own network will normally be free of charge, coast or ground stations will charge a fee for handling your traffic. It is advisable to make arrangements with the above for such services.

Apart from the fact that the transmission can sometimes be seriously affected by propagation and interference, the disadvantage of an HF-radio system is the need for a trained technician to install and line up the equipment and antennas. It should also be mentioned that, in some parts of the world, the allocation of HF radio frequencies by authorities can be a rather complicated and time-consuming procedure, and will normally require a trained technician to operate the system.

To select the most suitable antenna system, advice from a qualified technician is strongly recommended, and required during the installation process.

The specifications for HF-radio systems have been selected on the basis of long-term experience which various UN agencies and other international relief organizations and embassies have had with this type of equipment. Special consideration has in all cases been given to their reliability and suitability for field use.

b) Satellite Systems

Within the last ten years, long-range telecommunications has been revolutionized through the use of satellite systems, which provide the most reliable, high-quality wireless communications available today.

Systems of special interest for emergency relief operations are those based on the Mini-M Standard.

For all kinds of satellite terminals, registration with PTT authorities is required before the terminal can be used. Registration ensures that all communications via the satellite can be invoiced to the owner of the terminal. This is a significant difference and disadvantage of satellite communications when compared to HF-radio. Communications by satellite can be very expensive, the average fee being about five times the cost of HF coast radio services.

* INMARSAT-B
Standard-B terminals provides telephone, telefax, telex, and data transfer upto a speed of 64 kbit/s using digital communications technology.
NEEDS AND RECOMMENDED RESPONSES

* INMARSAT - Mini-M
Standard Mini-M terminals are lightweight laptop sized and provide direct-dial voice communication. Standard Mini-M terminals can also be connected to a fax machine or computer for direct data transmission (up to 2.4 kbits/s). The equipment is quickly installed and easy to use. Recently, high speed, 64kbits/s models have been introduced for mobile ISDN speed internet access.

* VSAT
Very Small Aperture Terminal (VSAT) - VSAT is a relatively new technology and growing rapidly. Due to its relatively small size it is easy to ship and to install, although VSAT terminals can have dish sizes of 1.2 through 7 meters the majority are 1.8 meters.

The specifications selected for satellite terminals take into consideration previous UN experience with this equipment. Also, the following guidelines may be taken into consideration when selecting which communication equipment to use during an emergency.

For Emergency Conditions - short to medium term:

INMARSAT Standard B - voice/data/fax
INMARSAT Standard Mini-M - voice
Radio

For Emergency Conditions - long term:

INMARSAT Standard B (Multiplexed - voice/data/fax)
VSAT - Ku band - voice/data

For Emergencies and True Portability, e.g., communications with projects:

INMARSAT Standard Mini-M - voice

Power Source

The power source for telecommunications equipment is often one of the following types depending on the location where the systems are operated:

- Battery
- Generating set
- Solar power

The most commonly used source is a battery which can be charged regularly. Power for battery recharging can be drawn from the mains, the engine of a running vehicle or from a gasoline generator.

However, when telecommunications equipment is utilized in emergency situations the regular provision of electric power is uncertain. In such cases, it is better to rely on small self-contained generating sets. Solar energy, also known as photovoltaics, is a mature technology that has already proved its reliability in numerous situations. The capital cost, however, is much higher and requires a skilled technician for maintenance and repairs.
Schematic diagram showing communications systems for emergency operations

- Short Range Communications
  - VHF-Radio System
    - Public Address (Megaphone)
    - Hand-Held Unit "Walkie-Talkie"
    - Base Station
    - Repeater Station

- Medium Range Communications
  - HF-Radio Voice System
    - Mobile Unit Vehicle Installation
    - Base Station

- HF-Radio Data System
  - Base Station Office System
    - Standard B
    - Option HSD

- Long Range Communications
  - Satellite System
  - Inmarsat System
    - VSAT-System Intelsat/Eutelsat
    - Standard Mini-M
    - Portable
    - Car Phone
    - Stationary
    - High Speed
<table>
<thead>
<tr>
<th>Type</th>
<th>Range</th>
<th>Size/Weight</th>
<th>Cost</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| VHF (Voice)        | 3 - 25 km (line-of-sight) | Hand-held or mobile unit  
VHF Kit:  
6 hand-held & 2 mobile/base units weight: 48 kg | 400 - 700 USD per unit  
12,000 USD per set | For on-site co-ordination and individual communications for safety and security of field personnel. Range depends on terrain and is larger for mobile/fixed stations than for hand-held units. |
| VHF (with repeater)| 10 - 50 km     | Repeater: 10 kg  
Repeater 3000 USD | Units as above  
Repeater 3000 USD | Repeater increases the range of VHF communications, particularly in urban and mountainous territories. Repeater needs to be installed in a high location (hill, building) and by a qualified technician. |
| HF (Voice)         | Regional to world-wide | Portable: 10 kg Fixed: 20 kg | 4,000 USD per station  
no fees | Commonly used for regional communications, 50 to 1,000 km, no communications fees unless used for phone through commercial land-stations. |
| HF (teletype)      | Regional to world-wide | Fixed: 25 kg | 7,000 USD per station  
no fees | Reliable teletype (sitor) provides links world wide. Requires a qualified operator. No communications fees unless messages are routed through commercial land-stations. |
| Satellite Inmarsat B | World-wide Phone/Fax (Telex/Data) | Suitcase set: 25 kg | 17,500 USD per station  
fees approx. 3 USD/Min (Mobile-Fixed) | Full phone, fax and telex capability, high speed Data (up to 64 kbits/s). Is expected to replace Inmarsat A by the year 2000. Ideal for multi-user environment when local communications networks down or nonexistent. |
| Satellite Inmarsat Mini-M | World-wide Phone (Fax/Data) | Attach-case set: 5 - 10 kg | 2,500 USD per station  
fees approx. 2.5 USD/Min (Mobile-Fixed) | Narrow bandwidth digital voice communication over international phone network. Data and fax transmission possible, although relatively slow (2400 bps). Equipment easy to install and light weight. Higher cost 64 kbps versions also available. |
| Satellite VSAT     | World-wide Phone/Fax Data/Video | Depending on model  
Antenna normally 1.8 m in diameter | 30,000 USD per station  
fees approx. 5,000 USD per month | The VSAT system provides telephone, fax, high speed data transfer (up to several mega bits/s), an ideal communication tool if high speed data transfer is needed. However, terminals need to be designed per the specific needs. |
PUBLIC ADDRESS EQUIPMENT

MEGAPHONE, HAND-GRIP TYPE

Shipping weight: 1 kg
Shipping volume: 0.03 m³
UNCCS Code: 472341

Type:
- Handheld with built-in microphone volume control and alarm switch in handgrip.
- Suited for small group of people (20-30 persons).

Technical Specifications:
- Audible Range: City areas - 250 m (min).
  Suburban - 800 m (min).
- Output power: 6 - 10 W.
- Power source: 12 VDC.

Accessories required:
- Batteries, size "AA", 8 pieces.

Quality Requirements:
- Conforms to International/National Standards.

MEGAPHONE, SHOULDER TYPE

Shipping weight: 1.5 kg
Shipping volume: 0.04 m³
UNCCS Code: 472342

Type:
- External input connection to microphone, tape recorder or recorder or record player.
- Handheld microphone with on/off switch and built-in volume control.

Technical Specifications:
- Audible range: City areas - 400 m (min).
  Suburban - 1.3 km (min).
- Output power: 10 - 16 W.
- Power source: 12 VDC.

Accessories required:
- Batteries, size "C", 8 pieces.

Quality Requirements:
- Conforms to International/National Standards.
PUBLIC ADDRESS EQUIPMENT

PUBLIC ADDRESS (PA) SET, MOBILE

Shipping weight: 3.5 kg
Shipping volume: 0.1 m³
UNCCS Code: 472352

Type:
- Mobile (vehicle mounted) PA - amplifier with hand-held microphone and two horn speakers for outside vehicle mounting, including cables.

Technical Specifications:
- Output power: 10 - 15 W or 20 - 30 W
- Power source: 12 VDC

Quality Requirements:
- Conforms to International/National Standards.

PUBLIC ADDRESS (PA) SET, FIXED INSTALLATION

Shipping weight: 20 kg
Shipping volume: 0.3 m³
UNCCS Code: 472353

Type:
- Desktop PA-amplifier with connections for microphone, speakers, tape recorders or record player. Suited for indoor or outdoor groups of people up to approx. 750 persons.

Technical Specifications:
- Output power: Minimum 60 W (Rated.)
- Power supply: 110 / 220 VAC 50/60 Hz and 24 VDC (battery operation).
- Speakers: Minimum two pieces directional reflex horns with driver units and extension cables.
- Microphone: Dynamic type microphone with extension cables.

Quality Requirements:
- Conforms to International/National Standards.
VHF EQUIPMENT

TRANSCiever, HANDHELD

Shipping weight: Approx. 0.5 kg
Shipping volume: Approx. 50x150x130mm
UNCCS Code: 467651 (a)

Use:
- Communication between individuals and/or base, within "line of sight" and maximum 10 km depending on the terrain.

Description:
- Portable VHF - FM Transceiver, compact, light weight, microprocessor controlled, housed in rugged casing, rubber antenna & CTCSS control unit built-in.

Technical Specifications:
- Frequency range:
  VHF: must include 154 - 166 MHz.

- Channel: Minimum 6 programmable memory channels.
- Channel spread: Minimum 10 MHz.
- Channel spacing: 25 kHz / 12.5 kHz

- Receiver sensitivity:
  Better than 0.35μV at 12 dB/SINAD.

- Power Output:
  Selectable high/low (on high minimum 2 W).

- Power supply:
  7.2 V or 12 V Ni-Cd batteries (rechargeable), min. 600 mAh.

- Standard accessories:
  - Spare battery.
  - 110 - 220 VAC rapid charger with automatic charging control.
  - 5 tone selective call-paging.
  - Equipment for programming.
  - Belt clip.

Optional accessories:
- Mobile DC adapter/charger.
- Speaker/microphone.

Quality Requirements:
- Conforms to International/National Standards.
TRANSCIEVER, BASE STATION

Shipping weight: Approx. 1.5 kg
Shipping volume: Approx. 140 x 40 x 175 mm
UNCCS Code: 467653

TRANSCIEVER

Use:
- Communication in a local area up to approx. 50 km depending on the terrain.

Description:
- VHF-FM transceiver of rugged construction, synthesized, selective channel scanning, and a built-in CTCSS controller.

Technical Specifications:
- Frequency range: Must include 154 - 166 MHz.
- Channels: Minimum 8, programmable.
- Channel spread: Minimum between 154 - 166 MHz.
- Channel spacing: 5 or 12.5 or 25 kHz.
- Receiver sensitivity: Better than 0.35μV at 12 dB/SINAD.
- Power output: Minimum 25 W.
- Power supply: 12 VDC.

Options:
- Equipment for field programming.
- 5-tone selective call.

BASE STATION ANTENNA

- Frequency range: 146 - 174 MHz, adjustable.
- Gain: Minimum 5 dB.

- Fitted with lowloss coaxial cable (less than 5 dB/100 m at 150 MHz) with necessary connectors.

Quality Requirements:
- Conforms to International/National Standards.
TRANSCIEVER, VEHICLE

Shipping weight: Approx. 1.5 kg
Shipping volume: Approx. 140x40x175mm
UNCCS Code: 467652

TRANSCIEVER

Use:
- Communication in a local area up to approx. 50 km depending on the terrain.

Description:
- VHF-FM transceiver of rugged construction, synthesized and selective channel scanning, including brackets and other vehicle installation, CTCSS control unit built-in.

Technical specifications:
- Frequency range: Must include 154 - 166 MHz.
- Channels: Minimum 8, programmable.
- Channel spread: Minimum 10 MHz.
- Channel spacing: 25 kHz.
- Receiver sensitivity: Better than 0.35μV at 12 dB/SINAD.
- Power output: Minimum 25 W.
- Power supply: 12 VDC.

Options:
- 5-tone selective encoder.
- Equipment for field programming.

VEHICLE ANTENNA

- Frequency range: 146 - 174 MHz, adjustable.
- Gain:
  - Minimum 3 dB.
  - Fitted with 5 m coaxial cable RG - 58 and PL - 259.

Quality Requirements:
- Conforms to International/National Standards.

Note: In some vehicles it is easier to install the antenna on the rooftop rather than on the side - and in this case the antenna should be of a size that avoids contact with low hanging power lines and tree branches.
VHF EQUIPMENT

REPEATER STATION

Shipping weight: Approx. 20 kg
Shipping volume: Approx. 480x150x400mm
UNCCS Code: 467683

Use:
- To increase the range and capability of handheld VHF equipment up to approx. 50 km and the other VHF equipment to approx. 60 km depending on the terrain.

Description:
- VHF repeater in rugged construction preferably with CTCSS decoder and duplexer.

Technical Specifications:
- Frequency range: 154 - 166 MHz (preferable).
- Channel frequencies: Factory aligned to specified transmission and reception frequencies.
- Channel spacing: 25 kHz.
- Frequency separation: 4.6 to 5.5 MHz.
- Power output: Minimum 10 W.
- Power supply: 110 - 230 VAC. 12 VDC with automatic switching.
- Antenna: Base station antenna, to match programmed transmission frequency. Gain: Minimum 5 dB.

Options:
- Power amplifier.
- Time-limiter.
- Battery charger, 12 V, 10 A.
- Heavy duty battery 12 V / 100 Ah.

Accessories:
- Equipment for field programming.

Quality Requirements:
- Conforms to International/National Standards.
VHF EQUIPMENT

VHF FIELD KIT

<table>
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<td>0.1 m³</td>
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<tr>
<td>UNCCS Code:</td>
<td>467685</td>
</tr>
</tbody>
</table>

Type: VHF field kit

To be included:
- 6 handheld VHF transceivers conforming to the specifications for UNCCS 467651, but with only one programming unit (including software).
- 2 mobile / base VHF transceivers conforming to the specifications for UNCCS 467652, but with only one programming unit.
- 2 mobile antennae with magnetic mount including 2 x 6 metre cable RG-58 and 4 adaptor plugs for handheld transceiver.
- 2 base station antennae modified to reduce packing size below 50 cm including 2x20 metre cable RG-58 and plugs.
- 2 adapters for cigarette lighters in car for handheld VHF transceivers, cable attached to adaptor.
- 1 AC distributor for 6 chargers and adaptor set.
- 1 instruction and service manual for the handheld and mobile transceivers and for the programming units.
- 1 waterproof aluminium transport box for storage of telecommunications items as below.
- 1 set of field programming equipment for handheld VHF transceivers.
- 1 set of field programming equipment for mobile/base VHF transceivers.

The individual items in the kit are stored in four layers in the transport box, each of which contains a specific group of material:

Top layer:
- 6 handheld VHF transceivers.

Second layer:
- 6 battery chargers.

Third layer:
- 2 mobile antennae with magnetic mount and 2 base antennae, cables and adaptors.

Bottom layer:
- 2 VHF transceivers with higher power and equipment to programme additional channels on all transceivers.

Quality Requirements:
- Conforms to International/National Standards.

Note: The layout is such, that the most urgently needed and immediately usable items are on top, while the equipment which offers additional possibilities but needs a minimum amount of installation work is stored further down. All items are however accessible at all times, as the layers can be lifted out one by one and can be inserted in any other sequence as well.
Type:
- Light weight base station of rugged construction.

Technical Specifications:
- Input power: 10 - 16 VDC, standby consumption to be lower than 1A at 12 V.
- Frequency range: 2 to 30 MHz (receive and transmit).
- Operating range: -30°C to +55°C, up to 90% humidity.
- Frequency control: Minimum 15 front-panel programmable channels, simplex and operation mode.
- Modes of operation: Transmit and receive: J3E (USB and LSB).
- Transmitter: Output power: 100 W pep minimum in SSB.
- Receiver: Sensitivity: Better than 0.3 µV for 12 dB sinad in SSB.
  Selectivity: 2.3 kHz/-6 dB (SSB).
  Image rejection: 76 dB or better.
  Clarifier: With central detent, approx. ± 150 Hz.

Additional features:
- Programmable scanning facility for all channels.
- Protection against inversion of polarity.
- Protection against overtension.
- Automatic fuses or easily accessible interchangeable fuses with spare fuses delivered as part of a standard package.
- Automatic antenna tuner (integrated or external).

Optional features:
- Selcall (protocol to be compatible).

HF base station antenna:
- See antenna systems for HF radio communications.

Quality Requirements:
- Conforms to International/National Standards.
TRANSEIVER

Type:
- Solid state HF transceiver of rugged construction. Synthesized, programmable with built-in receiver scanning facility.

Technical Specifications:
- Frequency range:
  - 2 - 24 MHz (min) - base station.
  - 3 - 18 MHz (min) - mobile station.
- Receiver selectivity: Greater than 70 dB at -1 kHz and +5 kHz.
- Channels: 400 front-panel programmable channels.
- Mode of operation: J3E (USB and LSB).
- Operating range: -30 to +60 °C at 90% humidity.
- Transmission Output: 100 W pep.
- Power requirements: 10-15 VDC, reverse polarity and overvoltage protection.

Options:
- Selcall (Protocol to be compatible).
- Extended control head with mounting.
- Bracket for vehicle installation.

HF VEHICLE ANTENNA

Frequency range:
- To cover the range in operation.
  Sturdy construction to withstand rough road driving, automatically tuned and complete with installation hardware (must be waterproof, i.e. unaffected by river fords).

Quality Requirements:
- Conforms to International/National Standards.
RADIOTELEX DATA TRANSMISSION SYSTEM

Shipping weight: Approx. 15 kg
Shipping volume: Approx. 0.05 m³
UNCCS Code: 467684 (a)

*(excl. antenna)

Use:
- SITOR and PACTOR are communication systems whereby low speed data information can be transmitted over a HF-radio connection.

Type:
- Data transmission via a HF-radio connection using the PACTOR A system.

Technical Specifications:
- Power supply: 12 VDC
- HF-Transceiver: Suitable for SITOR / PACTOR (see specifications of HF-Transceiver).
- HF-Modem:
  - Type: High speed PACTOR, incl. software on 3.5" diskette, interface cables and operation manual.
  - Throughput: 200/4800 bps.
  - Com. modes: PACTOR ARQ, FEC, MONITOR, SITOR ARQ, SELFEC.
  - Modulation: FSK/AFSK.

Computer equipment:
- RAM: 1 Mb (min).
- 1 floppy drive 3.5" 1.44 Mb.
- 20 Mb hard disk (min).
- Working from 12 VDC.
- Serial RS232 and parallel Centronics Interface.
- Socket for 12 V external supply, including mains battery charger.

Printer:
- 9-pin matrix print head, or bubble-jet printer.
- Parallel PC connection.
- Draft printing speed 120 characters/sec.
- Ribbon cartridges for matrix printer or printer heads (bubble jet printer).
- Modified for 12 VDC operation.
- Accessories for printer: Paper roll holder and Spare cartridge.

Power equipment:
- Battery charger: 12 V / 25 A or
- Generating set: 350 W or.
- Solar power supply: (see Solar Panel specifications for further details).

Antenna equipment:
- Delta-loop, broad band or log periodic antenna (see antenna specs for further details).

Accessories for antenna:
- Heavy duty antenna coupler control cable, 25 meters long.
- SWR/power meter, frequency range 2 - 30 MHz.

Quality Requirements:
- Conforms to International/National Standards.
ANTENNA SYSTEM FOR HF RADIO COMMUNICATION

BROADBAND ANTENNA

<table>
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<tr>
<th>Shipping weight:</th>
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</thead>
<tbody>
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<td>Approx. 0.16 m³</td>
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<td>475431</td>
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</table>

Area of use:
- For medium-range point to point and base to mobile communication. The advantage is that it can be used with natural available support systems such as buildings, high trees and free-standing masts. It is relatively simple and easy to erect and does not require an antenna tuner.

Type:
- Broadband antenna.

Typical kit:
- 1 Antenna.
- 1 Roll of 100 m nylon rope, Ø 5 mm.
- 2 Mast holders.
- 2 Wire holders.
- 4 Rawl plugs with hook screw.
- 50 Union screws.
- 8 Turn buckles.
- 20 Protective rings.
- 8 D shackles.
- 5 Complete rawl plugs.
- 30 m Coaxial cable RG-58U.
- 1 Installation manual.

Note:
- For temporary installations where available support structures can be used, the above mentioned kit could be reduced to consist of only a few necessities such as nylon rope, some 30 to 50 meters of RG-58 coaxial cable with connectors on both ends and a handful of tye-rops.

Quality Requirements:
- Conforms to International/National Standards.
DELTA LOOP ANTENNA

Shipping weight: Approx. 10 kg
Shipping volume: Approx. 0.02 m³
UNCCS Code: 475432

Area of use:
- For a semi-permanent or fixed base station installation, where an antenna system needs to be erected quickly and easily for multi-frequency operation, a delta loop antenna is most often chosen. A delta loop antenna can only be used with an associated antenna tuner, preferably automatic.

Type: Delta loop antenna.

Wind and ice survival:
- Wind: 160 km/h (100 mph).
- Ice-accumulated: 40/50 kg (90/110 lbs).

Typical kit: (Standard version for wall mounting):
- 30 m Multistrand (49x0.2 mm) copperweld wire.
- 1 10.2 m telescopic mast.
- 6 Insulators.
- 2 Variable wall brackets.
- 100 m Guywire.
- 1 Guywire bracket.
- 10 Guywire clamps.
- 1 Ground bracket.
- 50 m Coaxial cable RG58 fitted with 2 UHF PL259.
- 8 Spring safety hooks.
- 6 Plastic dowels.
- 5 Wall dowels.
- 1 Mounting instructions manual.

Extending kit: (For field installation):
- 2 2 m masts.
- 2 Guyrope brackets.
- 8 Ground spikes.
- 4 Ground spikes for mastfoot.
- 4 Hooks.
- 4 Guywire clamps.
- 1 Swivel mastfoot.
- 2 Fixed mastfeet.

Quality Requirements:
- Conforms to International/National Standards.

Note: In some cases the above mentioned kit is too extensive - locally available mast material, plenty of good nylon rope, 6 ceramic insulators and about 30 meters of insulated stranded 4 mm² is often enough to make up the loop. A few meters of solid copper wire 4 mm² should also be included to make up egg-chains and for general use.
AUTOMATIC ANTENNA TUNER

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</tbody>
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Area of use:
- Necessary when a delta-loop antenna is used.

Frequency range:
- 2-30 MHz.

Power capability:
- 150 W pep.

Input impedance:
- 50 Ohms.

Tune-up power:
- 5-15 W

Tune-up time:
- 1-2 sec.

Power supply:
- 12 VDC operation (from transceiver).

Construction:
- Weatherproof enclosure.

Accessories:
- 30 m control cable.

Quality Requirements:
- Conforms to International/National Standards.
LOG PERIODIC ANTENNA

Shipping weight: Approx. 38 kg
Shipping volume: Approx. 3 m³
UNCCS Code: 475433

Area of use:
- A log periodic antenna is suitable for communication over medium and long distances where a more sophisticated antenna system is required. It needs, however, a solid mast or tower of minimum 8 meters and is therefore most often used with permanent or semi-permanent installations.

Type:
- Log periodic antenna:

Technical Specifications:
- Frequency range: 10-30 MHz.
- Power capability: 1.5 / 3.0 kW pep.
- Forward gain: (Nominal) approx. 10 dB.
- Input impedance: 50 Ohms.
- Azimuth beam width: Nominal 58 degrees (at half power point).
- Angle of maximum radiation: Low frequency: 20 degrees. High frequency: 8 degrees.

Accessories:
- Hoisting mast, minimum 8 m.
- Rotor system, complete with control box and fittings.
- Multicore remote control cable: 50 m x 10 x 1 mm².
- Ground wire: 20 m x 1 x 4 mm².
- Coaxial cable: 50 m, RG 213.

Comments:
- As cranes are often not available to mount such an antenna, a tilting type mast (i.e. VERSA) tower is recommended.

Quality Requirements:
- Conforms to International/National Standards.
INMARSAT, APPROVED
STANDARD B

Shipping weight: Approx. 25 kg
Shipping volume: Approx. 0.1 m³
UNCCS Code: 467432

Areas of use:
- An office installed Inmarsat Standard B to provide voice, telex, telefax and data between the terminal and the international telecommunication networks.

To Include:
- Inmarsat B transceiver with built-in control keyboard, built-in control display and telephone handset.
- Built-in telex or lap-top with printer and software used as telex.
- Parabolic dish antenna with wall brackets, visual and/or acoustic signal strength indicator (to facilitate positioning of antenna).
- Operating and service manual, dual identity number.
- Power cable, min. 5 mtrs extension low-loss antenna cable and interconnecting cables.
- DC/AC 12/220 V inverter (inverting output rating: sufficient to power the STD B terminal and a connected fax machine).

Standard channels:
- Telex: 50 baud 66 word per minute.
- Voice: 16 kbits/s with voice coding.
- Fax: 9.6 kbits/s, CCITT G3 standard.
- Data: 9.6 kbits/s.
- HSD: Simplex 56 or 64 kbits/s.

Options:
- Duplex HSD transfer both 56 and 64 kbit/s.

Interfaces:
- RJ 11 for connecting a second telephone or a fax.
- RS 232 Hayes compatible, for connecting modem, printer or lap-top computer.

Environment:
- Operating temperature: Antenna -25° to +55° C.
- Electronic 0° to +45° C.
- Relative humidity: Antenna 95 % at 40° C.
- Electronics 85 % at 40° C.
- Antenna and outdoor unit must be weather proof.

Power supply:
90-240 Vac. 50-60 Hz single phase.

Accessories:
10-150 meters extension low-loss antenna cable.
Lap-top computer.
Printer.
Fax machine.
SATellite equipment

INMARSAT, approved
STANDARD Mini M

Shipping weight: 2.2 kg
Shipping volume: 200x270x50mm
UNCCS Code: 467433

Use:
- A portable briefcase sized Inmarsat Standard Mini M to provide voice, fax and data between the terminal and the international telecommunication networks.

To include:
- Inmarsat Mini M transceiver with built-in control keyboard, built-in control display and telephone handset.
- Removable antenna, visual and/or acoustic signal strength indicator (to facilitate positioning of antenna).
- Built-in battery.
- Antenna cables and interconnecting cables.
- Operating and service manual and compass.
- SIM card facilities.

Environment:
- Operating temperature: -25°C to +50°C.
- Relative humidity: 95% at 40°C.

Antenna and unit must be weather proof.

Power supply:
- 10-32 VDC.

Channels:
- Voice channel: 4.8 kbits/s.
- Fax channel: 2.4 kbits/s CCITT G3 standard.
- Data channel: 2.4 kbits/s.

Interfaces:
- RJ 11 for connecting a second telephone or a fax.
- RS 232 Hayes compatible data port.
- RS 232 printer port.

Accessories:
- Lap-top computer with printer.
- Portable fax machine equipment.
- Up to 15 meters antenna cable.
- Solar panel.
- Battery pack with charger.
- AC/DC power supply, 90 - 240 VAC at 50/60 Hz with AC/DC connector.
SATELLITE EQUIPMENT

VSAT

<table>
<thead>
<tr>
<th>Shipping weight:</th>
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<tbody>
<tr>
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<tr>
<td>UNCCS Code:</td>
<td>467433</td>
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</tbody>
</table>

Antenna

Outdoor Electronics

Mount

VSAT

Type:
- VSAT Very Small Aperture Terminal which refers to receive/transmit terminals installed at dispersed sites connecting to a central hub via satellite using small diameter antenna dishes.

Area of use:
- Used for the reliable transmission of data, video or voice via satellite. Specialist staff are not required, it simply plugs into existing terminal equipment. These new, smaller dishes are capable of sending and receiving signals from geostationary satellite while offering major advantages such as cost savings, portability and easy installation in various types of terrain.

Size:
- 0.9 - 1.8 meters.

Note:
- The VSAT equipment consists of two units: one outdoor unit (consisting of a small antenna for receiving and transmitting signals) which is placed in the line of sight to the satellite and one indoor unit (consisting of a small desktop box containing receiver and transmitter boards) to interface with the users communications device.

Quality Requirements:
- Conforms to International/National Standards.
POWER SOURCES

GENERATORS

Shipping weight: Approx. 10 kg  
Shipping volume: Approx. 0.02 m³  
UNCCS Code: 461140

Area of use:
- Can be used as a power generator and as a battery charger.

Type:
- Portable petrol generator, both AC and DC output.

Output:
- Voltage: 220 VAC.  
  12 VDC.  
- Frequency: 50 Hz.  
- Power: Minimum 300 W.

Engine:
- 2 stroke, petrol engine, air cooled.  
- Consumption approx 0.3 litres/h.

Tank:
- Minimum: 0.8 litres.

Options:
- Manual switch to select between AC or DC output.  
- Battery charger built-in.

Accessories:
- Cables and connectors included.

Quality Requirements:
- Conforms to International/National Standards.
POWER SOURCES

SOLAR POWER SUPPLY KIT

Shipping weight: See below
Shipping volume: See below
UNCCS Code: 466541

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<td>16 kg</td>
<td>8 kg</td>
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<tr>
<td></td>
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<td>0.1 m²</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td></td>
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</table>

Area of use:
- Power supply for 12 VDC telecommunication equipment.

Rated:
- Heavy duty: 5.4 A, 65 W.
- Light duty: 2.7 A, 32 W.

Contents of solar kit:
- Solar panel.
- Mounting frame.
- Anti-bird spikes
- 6 meter long heavy duty twin core cable.
- Battery lugs.
  - Regulator containing minimum:
    - Volt/ampere meter.
    - High/low voltage indicator.
    - 50 amps battery fuse.
    - 30 amps load control fuse, outdoor enclosure.
    - Adjustable overcharge timer.

Cabling and plugs:
- 6 m single core 4 mm² cable (intermodule cabling).
- 50 m double core 2.6 mm² power cable (array to charge controller and from charge controller to load).
- 100 pieces cable clip.
- 100 pieces plastic plugs.
- 10 plastic strips.
- 1 piece isolation tape.
- 2 pieces plugs of mil. standard (for the array cable and the load cable into the battery box).

The storage of the power should be on a 12V batteries with capacity of minimum 200Ah.

Quality Requirements:
- Conforms to International/National Standards.
Chapter 2 SHELTER, HOUSING, STORAGE AND COOKING APPLIANCES
NEEDS AND RECOMMENDED RESPONSES

General

This chapter covers following areas:

- Shelter and housing
- Bedding
- Kitchen accessories
- Lighting equipment
- Heating equipment

Clothing is not covered by this chapter for the following reasons. Often used clothing is commonly offered in emergencies but is generally an unsatisfactory means of meeting the need for clothing and should be discouraged. Experience suggests that much will arrive in poor shape, some will be dirty and badly sorted and little will be appropriate to the customs of the refugees. Furthermore, due to its volume, it is expensive to store and transport. First priority for meeting clothing needs should be the provision of fabrics for clothing that can be prepared by the people locally. For these reasons, clothing is not included in this catalogue.

Shelter and housing
Shelter must as a minimum provide; protection from the elements, space to live, rest and store belongings, privacy and emotional security. Shelter is likely to be one of the most important determinants of general living conditions and is often one of the largest items of non-recurring expenditure.

While the basic need for shelter is similar in most emergencies, issues such as the kind of housing needed, what materials and design are used, who constructs the housing and how long it must last, will differ significantly in each situation. In cold climates or those areas subject to daily extremes in temperature, lack of adequate shelter and clothing can have a particularly adverse effect on health and nutritional status. Thus, in addition to shelter, provision of sufficient blankets, sleeping bags, beds, appropriate clothing and even heaters will in some cases be a high priority.

To meet these varying situations, the following items are covered in the catalogue:

- Tarpaulins
- Shelter kit, family size
- Tents, shelter
- Utility tents

The best way to meet emergency shelter needs is to provide the same materials or shelter that would commonly be used by the refugees or the local population. The simplest principles and structures, and labour intensive building methods, are to be preferred. The design of shelter and more permanent housing should, if possible, provide for modification by the occupants to suit their individual needs.

The key to providing an adequate shelter is the provision of a solid and robust roof. If a complete shelter cannot be provided, provision of adequate roofing will be the priority. Plastic tarpaulins (woven and non-woven types) are in most cases the best materials available. These materials are also very useful in protecting minor stockpiles, latrines etc.

Tents are often not an effective means of providing shelter as they are difficult to live in and provide little insulation against extremes in temperature. There are however, circumstances in which
tents may be useful and appropriate, for example when local materials are not available, for use as storage or for various other purposes. In areas where the ground can be used as a floor in tents, the Shelter kit can be used as an inexpensive and efficient solution. The life of an erected tent is dependent on climate but may be as long as two years. In areas where the weather is very cold or rainy, a tent should be selected. Where tents are appropriate, repair material should be provided to the occupants.

Utility tents are needed to establish storage facilities, hospitals, schools and other field services. The success of the camp highly depends on these facilities. In order to select a hospital tent, it is important firstly, to establish a requirement for quantities of beds and to determine the types of diseases which have stricken the area. In colder areas, it may be necessary to use a prefabricated house as a hospital to provide the minimum protection against weather.

If the operation is long term and some of the refugees are children, a school tent should be erected. This increases the enthusiasm among the refugees and assists in making the camp a success.

When selecting storage facilities and shelter equipment, a systematic record of needs has to be established. It is important to ensure that the shelter is of sufficient size for its purpose. If the storage facility consists of several small tents situated in close proximity, the opportunity of loosing equipment and products from stock is increased. It is also necessary to have a proper security system for the storage facility e.g. guards or a proper fence.

To date neither pre-fabricated building systems nor specially developed emergency shelter units have proven effective in refugee emergencies. Reasons include inappropriateness, high unit cost, inflexibility and the fact that emergency shelter arrangements will have been made before these systems can arrive. They are therefore, not included in this catalogue as a commonly used item.

**Recommendations for tents**

Protected from: Mosquitoes, refuse dumps, adverse weather conditions, commercial and industrial zones

Average number of persons per family: 5 persons

Floor area in tent: 3.5 m² per person in tropical climates

Preferable tent area: 5 m² per person in colder climate

Preferable tent area: 17.5 m² in tropical climate

Preferable tent area: 25 m² in colder climate

Minimum height of side wall of tents: 90 cm

**Bedding**

There is a significant need for blankets in an emergency situation. Depending on the climate, blankets are one of the most valuable items in emergency situations. The catalogue covers the following bedding:

* Blankets, heavy thermal resistance
* Blankets, medium thermal resistance
* Blankets, light thermal resistance
* Sleeping bags and mattresses

The type of bedding selected for the operation, will depend on the climate. In cold areas where a heavy blanket is insufficient, sleeping bags should be considered.
NEEDS AND RECOMMENDED RESPONSES

Kitchen accessories

Kitchen-sets containing basic items are required for food preparation and consumption by the refugees. This catalogue contains three types of kitchen sets:

- Family size
- For 250 people
- For 100 malnourished children

Cooking utensils, water carriers/containers, stoves and lighting equipment may be required for family units and communal kitchen facilities - especially for displaced people and those who cannot salvage their own facilities after a sudden disaster.

Utensils, lanterns and stoves in particular should be the type which are commonly used in the area. Plastic jerry cans are very useful for carrying and storing water, and are easy to handle and use. In many situations, pre-packaged family kits of cooking utensils have been found useful, and are therefore included in this chapter.

It should be emphasized that the equipment supplied must consist of a lightweight material, but must be packed in a strong double-walled carton. Generally, equipment which can be purchased locally is to be preferred. It is very important that the refugees are aware of how to use the cooking utensils and related equipment and that this equipment can be useful to them, even after the emergency situation is stabilized.

Stoves that require wood or other fuels for operation, should be selected rather than those based on an electric principle. Stoves based on a solar energy principle might be necessary in areas where wood or fuel is unavailable.

Furthermore, it is crucial that cooking utensils are disinfected when appropriate. Disinfection can be carried out effectively by various methods, such as:

- Boiling water for minimum 5 minutes
- Chlorine solution, 100mg/litre for 30 seconds
- Quaternary ammonium compounds, 200mg/litre for 2 minutes
TARPAULINS, WOVEN PLASTIC

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<tr>
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<td>271616 (a)</td>
</tr>
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Use:
- Mainly for temporary human shelter or other personal protection purposes.

Description:
- Multi-purpose plastic sheeting.

Technical Specifications:
- Tensile strength: Not less than 60 kgs both directions of warp and weft (BS2576, 25 mm grab test or equivalent).
- Tear resistance: 9 kg min. both directions (BS 4303 or equivalent).

(Note: Tensile strength and tear resistance to be measured across any joints or seams present in the material offered.)

- Width: 4 m, standard size.
- Length: Sheets of 5 or 6 meters, or rolls of 50 or 60 meters.
- Thickness: Minimum 0.20mm (200 microns).
- Weight: 180 - 200 gr/m² - BS 2471
- Resistance: Temperature resistant from -20 to +80°C.
- Eyelets: Placed on 4 sides of the single sheets at approx. 1 metre centre to centre.

Features:
- UV- and chemical resistant.
- Water and soil fauna resistant.
- Long-life outdoor use in all climates.

Colors:
- Green on both sides with logo printed at regular intervals along the length of the roll for maximum visibility.

Flammability:
- Flash point above 200°C.

Quality Requirements:
- Conforms to International/National Standards.
TARPAULINS, MULTI PURPOSE

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</tr>
</tbody>
</table>

Use:
- Mainly for temporary human shelter or other personal protection purposes.

Description:
- Multi-purpose plastic sheeting.

Technical Specifications:
- **Material:** Woven high density polyethylene fibres. Warp and weft: 10x12 x 10x12 per square inch. Laminated on both sides with LDPE. 1000 denier minimum.
- **Tensile Strength:** Not less than 60 kgs both directions of warp and weft (BS 25576, 25 (BS 2576, 25 mm grab test, or equivalent).
- **Tear Resistance:** 9 kgs min. Both directions (BS 4303, wing rip).
- **Size:** rolls of 4 m x 50 m.
- **Thickness:** 200-230 microns (0.20-0.23) (BS 2544).
- **Weight:** 180-200 gr/m² (BS 2471).
- **Cold Crack:** To withstand temperatures of minimum -20 degrees C.

Colours:
- Green on both sides with logo printed at regular intervals along the length of the roll for maximum visibility. Logo size min. 50 x 55 cm.

Flammability:
- Flash point above 200 degrees C.

Quality Requirements:
- Conforms to International/National Standards.
TARPAULINS, REINFORCED NON-WOVEN PLASTIC

Shipping weight: 55 kg/roll
Shipping volume: 0.15 m³/roll
UNCCS Code: 271617 (a)

Use:
- Mainly for temporary human shelter or other personal protection purposes.

Description:
- Flexible braided plastic sheeting, with sealed eyelets.

Technical Specifications:
- Material: Flexible low density polyethylene (LDPE) sheet, reinforced with scrim of approx. 10/12 mm x 10/12 mm mesh, preferably of high tenacity polyester multifilament.
- Tensile strength: Minimum 7.0 kN/m.
- Tear resistance: 180 N to DIN 53363 (average of longitudinal and transverse values).

Note: tensile strength and tear resistance to be measured across any joints or seams present in the material offered.
- Width: 4 m, standard size.
- Length: 50 or 60 m in rolls.
- Thickness: 0.25 mm (250 microns).
- Weight: g/m².
- Resistance: Temperature resistant from -40°C to +80°C.
- Eyelets: Strong built-in plastic eyelets, melted into tarpaulin material, placed at approx. 1 metre center to centre and 10 cm from both lengthwise edges. Double row of eyelets every 5 or 6 meters and water-tight until pierced.

Features:
- UV- and chemical resistant.
- Water and soil fauna resistant.
- Long-life outdoor use in all climates.

Colours:
- White sun reflective top side and grey or blue reverse side.

Optional Accessories:
- 20 poles 2.15 m fiber glass 30 mm diameter (per roll of 50 m).
- 20 pole head, 16 pole feet plate.
- 10 x 33 rope, polypropylene, endless fibers.
- 40 pegs 48 x 3.35 cm, 1.25 mm thick, steel.
- 150 pegs 29 x 1.85 cm, 1.0 mm thick, steel.
- 150 toggles with one eye.
- Reinforced adhesive tape for repair.
- Manual for shelter construction.
- Cutting table.

Quality Requirements:
- Conforms to International/National Standards.
TARPAULINS, REINFORCED, BRAIDED PLASTIC
(Specifications as per MSF)
Shipping weight: 47.5 kg/roll
Shipping volume: 0.15 m³/roll
UNCCS Code: 271618 (a)

Use:
- Mainly for temporary human shelter or other personal protection purposes.

Description:
- Reinforced (braided) flexible plastic.

Technical specifications:
- Material: Low density polyethylene (LDPE) sheet, non-transparent, reinforced with a scrim of multifilament threads made of high density polyethylene (HDPE) or polyester (PES) or polypropylene (PP). Reinforced also with 6 bands of 7.5 cm width made of woven black HDPE fibers fabric and coated outside.
- Tensile strength: Minimum 50 DaN and 10% to 25% elongation in warp and weft outside of the reinforcement bands under ISO 1421. Minimum 70 DaN inside the reinforcement bands as per ISO 1421 plus the additional procedure.
- Tear resistance: Minimum 10 DaN under ISO 4674 (A2) outside of the reinforcement bands.
- Weldings: Only one welding allowed, in the middle of the sheet, lengthwise. Minimum resistance is 80% of the original tarpaulin tensile strength in weft under ISO1421 plus additional procedure.
- Peeling strength: Not applicable.
- UV resistance: Maximum 5% loss on original tarpaulin tensile strength under ISO 1421 after 1500 hours UV under ASTM G53/94 (UVB 313 nm peak), to be tested outside and inside the reinforcement bands.
- Width: 4 m standard size +/- 1%, net width.
- Length: Sheets of 6 meters, or rolls of 60 meters.
- Weight: 200 g/m² +/- 5%, plus 10% for the reinforcement bands under ISO3801.
- Resistance to T°: Temperature resistant from 20 to +80°C.
- Features: Water-rot and soil fauna resistant. Long life outdoor use in all climates.
- Flammability: Flash point above 200°C.
- Printing: Every 6 m, manufacturers name, month and year of production. Letters of 2.5 cb (1 inch).
- Colours: White sun reflective both sides. bands to be UN blue. Inner black film to ensure non transparency.

Quality Requirements:
- Conforms to International/National Standards.
CENTRE POLE TENT - DOUBLE FLY
(UNHCR Standard Family Tent)

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<th>Shipping weight:</th>
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<td>UNCCS Code:</td>
<td>271624 (a)</td>
</tr>
</tbody>
</table>

Dimensions Outer Fly:
- Dimensions: 4.50 m x 4.50 m
- Centre Height: 3.00 m
- Eaves height Corners: 2.05 m

Inner Tent:
- Dimensions: 4.00 m x 4.00 m.
- Floor area: 16 m²
- Centre height: 2.75 m
- Side wall height: 1.80 m.

Outer fly to clearly extend beyond the sidewalls of the inner tent by 25 cm. min.

Outer fly - single fold:
Canvas:
- 100 pct cotton yarn count 10/2 x 10/2 twisted in warp 42/44, weft 24/26 threads per inch, plain weave.
- Basic weight in loomstate: 13/14 oz. per m², finished 15/16 ozs per m².
- Canvas to be free of weaving defects and finishing faults adversely affecting strength, waterproofness and durability.
- Greige canvas with logo screen-printed on four sides of the outer fly in blue indelible ink for maximum visibility.
- Letter size: height min 50 cm, width min 20 cm, spacing between letters min 2.5 cm.
- Waterproofing/resistance to water penetration by paraffin wax emulsion and aluminium acetate to withstand min 30 cm hydrostatic head.
- Stabilization against decomposition of the fabric (rot proofing) with copper naphtanate. Min. 0.35% of metallic copper to be present on finished weight of fabric.

Make up:
- 12 galvanised D-rings (triangular shape) 8-9 mm in dia. Sewn with canvas (yarn count 10/2) to hold corners and side ropes.
- Roof corners to be provided with canvas reinforcements (same material as tent canvas) including 4 stitched steel rings (12 mm inner diameter).
- A distance of some 25 cm has to be ensured between outer fly and inner tent.
- 12 5 cm wide strengthening bands to hold all corner and side ropes fixations securely.
- The 5 cm strengthening band to allow corner ropes to run diagonally in-between canvas and strengthening band from one corner to the other. The ropes should run uninterrupted from one fixation peg to the other.
- All seams to be sewn in two rows, lock stitched with 101 (commercial number) or 21/4 (English count) good quality cotton thread or equivalent.
- A perimeter rope, 9 mm, hemmed to the rim of the outer fly as reinforcement.
Poles:
- 4 roof corners to be supported by 4 corner poles, bamboo or aluminium of 2.25 m length and 25 mm dia. Minimum, twofold inner tent, i.e. canvas and lining (Dosouti).

Canvas:
- 100 pct cotton yarn count 10/2 and 10/2 twisted in warp 42/44 weft 24/26 thread per inch, plain weave.
- Basic weight in loomstate: 13/14 ozs per m², finished 15/16 ozs per m².
- Canvas to be free of weaving defects and finishing faults adversely affecting strength, waterproofness and durability.
- Greige Canvas: waterproofing/resistanceto water penetration by paraffin wax emulsion and aluminium acetate to withstand min 30 cm hydrostatic head.
- Stabilization against decomposition of the fabric (rot proofing) with copper naphtanate. Min 0.35% copper naphtanate to be present on finished weight of fabric.

Lining (Dosouti):
- 100 pct cotton, yarn count 16 x 16 in warp and weft. Alternatively up to 20 x 20 in warp and weft, 32 threads per inch in warp and weft, 2 x 2 weave, min. 6 oz. per square meter in finished state.
- Dyed yellow, color-fast to water, colour to be uniform without objectionable stains/spots.

Make-up:
- Dosouti lining to be sewn to the inner tent along the panel joints. Lining to stop at the splash wall with an overlap of 3 to 5 cm.
- 2 separate side walls, height 1.80 m made up of 1.45 m canvas and 0.55 m PVC coated 100% polyester on both sides: 300G/m², color, light grey or white, sewn to the bottom of canvas wall, not be sewn neither on top of the canvas nor on top of the Dosouti). The PVC coated polyester overlap of 20 cm to serve as mud flap. Corner position of the mud flap to be cut to allow mud flap to extend properly.
- 20 cm double flap to be sewn to the eaves of the roof on all four sides, to provide insulation on inner an outer walls between roof and side wall. Outside flap to be of same material as canvas. Inside flap to be of Dosouti.
- One door flap on each of the 2 side walls. When opened to serve as canopy roof supported by 2 bamboo poles. Doorflap to be closed by means of loopplacing. Threshold of the door opening to be made only of PVC coated polyester fabric.
- One window of 40 x 60 cm to be provided on each of the side walls. Windows to be placed 45 cm above bottom (10 cm above splash wall). All windows to have cross strengthening bands, mosquito net and adjustable canvas flap adjustable from inside canvas flap to overlap window opening by 10 cm each side. Canvas flap to be placed high enough to allow fold away clear of window opening.
CENTRE POLE TENT - DOUBLE FLY, Contd...

Shipping weight: 150 kg
Shipping volume: see below
UNCCS Code: 271624 (a)

- 12 galvanized D-rings (triangular shape) 8-9 mm in dia, sewn with canvas (yarn count 10/2 to hold corner and side ropes.
- Cap of inner ten strongly reinforced with canvas, pierced and reinforced for centre pole to pass and to subsequently support outer fly 25 cm above inner tent.
- 12 5 cm wide strengthening bands to be provided down the length of the side walls and from the eaves of the roof up to the centre pole to provide reinforcement strengthening band and yarn on the splash wall must be of synthetic material.
- Loops to be provided on the roof and eyelets on the top of the side walls to join the roof and side walls together (loop lacing, distance/interval: 15 cm).
- Side walls to be jointed together by loop lacing, interval 15 cm between the loops. Overlap of side walls at corners min 20 cm.
- 2 galvanized mild steel 8 mm diameters D-rings to be provided at the bottom of door panel with synthetic material.
- Ground fixation: 12 galvanised D-rings, 8 mm sewn to the bottom of PVC splashwall with rotproof yarn (polyester/nylon). All bottom tabs must be of synthetic material.

Ropes:
- Ropes made of 9 mm 3-strand polypropylene preferably black with tensile strength of not less than 500 kg, knotted securely to the tent and outer fly, and slip-proof runners (flat double hole, hard wood 15 cm long, 10 cm between the poles and treated against termites and rot).
- Loop lacing with 7 mm cotton spun yarn.

Poles:
- Centre pole 3m long jointed steel, bamboo or aluminium. Wall thickness: steel 1.5 mm, aluminium: 3 mm min. Dia: for steel/aluminium: 50 mm, for bamboo: min 50 mm max 70 mm sleeves of 20 cm length riveted to one end of the upright section with 10 cm sleeve overlapping the pipe. Alternatively, mechanically reduced steel or aluminium pipe to fit into the 50 mm pole.
- Both sections to be tightly fitted together without coming apart when erected.
- Screwed base plate of 15 cm diameter attached to bottom of pole.
- 4 aluminium poles (22 dia x 2 mm) or bamboo poles (25 mm dia.) to be sewn into sleeves on each side wall and not to extend beyond the top of each side wall.
- 2 corner poles (25 mm dia) to be provided for each door panel as canopy support. Height 1.75 m long including 5 cm metal pin riveted to pole cap.
Note: All bamboo poles must be treated against termite and insect damage.

Accessories:
- 24 T-type bars 40 mm x 20 mm, 50 cm long, flanges 4 mm with a notch to avoid rope from slipping.
- 12 iron pegs of 25 cm long. made of reinforced steel rod, 9 mm diameter.
- 1 iron hammer of 1 kg with 45 cm wooden tapered handle. Metal head to be firmly secured to the handle by means of a wedge.
CENTRE POLE TENT - DOUBLE FLY,
Contd..

Shipping weight: 150 kg
Shipping volume: see below
UNCCS Code: 271624 (a)

- 1 repair kit, consisting of 1 straight and 1 curved needle with 20 m of suitable thread for tent repair.
- Assembly instructions with illustrations, and list of contents.

Groundsheet:
- Woven HDPE, warp x weft: 12/12 x 12/14, laminated on both sides with LDPE, reinforced rims by heat sealing on all sides.
- Size: 4 m x 4 m, without UV stabilisation, 200 g/m².

Packing:
- Outer/inner flies and groundsheet folded and rolled with all accessories and wrapped in canvas cloth inside the bundle. The bundle to be polyethylene lined, wrapped with hessian cloth, stitched, and strapped with nylon bands in both directions.

Shipping Marks:
- To be printed clearly on separate piece of white canvas (minimum 35 x 60 cm) in indelible ink for max. visibility and secured with the nylon bands of the packing.

Weight and Packing:
- Gr. weight per tent: approx 100/150 kg (depending on whether poles, bamboo, aluminium or steel).

Quality Requirements:
- Conforms to International/National Standards.
SINGLE FLY TENT

Shipping weight: 65 kg
Shipping volume: 0.25 m³
UNCCS Code: 271623 (a)

Dimensions:
- Floor area: 4 m x 4 m
- Ridge length: 4.0 m
- Center height: 3.0 m
- Side Wall: 0.9 m

Tent fly: two folds, i.e. canvas and Dosouti lining:
Canvas:
- 100% cotton, yarn count 10/2 x 10/2 twisted in warp 44, weft 26 threads per square inch, plain weave.
- Basic weight in loomstate 14 oz per square yard, finished weight 16 oz per square yard.
- Canvas to be free of weaving defects and finishing faults adversely affecting strength, waterproofness and durability.
- Natural canvas color without objectionable spots and/or stains.
- Waterproofing by paraffin emulsion and alum acetate to withstand minimum 20 cm hydrostatic head.
- Stabilization against decomposition of the fabric (rot-proofing) with copper naphtanate or any appropriate agents. Min. 0.35% metallic copper to be present on finished weight of fabric.

Dosouti lining:
- 100% % cotton, yarn count 16 x 16, construction 32 x 32 threads per square inch in warp and weft, 2 x 2 weave, min. 7 oz/sq. yard in finished state.
- Dyed yellow, colorfast to water. Color to be uniform without objectionable stains/spots.

Make up:
- 2 folds outsdie canvas and insideside dosouti lining.
- 4 or 5 (two folds) panels of uniform width.
- Full length suspension loop made of same canvas 16 cm wide properly sewn into the tent ridge.
- Dosouti lining to be sewn to the inner fly along the canvas panel joints to allow maximum interior space.
- 3 inches reinforced eaves with 5 or 6 equally spaced hot dip galvanized steel (8 gauge) grommets sewn with 10/8 x 2 cotton string to hold corner and side ropes.
- Side walls 90 cm high with 40 cm wide mud/wind flap made of woven polypropylene, min. 0.2 mm thick, 10 x 10 threads/sq. inch, weight min. 200 g/m², sewn to side walls 20 cm from the bottom.
- Four pockets provided between outer and inner walls on either side. Pockets approx.
SINGLE FLY TENT, Contd.

Shipping weight: 65 kg
Shipping volume: 0.25 m³
UNCCS Code: 271623 (a)

- Ridge reinforced on inside with 15 cm wide canvas in matching material and color lengthwise.
- Strengthening patches each corner where wall, roof and doorways are joined.
- 1 window on each side wall, size 40 cm x 60 cm with cross strengthening bands, mosquito nets and adjustable canvas flaps.
- Front and rear doors of same materials sewn into roof with nylon toggles 15 cm spacing for doors laces. One additional flap 15 cm wide inside each end of the tent to cover the upright pole. The flap shall be sewn to one half of the door and held by 5 equally spaced loops and toggles to the other half of the door. Same woven polypropylene mud/wind flap of 40 cm wide sewn to the doors at 20 cm from the bottom.
- Triangular-shaped hood canopy of 15 cm wide at ridge band, full length of tent fly at either end.
- Ridge reinforced on inside with 15 cm wide canvas in matching material and color. Edges hemmed and stitched accordingly.
- Two half-cone-shaped ventilators, one on each side of the roof, 15 cm wide x 20 cm long x 7.5 cm high with mosquito net, at 25 cm from ridge and 1.00 m from each end.
- 16 canvas tabs with 6 mm diameter hot-dip galvanized steel triangles approx. spaced around the perimeter of the tent at meter intervals.
- 1.5 cm wide x 15 cm long cotton tie tape to be provided at every meter interval, 15 cm from the bottom of the side walls and doors.
- Caps at both ridge ends strongly reinforced with canvas and 15 mm hot dip galvanized steel grommets sewn into canvas for upright pole pins.
- All seams to be sewn in two lock stitches 21/4 (English count) good quality cotton thread or equivalent except hand stitching where required.

Groundsheet:
- Dimensions: 4.4 m x 4.4 m.
- Material:
  - Identical quality requirements as per outer fly canvas above, edges folded and sewn with two rows of stitching, 5 stitches per inch with 21/4 (English count) good quality cotton thread or equivalent, provided with aluminium eyelets at meter intervals along the four sides. Groundsheet to be dyed to ensure durability.

Ropes:
- Guy ropes made of 9 mm 3 strands nylon or polypropylene with tensile strength of not less than 750 kg, knotted securely to tent and guy runners made of 5 mm diameter hot dip galvanized steel, approximately 11 cm long.
- Loop lacing for doors - 7 mm cotton spun yarn.
SINGLE FLY TENT, Contd..

Shipping weight: 65 kg
Shipping volume: 0.25 m³
UNCCS Code: 271623 (a)

Ridge pole:
- 4 m long ridge pole, made of steel pipe min. wall thickness 2.5 mm, welded, hot dip zinc galvanized, made up from 2 x 1.5 m sections of 50 mm diameter and one 1.5 m middle section of 55 mm diameter. (alternative: 50 mm diameter, welded, hot dip zinc galvanized water pipe to ISO R.65 medium series, 2 sections of 2 meter each screwed and socketed).
- 11 mm holes drilled at one end of other two sections for upright poles pins to fit in.
- Each section should be fitted together without coming apart when erected.

Upright poles:
- Two upright poles of 2 m each, made of 45 mm diameter welded hot dip galvanized steel pipe, minimum 2.5 mm wall thickness with screwed base plate of 15 cm diameter one end and 9 mm diameter metal pin of 7 cm long welded to pole cap on the other end.

Accessories and repair kit:
- 16 galvanized metal pins of 30 cm long before hooking, made of steel rod 9 mm diameter, sufficient to withstand heavy impact from hammer. Steel to contain maximum 0.2 % carbon.
- 12 galvanized metal pegs of 50 cm long made of equal tee bar 2 cm x 2 cm x 2 cm, 3 mm thick with 2.5 cm diameter homogenized ring made of 4 mm steel bar, fitted into a 5/6 mm hole on one end of the peg. Peg pointed on the other end.
- 1 metal hammer of 1.5 kg with 45 cm wooden tapered handle. Metal head to be firmly secured to the handle by means of a wedge.
- 1 repair kit, consisting of one straight and one curved strong needles with 20 m of suitable thread for repairing the tent.

Packing:
- Tent fly and groundsheets folded and rolled with all accessories and poles wrapped in canvas cloth inside the bundle. Each bundle shall be polyethylene lined, wrapped with Hessian cloth and stitched and strapped with nylon bands in both directions.

Shipping marks:
- To be printed clearly on separate piece of white canvas (minimum 35 x 60 cm) in indelible ink for maximum visibility, and secured with the nylon bands of the packing.

Quality Requirements:
- Conforms to International/National Standards.
DOUBLE FLY TENT, STANDARD VERSION
Shipping weight: 75 kg
Shipping volume: 0.4 m³
UNCCS Code: 271624 (a)

Dimensions:
- Floor area: 4 m x 4 m
- Ridge length: 4.0 m
- Center height: 3.0 m
- Side wall: 0.9 m

Outer fly - single fold:

Canvas:
- 100% cotton yarn count 10/3 x 10/2, twisted in warp 42, weft 26 threads per square inch, plain weave.
- Basic weight in loomstate 15 oz per square yard, finished weight 18 oz per square yard.
- Canvas to be free of weaving defects and finishing faults adversely affecting strength, waterproofness and durability.
- Natural canvas color without objectionable spots and/or stains.
- Waterproofing/resistance to water penetration by paraffin emulsion and alum acetate to withstand minimum 20 cm hydrostatic head.
- Stabilization against decomposition of the fabric (rot-proofing) with copper naphtanate or any appropriate agents. Min 0.35% of metallic copper to be present on finished weight of fabric.

Make up:
- 4 or 5 panels of uniform width, single fold.
- 2 inch machine stitched hem on all sides with 2 rows of stitching, 5 stitches per inch with 21/4 (English count) good quality cotton thread or equivalent.
- 5 or 6 (5 if 4 panels and 6 if 5 panels) hot-dip galvanized steel (8 gauge) grommets sewn with 10/8 x 2 cotton string, equally placed into panel joints and ends.
- Triangular shaped hood canopy of 50 cm wide at ridge band, full length of flysheet on either end.
- Ridge reinforced on inside with 15 cm canvas in matching material and color. Edges hemmed and stitched accordingly.
- Minimum 20 cm overlap margin to cover inner fly.

Inner tent - two folds; i.e. canvas and dosouti lining:

Canvas:
- 100% cotton yarn count 10/2 x 10/2 twisted in warp 44, weft 26 threads per square inch, plain weave.
- Basic weight in loomstate 14 oz per square yard, finished weight 16 oz per square yard.
DOUBLE FLY TENT, STANDARD VERSION, Contd...

<table>
<thead>
<tr>
<th>Shipping weight:</th>
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<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.4 m³</td>
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<tr>
<td>UNCCS Code:</td>
<td>271624 (a)</td>
</tr>
</tbody>
</table>

- Canvas to be free of weaving defects and finishing faults adversely affecting strength, waterproofness and durability.
- Natural canvas color without objectionable spots and/or stains.
- Waterproofing/resistance to water penetration by paraffin emulsion and alum acetate to withstand minimum 20 cm hydrostatic head.
- Stabilization against decomposition of the fabric (rot-proofing) with copper naphtanate or any appropriate agents. Min 0.35% copper naphtanate to be present on finished weight of fabric.

Dosouti lining:
- 100 % cotton, yarn count 16 x 16, 32 x 32 threads per square inch in warp and weft, 2 x 2 weave, min. 7 oz/sq. yard in finished state.
- Dyed yellow, colorfast to water. Color to be uniform without objectionable stains/spots.

Make up:
- 2 folds outerside canvas and innerside dosouti lining.
- 4 or 5 (two folds) panels of uniform width.
- Full length suspension loop made of same canvas 16 cm wide properly sewn into the tent ridge.
- Dosouti lining to be sewn to the inner fly along the canvas panel joints to allow maximum interior space.
- 3 inches reinforced eaves with 5 or 6 equally spaced hot dip galvanized steel (8 gauge) grommets sewn with 10/8 x 2 cotton string to hold corner and side ropes.
- Side walls 90 cm high with 40 cm wide mud/wind flap made of woven polypropylene, min. 0.2 mm thick, 10 x 10 warp and weft, weight min. 200 g/m², sewn to side walls 20 cm from the bottom.
- Four pockets provided between outer and inner walls on either side. Pockets approx. 60 cm length x 40 cm depth with 3 cm hem at mouth.
- Ridge reinforced on inside with 15 cm wide canvas in matching material and color lengthwise.
- Strengthening patches each corner where wall, roof and doorways are joined.
- 1 window on each side wall, size 40 cm x 60 cm with cross strengthening bands, mosquito nets and adjustable canvas flaps, placed in order to allow maximum cross-wind ventilation.
- Front and rear doors of same materials sewn into roof with nylon toggles 15 cm spacing for doors laces. One additional flap 15 cm wide inside each end of the tent to cover the upright pole. The flap shall be sewn to one half of the door and held by 5 equally spaced loops and toggles to the other half of the door. Same woven polypropylene mud/wind flap of 40 cm wide sewn to the doors at 20 cm from the bottom.
- Four half-cone-shaped ventilators, one on each side of the roof, 15 cm wide x 20 cm long x 7.5 cm high with mosquito net, at 25 cm from ridge and 1.00 m from each end.
### DOUBLE FLY TENT, STANDARD VERSION, Contd.

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Shipping weight</td>
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</tr>
<tr>
<td>Shipping volume</td>
<td>0.4 m³</td>
</tr>
<tr>
<td>UNCCS Code</td>
<td>271624 (a)</td>
</tr>
</tbody>
</table>

- 16 canvas tabs with 6 mm diameter hot-dip galvanized steel triangles approx. spaced around the perimeter of the tent at meter intervals.
- 1.5 cm wide x 15 cm long cotton tie tape to be provided at every meter interval, 15 cm from the bottom of the side walls and doors.
- Caps at both ridge ends strongly reinforced with canvas and 15 mm hot dip galvanized steel grommets sewn into canvas for upright pole pins.
- All seams to be sewn in two lock stitches 21/4 (English count) good quality cotton thread or equivalent except hand stitching where required.

### Groundsheet:
- Dimensions: 4.4 m x 4.4 m
- Material: Identical quality requirements as per outer fly canvas above, edges folded and sewn with two rows of stitching. 5 stitches per inch with 21/4 (English count) good quality cotton thread or equivalent, provided with aluminium eyelets at meter intervals along the four sides. Groundsheet to be dyed to ensure durability.

### Ropes:
- Guy ropes made of 9 mm 3 strands nylon or polypropylene with tensile strength of not less than 750 kg, knotted securely to tent and guy runners made of 5 mm diameter hot dip galvanized steel, approximately 11 cm long.
- Loop lacing for doors - 7 mm cotton spun yarn.

### Poles / beam:

#### Ridge beam:
- 4 metre long, made of hot dip galvanized structural hollow section, minimum wall thickness of 3.2 mm. Made up from 1.5 m outer sections of 80 mm x 40 mm cross section and one 1.5 m middle of 86.4 mm x 46.4 mm cross section (alternative: 50 mm diameter, welded, hot dip zinc galvanized water pipe to ISO R.65 medium series, 2 sections of 2 meter each screwed and socketed).
- 11 mm holes drilled at one end of other two sections for upright poles pins to fit in.
- Each section should be fitted together without coming apart when erected.
DOUBLE FLY TENT, STANDARD
VERSION, Contd...

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>75 kg</th>
</tr>
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<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.4 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>271624 (a)</td>
</tr>
</tbody>
</table>

**Upright poles:**
- Two upright poles of 2.15 m each, made of 50 mm diameter welded hot dip galvanized steel pipe, minimum 2.5 mm wall thickness with screwed base plate of 15 cm diameter one end and a 10 cm diameter screwed top plate with 9 mm diameter metal pin, 10 cm long (7 cm long if alternative) welded to pole cap on the other end.

**Accessories and repair kit:**
- 16 galvanized metal pins of 30 cm long before hooking, made of steel rod 9 mm diameter, sufficient to withstand heavy impact from hammer. Steel to contain maximum 0.2 % carbon.
- 12 galvanized metal pegs of 50 cm long made of equal tee bar 2 cm x 2 cm x 2 cm, 3 mm thick with 2.5 cm diameter homogenized ring made of 4 mm steel bar, fitted into a 5/6 mm hole on one end of the peg. Peg pointed on the other end.
- 1 metal hammer of 1.5 kg with 45 cm wooden tapered handle. Metal head to be firmly secured to the handle by means of a wedge.
- 1 repair kit, consisting of one straight and one curved strong needles with 20 m of suitable thread for repairing the tent.

**Packing:**
- Outer/inner flies and groundsheet folded and rolled with all accessories and poles wrapped in canvas cloth inside the bundle. Each bundle shall be polyethylene lined, wrapped with Hessian cloth and stitched and strapped with nylon bands.

**Shipping marks:**
- To be printed clearly on separate piece of white canvas (minimum 35 x 60 cm) in indelible ink for maximum visibility, and secured with the nylon bands of the packing.

**Quality Requirements:**
- Conforms to International/National Standards.
DOUBLE FLY TENT, WINTERIZED VERSION

Shipping weight: 80 kg  
Shipping volume: 0.5 m³  
UNCCS Code: 271632 (a)

Dimensions:
- Floor area: 4 m x 4 m
- Ridge length: 4.0 m
- Center height: 3.0 m
- Side wall: 0.9 m

Outer fly - single fold:

Canvas:
- 100% cotton yarn count 10/3 x 10/2, twisted in warp 42, weft 26 threads per square inch, plain weave.
- Basic weight in loomstate 15 oz per square yard, finished weight 18 oz per square yard.
- Canvas to be free of weaving defects and finishing faults adversely affecting strength, waterproofness and durability.
- Natural canvas color without objectionable spots and/or stains.
- Waterproofing/resistance to water penetration by paraffin emulsion and alum acetate to withstand minimum 20 cm hydrostatic head.
- Stabilization against decomposition of the fabric (rot-proofing) with copper naphtanate or any appropriate agents. Min. 0.35% of metallic copper to be present on finished weight of fabric.

Make up:
- 4 or 5 panels of uniform width, single fold.
- 2 inch machine stitched hem on all sides with 2 rows of stitching, 5 stitches per inch with 21/4 (English count) good quality cotton thread or equivalent.
- 5 or 6 (5 if 4 panels and 6 if 5 panels) hot-dip galvanized steel (8 gauge) grommets sewn with 10/8 x 2 cotton string, equally placed into panel joints and ends.
- Triangular shaped hood canopy of 50 cm wide at ridge band, full length of flysheet on either end.
- Ridge reinforced on inside with 15 cm canvas in matching material and color. Edges hemmed and stitched accordingly.
- Minimum 20 cm overlap margin to cover inner fly.
- 40 cm x 40 cm apron for flue pipe properly fitted onto one side of the roof. Apron made of 1.0 mm thick aluminium plate with 10 cm diameter opening in the centre and 1 cm diameter holes properly spaced around it. This opening shall be provided with a flap and located at about 40 cm from the middle of the ridge.

Inner tent - two folds; i.e. canvas and Dosouti lining:

Canvas:
- 100% cotton yarn count 10/2 x 10/2 twisted in warp 44, weft 26 threads per square
DOUBLE FLY TENT, WINTERIZED VERSION, Contd..

Shipping weight: 80 kg
Shipping volume: 0.5 m³
UNCCS Code: 271632 (a)

- Basic weight in loom state 14 oz per square yard, finished weight 16 oz per square yard.
- Canvas to be free of weaving defects and finishing faults adversely affecting strength, waterproofness and durability.
- Natural canvas color without objectionable spots and/or stains.
- Waterproofing/resistance to water penetration by paraffin emulsion and alum acetate to withstand minimum 20 cm hydrostatic head.
- Stabilization against decomposition of the fabric (rot-proofing) with copper naphtanate or any appropriate agents. Min. 0.35% of copper naphtanate to be present on finished weight of fabric.

Dosouti lining:
- 100 % cotton, yarn count 16 x 16, 32 x 32 per square inch in warp and weft, 2 x 2 weave, min. 7 oz/sq. yard in finished state.
- Dyed yellow, color fast to water. Color to be uniform without objectionable stains/ spots.

Make up:
- 2 folds outerside canvas and innerside dosouti lining.
- 4 or 5 (two folds) panels of uniform width.
- Full length suspension loop made of same canvas 16 cm wide properly sewn into the tent ridge.
- Dosouti lining to be sewn to the inner fly along the canvas panel joints to allow maximum interior space.
- 3 inches reinforced eaves with 5 or 6 equally spaced hot dip galvanized steel (8 gauge) grommets sewn with 10/8 x 2 cotton string to hold corner and side ropes.
- Side walls 90 cm high with 40 cm wide mud/wind flap made of woven polypropylene, min. 0.2 mm thick, 10 x 10 warp and weft, weight min. 200 g/m², sewn to side walls 20 cm from the bottom.
- Four pockets provided between outer and inner walls on either side. Pockets approx. 60 cm length x 40 cm depth with 3 cm hem at mouth.
- Ridge reinforced on inside with 15 cm wide canvas in matching material and color lengthwise.
- Strengthening patches each corner where wall, roof and doorways are joined.
- 1 window on each side wall, size 40 cm x 60 cm with cross strengthening bands, mosquito nets and adjustable canvas flaps.
- Front and rear doors of same material sewn into roof with nylon toggles 15 cm spacing for doors laces. One additional flap 15 cm wide inside each end of the tent to cover the upright pole. The flap shall be sewn to one half of the door and held by 5 equally spaced loops and toggles to the other half of the door. Same woven polypropylene mud/wind flap of 40 cm wide sewn to the doors at 20 cm from the bottom.
DOUBLE FLY TENT, WINTERIZED VERSION, Contd...

Shipping weight: 80 kg
Shipping volume: 0.5 m³
UNCCS Code: 271632 (a)

- Two half-cone-shaped ventilators, one on each side of the roof, 15 cm wide x 20 cm long x 7.5 cm high with mosquito net, at 25 cm from ridge and 1.00 m from each end.
- 40 cm x 40 cm apron for flue pipe properly fitted onto one side of tent roof. Apron made of 1.0 mm thick aluminium plate with 10 cm diameter opening in the centre and 1 cm diameter holes properly spaced around it. This opening shall be provided with a flap located at about 40 cm from the middle of the ridge.
- 16 canvas tabs with 6 mm diameter hot-dip galvanized steel triangles approx. spaced around the perimeter of the tent at meter intervals.
- 1.5 cm wide x 15 cm long cotton tie tape to be provided at every meter interval, 15 cm from the bottom of the side walls and doors to enable the sides to be rolled up.
- Caps at both ridge ends strongly reinforced with canvas and 15 mm hot dip galvanized steel grommets sewn into canvas for upright pole pins.
- All seams to be sewn in two lock stitches 21/4 (English count) good quality cotton thread or equivalent except hand stitching where required.

Groundsheet:
- Dimensions: 4.4 m x 4.4 m
- Material: Identical quality requirements as per outer fly canvas above, edges folded and sewn with two rows of stitching. 5 stitches per inch with 21/4 (English count) good quality cotton thread or equivalent, provided with aluminium eyelets at meter intervals along the four sides. Groundsheet to be dyed to ensure durability.

Ropes:
- Guy ropes made of 9 mm 3 strands nylon or polypropylene with tensile strength of not less than 750 kg, knotted securely to tent and guy runners made of 5 mm diameter hot dip galvanized steel, approximately 11 cm long.
- Loop lacing for doors - 7 mm cotton spun yarn.

Poles / beam:
Ridge beam:
- 4 meters long, made of hot dip galvanized structural hollow section, minimum wall thickness of 3.2 mm. Made up from 1.5 m outer sections of 80 mm x 40 mm cross section and one 1.5 m middle of 86.4 mm x 46.4 mm cross section (alternative: 50 mm diameter, welded, hot dip zinc galvanized water pipe to ISO R.65 medium series, 2 sections of 2 meter each screwed and socketed).
- 11 mm holes drilled at one end of other two sections for upright poles pins to fit in.
- Each section should be fitted together without coming apart when erected.
DOUBLE FLY TENT, WINTERIZED VERSION, Contd..

Shipping weight: 80 kg
Shipping volume: 0.5 m³
UNCCS Code: 271632 (a)

Accessories and repair kit:
- 16 galvanized metal pins of 30 cm long before hooking, made of steel rod 9 mm.

Upright poles:
- Two upright poles of 2.15 m each, made of 50 mm diameter welded hot dip galvanized steel pipe, minimum 2.5 mm wall thickness with screwed base plate of 15 cm diameter one end and a 10 cm diameter screwed top plate with 9 mm diameter metal pin, 10 cm long (7 cm long if alternative) welded to pole cap on the other end.

Accessories and Repair kit:
- 16 galvanized metal pins of 30 cm long before hooking, made of steel rod 9 mm diameter, sufficient to withstand heavy impact from hammer. Steel to contain maximum 0.2% carbon.
- 12 galvanized metal pegs of 50 cm long made of equal tee bar 2 cm x 2 cm x 2 cm, 3 mm thick with 2.5 cm diameter homogenized ring made of 4 mm steel bar, fitted into a 5/6 mm hole on one end of the peg. Peg pointed on the other end.
- 1 metal hammer of 1.5 kg with 45 cm wooden tapered handle. Metal head to be firmly secured to the handle by means of a wedge.
- 1 repair kit, consisting of one straight and one curved strong needles with 20 m of suitable thread for repairing the tent.

Packing:
- Outer/inner flies and groundsheets folded and rolled with all accessories and poles wrapped in canvas cloth inside the bundle. The bundle will be polyethylene lined, wrapped with Hessian cloth and stitched and strapped with nylon bands in both directions.

Shipping marks:
- To be printed clearly on separate piece of white canvas (minimum 35 x 60 cm) in indelible ink for maximum visibility, and secured with the nylon bands of the packing.

Quality Requirements:
- Conforms to International/National Standards.
TENT REPAIR KIT

Shipping weight: 1 kg set
Shipping volume: 0.0045 m³
UNCCS Code: 271695

Description:
- Repair kit for cotton/canvas tent sheet.

To include:
- Sheet: Cotton - or cotton/polyester canvas, minimum 250 g/m².
- Size: 0.5 m² (approx. 70 cm x 70 cm).
- Needle: 1 piece straight and 1 piece curved needles.
- Thread: 1 roll of appropriate thread as per BS 6157 or equivalent. Thread length to be minimum 50 meters.

Quality Requirements:
- Conforms to International/National Standards.
BLANKETS, LOW THERMAL RESISTANCE (UNHCR Standard)

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>1.4 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>Approx. 4,800 blankets/20 ft. cont.</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>271123 (a)</td>
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</tbody>
</table>

Area of use:
- For tropical climates.

Description:
- Woven, low thermal resistance blanket. Dry raised.

Content:
- Min. 30% wool, virgin or reconditioned.
- Rest: Other virgin fibres (e.g. cotton or cotton/synthetic mix).

Weight:
- Min. 1.5 kg/blanket.

Size:
- 150 x 200 cm.

Thickness:
- 4 mm under load 20g/cm² and before compression into bales.

Tensile strength:
- Warp: Approx. 25 kg.
- Weft: Approx. 25 kg.

Thermal resistance:
- 0.14 - 0.16 m² K / W.

Finish:
- Whipped (10 stitches/decimetre) or ribbon bordered 4 sides.

Shrinkage:
- Maximum 8% after handwashing at 40°C.

Colors:
- Grey, brown or other dark colors.

Packing:
- (Should be sprayed to avoid moths), packed in compressed bales of 30 blankets and water-tight wrapping.

Quality Requirements:
- Conforms to international/National Standards.
BLANKETS, MEDIUM THERMAL RESISTANCE
Shipping weight: 1.5 kg
Shipping volume: Approx. 4,500 blankets/
20 ft. container
UNCCS Code: 271124

Area of use:
  - For temperate climates.

Description:
  - Woven, medium thermal resistance blanket. Dry raised.

Content:
  - 50% wool, (virgin).
  - Rest: New synthetic fibres.

Weight:
  - 1.5 - 1.6 kg/blanket.

Size:
  - 150 x 200 cm.

Thickness:
  - 5 mm under load 20g/cm² and before compression into bales.

Tensile strength:
  - Warp: Approx. 25 kg.
  - Weft: Approx. 25 kg.

Thermal resistance:
  - 0.20 - 0.24 m² K/W.

Finish:
  - Whipped (10 stitches/decimetre) or ribbon bordered 4 sides.

Shrinkage:
  - Maximum 8 % after handwashing at 40°C.

Colors:
  - Grey, brown or other dark colors.

Packing:
  - (Should be sprayed to avoid moths), packed in compressed bales of 30 blankets and water
  - tight wrapping.

Quality Requirements:
  - Conforms to International/National Standards.
BLANKETS, HIGH THERMAL RESISTANCE

Shipping weight: 1.2 kg
Shipping volume: Approx. 5,000/20 ft. cont
UNCCS Code: 271125

Area of use:
- For cold areas.

Type:
- Knitted, high thermal resistance blanket. Polar fleece double sided.

Content:
- 80% Dacron polyester and 20% polypropylene or 50% polyacrylic and 27% polyester and 23% polypropylene.

Weight:
- 1.2 kg/blanket.

Size:
- 160 x 230 cm.

Thickness:
- 6 - 7 mm under load 20g/cm² and before compression into bales.

Tensile strength:
- Warp: Approx. 25 kg.
- Weft: Approx. 25 kg.

Thermal resistance:
- 0.25 - 0.30 m²K/W

Finish:
- Whipped (10 stitches/decimetre) or ribbon bordered 4 sides.

Shrinkage:
- Maximum 2 % after handwashing at 40°C.

Colors:
- Grey, brown or UN light blue.

Packing:
- (Should be sprayed to avoid moths) packed in compressed bales of 30 blankets and watertight wrapping.

Quality Requirements:
- Conforms to International/National Standards.
SLEEPING BAGS

Shipping weight: Approx. 2.5 kg
Shipping volume: Approx. 0.05 m³
UNCCS Code: 271830

Technical specifications:
- Size: Approx. 200 x 75 cm.
- Shape: Rectangular.
- Range: Max minus 20 °C (temperature rating with use of mattress).

Material and construction:
- Outer shell: Polyamide, nylon etc. 80-100 g/m², water resistant.
- Inner lining: Soft cotton/viscose or cotton/polyamid blend.
- Fill (insulation): Thermal efficient fibre. Approx 600-800 g/m², eg. Du Pont Quallofil, Vitafil or equivalent.
- Vertical/lateral quilting every 15 cm.
- Vertical/logitudinal quilting every 37.5 cm.
- Double coil zipper, heavy duty quality, to permit combination of 2 sleeping bags.
- Total weight: 2200 - 2800 g.
- Color: Blue, red or any dark colour except green.
- Shrinkage: After 40 °C wash: 3-5%.

Packing:
- Each unit in own stuff sack.

Quality Requirements:
- Conforms to International/National Standards.

MATTRESSES

Shipping weight: Approx. 2 kg
Shipping volume: Approx. 0.5 m³
UNCCS Code: 381713

Technical Specifications:
- Size: 200 x 80 x 10 cm
- Density: 23 - 25 kg/m³
- Material: Polyurethene foam.
- Cover: Removable non-woven spunbounded synthetical covering material (minimum 100 g/m²) with zip fastener or 100% cotton
- Colours: Preferably dark colours

Packing:
- 10/12 pieces to be vacuum packed in strong polyethylene material

Quality Requirements:
- Conforms to International/National Standards.
KITCHEN SETS, FAMILY SIZE
(UNHCR Standard)

Shipping weight: Approx. 5 kg
Shipping volume: 0.04 m³
UNCCS Code: 429187

Set 'A' consists of items 1 - 10
Set 'B' consists of items 1, 2, 3 (or 4) 5, 6 and optionally 9
Set 'C' consists of items 1, 3 (or 4), 5 and 6

Item 1 - 1 cooking pot:
- Capacity: 7 litres
- Material: Aluminium
- Diameter: Approx. Ø 27 cm
- Thickness: Min. 1.75 mm
- Lid: Min 1.0 mm thick
- Handles: 2 cast aluminium handles

Item 2 - 2 cooking pots:
- Capacity: 5 litres
- Material: Aluminium
- Diameter: Approx Ø 22 cms
- Thickness: Min. 1.60 mm
- Lid: Min. 1.0 mm thick.
- Handles: 2 cast aluminium handles.

Item 3 - 5 bowls:
- Capacity: Approx. 1 litre
- Material: Aluminium or stainless steel
- Diameter: Min.18mm
- Thickness: Min. 1.0 mm
- Height: Up to 8 cm with rolled edge border

Item 4 - 5 plates:
- Capacity: Approx 1 litre
- Material: Aluminium
- Diameter: 24/25 cm
- Thickness: Min. 1.0 mm, with border

Item 5 - 5 cups:
- Capacity: Approx. 0.3 litres
- Material: Aluminium or stainless steel
- Thickness: Minimum 1.0 mm
- Handle: Approx. 1 mm thick
KITCHEN SETS, FAMILY SIZE, Contd..

Shipping weight: Approx. 5 kg
Shipping volume: 0.04 m³
UNCCS Code: 429187

Item 6 - 5 knives
- Material: Stainless steel

Item 7 - 5 forks:
- Material: Stainless steel

Item 8 - 5 tablespoons:
- Material: Stainless steel

Item 9 - 1 kitchen knife:
- Cutting edge: Minimum 14 -15 cm
- Width: Approx. 2.5 cm
- Material: Stainless steel
- Handle: Moulded plastic handle

Item 10 - 1 bucket:
- Capacity: Minimum 15 litres
- Material: Galvanized steel
- Thickness: Approx. 0.5 cm
- Handle: Metallic handle

Packing:
- Each set packed into a plastic bag and placed into a strong double wall export quality cardboard box.

Quality Requirements:
- Conforms to International/National Standards.

Note: Pots, bowls, cups and plates to be sandpaper finished
## KITCHEN SETS, FOR 250 PEOPLE

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Approx. type</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking pots with lids</td>
<td>2</td>
<td>250 ltrs, Ø 400 mm, 400 mm high 100 ltrs, Ø 500 mm, 500 mm high</td>
<td>Aluminium or stainless steel</td>
</tr>
<tr>
<td>Paddles for stirring food</td>
<td>2</td>
<td>Optional</td>
<td>Wood</td>
</tr>
<tr>
<td>Cups</td>
<td>300</td>
<td>Ø 80 mm</td>
<td>Plastic</td>
</tr>
<tr>
<td>Bowls</td>
<td>300</td>
<td>400 ml, 50 mm deep, Ø150 mm</td>
<td>Melamine</td>
</tr>
<tr>
<td>Teaspoons</td>
<td>100</td>
<td>140 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Measuring jugs</td>
<td>2</td>
<td>2 litres, Ø 170 mm, 170 mm deep</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Scoops</td>
<td>2</td>
<td>2 litres, Ø 200 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Ladles</td>
<td>2</td>
<td>250 ml, Ø100 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Whisks</td>
<td>2</td>
<td>300 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Tin openers</td>
<td>2</td>
<td>Optional</td>
<td>Metal</td>
</tr>
<tr>
<td>Scrubbing brush</td>
<td>1</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Large jerry can</td>
<td>2</td>
<td>20 litres</td>
<td>PE</td>
</tr>
<tr>
<td>Buckets with lids</td>
<td>4</td>
<td>10 litres</td>
<td>PE</td>
</tr>
<tr>
<td>Stoves, butane gas</td>
<td>2</td>
<td>Ø 450mm, 4000 kcal/h</td>
<td>Cast iron</td>
</tr>
<tr>
<td>Water purification tablets:</td>
<td>500</td>
<td>1 tablet / 20 l (5 ppm)</td>
<td>Optional</td>
</tr>
</tbody>
</table>

### Quality Requirements:
- Conforms to International/National Standards.
## KITCHEN ACCESSORIES

### KITCHEN SETS, FOR 100 CHILDREN

- **Shipping weight:** Approx. 80 kg
- **Shipping volume:** Approx. 0.5 m³
- **UNCCS Code:** 429189

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Approx. type</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking pots with cover</td>
<td>2</td>
<td>50 ltrs, Ø 400 mm, 400 mm high</td>
<td>Aluminium or Stainless steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 ltrs, Ø 500 mm, 500 mm high</td>
<td>Wood</td>
</tr>
<tr>
<td>Paddles for stirring food</td>
<td>2</td>
<td>Optional</td>
<td></td>
</tr>
<tr>
<td>Cups</td>
<td>120</td>
<td>Ø 80 mm</td>
<td>Plastic</td>
</tr>
<tr>
<td>Bowls</td>
<td>120</td>
<td>400 ml, 50 mm deep, Ø150 mm</td>
<td>Melamine</td>
</tr>
<tr>
<td>Teaspoons</td>
<td>50</td>
<td>140 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Teaspoons</td>
<td>250</td>
<td>140 mm</td>
<td>Plastic</td>
</tr>
<tr>
<td>Measuring jugs</td>
<td>2</td>
<td>2 litres, Ø 170 mm, 170 mm deep</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Scoops</td>
<td>2</td>
<td>2 litres, Ø 200 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Ladles</td>
<td>2</td>
<td>250 ml, Ø100 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Whisks</td>
<td>2</td>
<td>300 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Tin openers</td>
<td>2</td>
<td>Optional</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Food scale, metric</td>
<td>1</td>
<td>10 kg/50 g</td>
<td>Metal</td>
</tr>
<tr>
<td>Alarm clock</td>
<td>1</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Scrubbing brush</td>
<td>1</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Large jerry can</td>
<td>2</td>
<td>20 litres</td>
<td>PE</td>
</tr>
<tr>
<td>Buckets with lids</td>
<td>4</td>
<td>10 litres</td>
<td>PE</td>
</tr>
<tr>
<td>Hurricane lamps, kerosene</td>
<td>2</td>
<td>Ø 150 mm, 400 mm high</td>
<td>Light grade tin plated finish</td>
</tr>
<tr>
<td>Candles &amp; matches</td>
<td>Optional</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Stoves, butane gas</td>
<td>2</td>
<td>Ø 450mm, 4000 kcal/h</td>
<td>Cast iron</td>
</tr>
<tr>
<td>Torch</td>
<td>1</td>
<td>Ø 50 mm, 250 mm</td>
<td>Heavy duty plastic</td>
</tr>
<tr>
<td>Batteries</td>
<td>4</td>
<td>Ø 33 x 61 mm, D-size, 1.5 V</td>
<td>Heavy duty metal</td>
</tr>
<tr>
<td>Water purification tablets</td>
<td>500</td>
<td>1 tablet/20 l (10 ppm)</td>
<td>Optional</td>
</tr>
<tr>
<td>Nasogastric tube kit</td>
<td>50</td>
<td>Optional</td>
<td>Optional</td>
</tr>
</tbody>
</table>
**KITCHEN ACCESSORIES**

**STOVES, KEROSENE**

Shipping weight: Approx. 1 kg  
Shipping volume: Approx. 0.005 m³  
UNCCS Code: 448222

**Type:**
- Fuel efficient and low consumption stove non-pressurized wick type with incorporated fuel tank
- Fuel: Kerosene
- Burner: Minimum 8 wicks

**Technical Specification:**
- Dimensions: Approx. length: 15 cm  
  Approx. width: 15 cm  
  Approx. height: 20 cm
- Capacity of tank: Minimum 1 hour burning time
- Material: Sheet iron, rust- and heat resistant
- Features: Wind safe  
  Noiseless, odourless and smokeless

**Accessories:**
- Spare parts,  
- Wicks and cleaners  
- Instructions for use and maintenance

---

**STOVES, WOOD/CHARCOAL**

Shipping weight: Approx. 8 kg  
Shipping volume: Approx. 0.1 m³  
UNCCS Code: 448223

**Area of use:**
- For use in refugee camps where electricity or kerosene not available.

**Type:**
- Fuel efficient cooking stoves.

**Technicals Specifications:**
- Fuel: Wood or charcoal
- Dimensions: Approx. diameter: 45 cm  
  Approx. height: 50 cm
- Material: Steel or stainless steel

**Features:**
- 30 ltr pot with furnace and wind protection cover  
- Furnace equipped with door, fire grate and ash pan  
- Easily detachable parts for transport  
- Maximum fuel efficiency by means of controlled air inlet and flue gas outlet
KITCHEN APPLIANCES

HOT PLATES, GAS

Shipping weight: Approx. 3 kg
Shipping volume: Approx. 0.02 m³
UNCCS Code: 448216

Type:
• Hot plate/stove, table type, manual ignition, incl. gas-adapter and hose

Power:
• Butane/propane gas, approx. 50 mbar

Consumption:
• Approx. 100 g/h gas (at 1500 W)

Capacity:
• 2-3 burners, individually controlled, performing 1-2,000 W, equal to 850-1,700 kcal/h per burner

Material:
• Burner: Stainless steel
• Casing: Steel or aluminium, enamelled
• Grid: Steel or cast iron, enamelled

HOT PLATES, ELECTRIC

Shipping weight: Approx. 2.5 kg
Shipping volume: Approx. 0.02 m³
UNCCS Code: 448217

Type:
• Hot plate, table type

Power supply:
• 110/220 (AC)

Capacity:
• 2 elements, individually controlled, each plate performing up to 1500 W,
  Minimum 3 stage switches including 2m connection cable.

Material:
• Casing: Steel or aluminium, enamelled

Plates:
• Approx. Ø 14-18 cm
NON-COLLAPSIBLE JERRY CAN, PLASTIC

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>0.5 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.3 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>369494</td>
</tr>
</tbody>
</table>

Use:
- For storing and carrying water.

Description:
- White transparent stackable plastic jerrycan.

Technical Specifications:
Size:
- 10 litres (Max. contents: 11.1 litres)

Material:
- High molecular LDPE

Features:
- Strong built-in carrying handle for adults.
- Hand screw cap. – 55 mm Ø

Impact resistance:
- Resists a drop from minimum of 2.5 m. containing maximum volume.

Quality Requirements:
- Conforms to International/National Standards.
KITCHEN APPLIANCES

SEMI COLLAPSIBLE JERRY CANS

Shipping weight: Approx. 0.5 kg
Shipping volume: Approx. 0.01 m³
UNCCS Code: 369491 (a)

Use:
• For carrying and storing water.

Description:
• Plastic jerrycan.

Technical Specifications:
Material:
• Tough, flexible, food grade, low density polyethylene. UV stabilized.

Size: 10 litres
Weight:
• Bottle, approximately 250-260 grm
• Cap, approximately 6 grm.

Dimensions:
• 210 x 210 x 270 (filled)
• 210 x 210 x 80 (empty)

Features:
• Moulded carrying handle for adults. Built-in handle wide enough for a male adult hand, without sharp edges.
• Hand screw cap. – 38 mm/8 mm, linked to jerry can by a nylon string.
• Can withstand drop from 2.5 meters, containing maximum volume of water at +25°C
• Must stand by itself even when filled with less than 1/4 of its max. volume.
• Operating temperature -20°C to +50°C.
• Average thickness approximately 0.6 mm, corner thickness 0.5 mm.
• Weight approximately 190-230 grams.

Packed:
• In wooden crates of 150
• 970 x 680 x 645 mm,
• Weight: approximately 78 kgs.

Quality Requirements:
• Conforms to International/National Standards
KITCHEN APPLIANCES

BUCKET, PLASTIC

| Shipping weight: | Approx. 0.7 kg |
| Shipping volume: | Approx. 0.01 m³ |
| UNCCS Code:      | 369424 (a)    |

Use:
- For storing and carrying water.

Description:
- Multi-purpose heavy duty plastic bucket.

Technical Specifications:
- Conical seamless design with a lid.
- Steel handle with plastic roller grip.
- Lid: HDPE / LDPE (50/50%),
- Top diameter: 30 cm.
- Height: 21 cm.

Size:
- 10 litres

Material:
- Copolymer (white).

Features:
- Steel-wire bale handle, fitted with grip, rust-proof.

Quality Requirements:
- Conforms to International/National Standards.
KITCHEN APPLIANCES

BUCKET, STEEL

Shipping weight: Approx. 2 kg
Shipping volume: Approx. 0.01 m³
UNCCS Code: 429147

Description:
• Heavy duty steel bucket, multi-purpose.

Technical Specifications:
Material:
• Galvanized steel, rust-proof.

Thickness:
• Minimum 0.5 mm.

Capacity:
• 10 litres

Dimensions:
• Approx. top diameter: 30 cm.
• Approx. height: 30 cm.

Handle:
• Steel wire bale handle, fitted with grip and rust-proof.

Quality Requirements:
• Conforms to International/National Standards.
LIGHTING EQUIPMENT

LANTERNS, KEROSENE

Shipping weight: Approx. 0.8 kg
Shipping volume: Approx. 0.01 m³
UNCCS Code: 465319 (a)

Type:
- Hurricane lantern, kerosene type.

Size:
- Height: Approx. 30 cm.
- Diameter: Approx. 15 cm.

Performance:
- Fuel efficient, low consumption, easy to light, bright flame in rough weather.

Capacity of tank:
- Approx. 0.5 litres, minimum 10 hours burning.

Materials:
- Heavy gauge steel body, tin coated, rust- and heat resistant and clear glass globe.

Features:
- Easy to carry and operate, smokeless and odourless.

Accessories:
- Flame regulator.
- Spare globe and wicks (minimum 3).
- Instructions for use and maintenance.
- Cleaners & filling can.

Quality Requirements:
- Conforms to International/National Standards.
**SOLAR LIGHTING KIT, MOBILE**

Shipping weight: 9 kg  
Shipping volume: 0.5 m³  
UNCCS Code: 465346

---

**Type:**
- Solar electric lighting package.

**Area of use:**
- For domestic and community use in emergency relief aid situations.

**Capacity:**
- Approx. 15 light-hours/day with an average insolation of 5 kWh/m²/day.

**Solar module:**
- Mounted on support structure with pre-fitted cable and plug.

**Power:**
- Nominal 50 Wp, 12 V.

**Control:**
- Plug-in type, featuring low battery warning.

**Lights:**
- 4 lights of 8 W, 12 V, fluorescent type, integral switch and pre-fitted cable and plug.

**Features:**
- Automatic daylight cut-out.

**Accessories:**
- Cabling, 10 m.  
- Battery.  
- Spare fuse.  
- Additional lights.  
- Lighting tubes.  
- Tool kit for installation and use.  
- Manual for installation and use.

**Quality Requirements:**
- Conforms to international/National Standards.
HEATERS

HEATERS, KEROSENE/DIESEL

Shipping weight: Approx. 10 kg
Shipping volume: Approx. 1 m³
UNCCS Code: 448293

Type:
- Heater for tents and buildings, with built-in hotplate.

Area of use:
- As a heater and as a stove.

Fuel:
- Kerosene, fuel oil.

Heating capacity:
- Minimum 10 kW consuming 20 litres kerosene/day.

Capacity of tank:
- Minimum 5 litres.

Dimensions:
- Approx. 50 x 50 cm.
- Approx. 100 cm high.

Materials:
- Steel sheet body: Approx. 0.5 mm thick.
- Cast aluminium dome: Approx. 5 mm thick
- Cast iron hot plate: Approx. 5 mm thick

Features:
- Easy to install and operate.
- Low fuel consumption.
- Non-smoke producing.
- Non-corrosive materials.
- Wind safe.
- Supporting frame of steel.
- Fuel level gauge breather.

Accessories:
- Damper for air flow control, complete with ducting and piping.
- Spare parts and cleaning instruments.
- Small tool kit for repairs and maintenance.
- Instructions for use and maintenance.

Quality Requirements:
- Conforms to International/National Standards.
Chapter 3 WATER SUPPLY SYSTEMS
NEEDS AND RECOMMENDED RESPONSES

General
To save lives and preserve health, minimum quantities of safe water must be made available. The following indications are standard guidelines to be considered when setting up a water supply system.

Water requirements
When setting up a water supply system, the following minimum water requirements should be considered:

a) Human consumption
- Minimum, “Survival” allocation: 7 litres/person/day
- Average refugee camp allocation: 15-20 litres/person/day

b) Average for services at camp level (Additional to human consumption)
- Out patient health centers: 5 litres/patient/day
- In-patient health centers: 40-60 litres/patient/day
- Hospital (with laundry facilities): 220-300 litres/bed/day
- Schools (Toilet requirement not included): 2 litres/person/day
- Schools (Water-flushed toilet system): 10-15 litres/person/day
- Feeding centers: 20-30 litres/person/day
- Camp administration (Staff accommodation not included): 5 litres/person/day
- Staff accommodation: 30 litres/person/day

c) Livestock
- Bovine animals: 25-30 litres/head/day
- Horses, mules: 20-25 litres/head/day
- Goats and sheep: 15-20 litres/head/day
- Pigs: 10-15 litres/head/day
- Chickens: 10-20 litres/100 animals/day

However, if there are no restrictions or water supply limitations, the use of water may even reach up to 100 litres/person/day, if desired.

Water sources
The most important component of a water supply system is the water source. There are three main sources of natural water; groundwater, rainwater and surface water. Groundwater is generally the clearest and purest (there are exceptions, e.g. arsenic in the ground water in India and Bangladesh), followed by rainwater and then surface water.

The following should be considered when choosing the appropriate water source:
- Volume of supply
- Reliability of supply (taking into account seasonal variations and, if necessary, logistics)
- Water quality, risk of contamination and ease of treatment
- Speed and cost with which a source can be made operational
- Simplicity of technology and ease of maintenance
- Costs of operation and maintenance
NEEDS AND RECOMMENDED RESPONSES

Water pumping
In an emergency situation there are various needs for pumping equipment, notably to:

- Pump water from wells or boreholes
- Pump water from surface water
- Pump water into storage tanks
- Boost water within the system

To distribute water from the water tank to the end user, gravity flow should be utilized where feasible. However, in cases where gravity flow is impossible, a pump is required for distribution.

Pumps commonly used in emergency situations can be divided into two categories:

a) Reciprocating pumps
Reciprocating pumps are typically handpumps, which retrieve water from wells. There are different types of reciprocating pumps, depending on the dynamic water level.
- Suction Pumps
- Direct Action Pumps
- Lever type Pumps
- Fly wheel type Pumps

These are not discussed in this catalogue since they are usually used in a later stage of emergency.

The suction pump can only lift water up to 7 meters and can therefore only be used in shallow wells and boreholes with a very limited depth. Handpumps are typically used up to 50 meters dynamic water level. Extra deep well hand pumps can be used at higher dynamic water levels, however the flow rate becomes very low. For deeper wells or boreholes it is necessary to use a deep well pump, such as a submersible pump.

There are three important characteristics to be aware of when selecting handpumps for water supply. They can only be used for applications which do not require a larger water supply as the typical flow rate of a hand pump is about 1 m³/hour (although it is reduced the higher the setting depth). Hand pumps should only be selected when the group of people can be divided into smaller groups (maximum 200 persons/pump). It should be noted that the design from a traditional point of view is important for the success of selecting handpumps.

b) Centrifugal pumps
The centrifugal pump is motorized and can, depending on the type, be used to transport water from all sources. There are two categories of centrifugal pumps:
- Pumps used for surface water and shallow wells
- Submersible pumps

When the water leaves the pump, it can be transported to a storage tank, treatment equipment etc.. The maximum lift from the pump to the destination depends on the pressure from the pump. The pumps listed in this catalogue can force the water up to approx. 50 meters. It is recommended however, that the lift of the pump be as low as possible to achieve the highest flow. If it is necessary to force the water to a higher level, a combination of pumps can be used to boost the system (inserting a pump half way up). In this case, it is essential to consult a technician to establish a functional system.

A submersible borehole pump is needed in boreholes deeper than 7 meters. The pump operates under water with an electrical motor and needs a power supply on the ground, usually a generator.

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NEEDS AND RECOMMENDED RESPONSES

Water treatment

Depending on the water source and quality, a water treatment system may be required. Water treatment can involve many unit operations and unit processes, which should be chosen according to the available raw water quality. The basic types of treatment units or systems covered in this catalogue are as follows:

- Screening for floating objects
- Micro-straining for algae and coarse particles
- Gravity separation for suspended solids
- Chemical precipitation for turbidity and/or colour removal
- Sand filtration
- Chlorine and UV disinfection
- Membrane or evaporation systems

The most commonly used processes in emergency situations are filtration, proceeded by chemical precipitation when necessary, and chlorine disinfection. Other processes such as UV disinfection and chemical precipitation are included in the catalogue to account for emergency situations where chlorine disinfection and filtration alone are not enough to produce a potable water, or when only brackish water are available as source of supply.

Chlorine disinfection is a very effective means of eliminating microbiological contamination of drinking water. When applying the adequate chlorine dosage a contact time of approximately 30 minutes must be ensured before the water is distributed. When the source of water is excessively contaminated, consideration must be given to the provision of pre-chlorination. The use of chlorine tablets is recommended for disinfection of small volumes of water, during short periods of time. If the emergency situation calls for disinfection of large volumes, during extended periods of time, adequate chlorine equipment for dosing chlorine gas or hypochlorite solutions should be utilized.

Since the treated water can undergo contamination in the distribution system, a residual chlorine should be maintained in the water supplied. The residual chlorine should be frequently monitored and additional chlorine may be added into the lines or distribution reservoirs, if deemed necessary.

Water storage

To acquire a reliable and effective water supply and compensate for variations in water use during the day, it is necessary to have a storage tank of an appropriate size. The situations and locations where tanks can be used are as follows:

- At the water collection point (raw water tanks at surface water intake, run-off water collection and storage facilities)
- At central storage tanks, before or after treatment to balance the supply from the source with the needs and in many cases, to provide the system with enough hydraulic head to allow for gravity-fed distribution.
- In connection with sand filtration
- At distribution points which may include public standposts and other service points (health or feeding centres, camp administration facilities and sometimes at staff houses)
- At household level
NEEDS AND RECOMMENDED RESPONSES

In some cases, a transportable storage tank is required to transport water to areas lacking a water supply.

This catalogue contains two types of storage tanks. A prefabricated open top tank for stationary use and a pillow tank for mobile use and distribution.

In emergency situations, it is customary to place the stationary water tank after the treatment and before the distribution system. This arrangement ensures the most efficient means of chlorination. In special cases where the chlorination is replaced and not combined with UV-light and special filtration, treatment should be after the storage tank and as close to the distribution point as possible.

The size of a storage tank should be in accordance with the water demand of a specific area. If the population to be supplied is smaller than approx. 2000 people, the volume should be equal to at least one day of water demand. For economic reasons, a larger camp population will have less storage capacity but, under no circumstances should this capacity be smaller than 1/6 of the camp's daily water demand. In camps with a population of more than 5000 people, the water storage capacity could be obtained through a battery of smaller reservoirs.

Water distribution

When a camp or area requires treated water from the storage tank it is necessary to use a distribution system. Whenever possible, the system should be based on gravity flow, which means that the outlet from the storage tank should be on a higher level than the taps at the distribution points. The distribution system consists of the following items:

- Pipeline (HDPE or PVC pipes)
- Connectors
- Valves
- Taps - Self closing type
- Tap stand

The major difference between the two types of pipes is flexibility and the degree of resistance when exposed to sunlight. Usually, PVC pipes are hard plastic tubes, non-resistant to sunlight. They therefore, need to be buried if possible. The HDPE pipe is normally a flexible material and is therefore transported in coils. This reduces the number of necessary joints. HDPE has better resistance to sunlight but it is recommended that they also be buried.

The choice between the two pipe materials should be determined by their availability within the local market, cost, diameter available, pressure rating and transport costs. HDPE is environmentally friendly compared to PVC and thus is to be preferred.
<table>
<thead>
<tr>
<th>Test type</th>
<th>Quality</th>
<th>Treatment</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbidity</td>
<td>Algae</td>
<td>Straining/Filtration</td>
<td>Algae which passes the filter is destroyed through chlorination.</td>
</tr>
<tr>
<td></td>
<td>Particles &gt; 20 NTU</td>
<td>Sedimentation</td>
<td>If floating objects are represented in the water, sedimentation should be considered.</td>
</tr>
<tr>
<td></td>
<td>Particles &lt; 20 NTU</td>
<td>Slow sand filtration</td>
<td>If the water contains large quantities of particles, the filtration tank must be frequently cleaned. A prefiltration tank could also be considered. Filtration should precede chlorination and UV disinfection.</td>
</tr>
<tr>
<td>pH-value</td>
<td>&gt; 5.5</td>
<td>Not included in this volume</td>
<td>Acid water should be treated with limestone or marble. If the pH-value is under 5.5, soda ash or caustic soda should be added to the water. An expert should be consulted to perform the above pH-adjustment.</td>
</tr>
<tr>
<td></td>
<td>&lt; 5.5</td>
<td>Not included in this volume</td>
<td></td>
</tr>
<tr>
<td>Electric conductivity</td>
<td>Excessive iron, manganese and hardness</td>
<td>Not included in this volume</td>
<td>The most chemical related water quality problems do not cause serious health hazards if the water is consumed during short periods. An expert should be consulted for consumption over longer periods.</td>
</tr>
<tr>
<td>Coliform bacterial</td>
<td>&gt; 50 colonies/100 ml in rough water</td>
<td>Prechlorination with calcium hypochlorite Calcium hypochlorite powder</td>
<td>If the water is very polluted, a prechlorination is recommended. The chlorination should last for at least 30 minutes. The water should be stored for at least 30 minutes before being distributed. The UV treatment should be used in combination with chlorination to avoid contamination of the water after the treatment plant. The UV treatment is best suited to larger water supplies.</td>
</tr>
<tr>
<td></td>
<td>&lt; 50 colonies/100 ml in rough water</td>
<td>Calcium hypochlorite powder</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bacterial survived chlorination</td>
<td>UV light</td>
<td></td>
</tr>
<tr>
<td>Chlorine</td>
<td>&lt; 0.2 - 0.3 mg/litre at water collection point</td>
<td>Calcium hypochlorite powder</td>
<td>The remaining chlorine in the water at the distribution point should be approx. 0.2 - 0.3 mg/litre to avoid contamination in the distribution system.</td>
</tr>
</tbody>
</table>
WATER TESTING EQUIPMENT

WATER TESTING KIT

Shipping weight: 10 kg
Shipping volume: 0.01 m³
UNCCS Code: 439479

Use:
- For testing the quality of water at various sources.

Description:
- A water testing kit designed to provide rapid information on the safety of a water supply and capable of performing chemical and microbiological analyses in the field.
- Water testing kit packed in a handy box with handle, hinged lockable lid, removable or built in incubator and enough storage space for testing equipment.
- The kit should be able to perform a minimum of 250 complete tests.
- A filtration unit is included in the kit.

Technical specifications:
- Incubator: Temperature: freely adjustable between 37° and 44° C.
- Power supply: 12-24 VDC.
- Digital Display, PID microprocessor
- Capacity: approx. 1,000 ml (20 Petri dishes).
- Battery charger: 100/120V, 200/240V; 50/60hz., 12V DC, 24V DC.

- Provides the following tests:
  - Thermo-tolerant coliform count test.
  - Turbidity test.
  - Chlorine test.
  - pH test.
  - Electrical conductivity test.
  - Temperature test.
  - Tests for E. coli and coliforms, streptococcus faecalis, salmonellae.

- Additional optional tests:
  - Total hardness test, chloride, nitrate, nitrite, sulphate, ammonium (using photometer or test strips and digital reflectometer).
  - Filtration test.

Note:
Tests for the other characteristics mentioned in the guidelines (Biological Oxygen Demand, Chemical Oxygen Demand, etc.) should be carried out in an approved laboratory using waer samples taken in the correct and appropriate manner
WATER TESTING EQUIPMENT

WATER TESTING KIT, Contd..

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>10 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.01 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>439479</td>
</tr>
</tbody>
</table>

Accessories (can be included or optional, depending on kit):
- Instructions.
- Reporting sheets.
- Pocket reflectometer.
- Disposable syringes.
- Vacuum pump.
- Alcohol burner.
- Forceps.
- Thermometer.
- Bottles for alcohol and water.
- Bags for collecting samples (whirl packs).
- Portable steam steriliser/pressure cooker.
- Methanol (1 litre).
- Distilled water.
- Field water deioniser.
- 1 litre measuring cylinder or beaker.

Additional features:
- Some products use membrane filter method, using nutrient pads which require moistening with sterile water.
- Shelf life 12 months at room temperature.
- Chemical analysis easy to carry out with test strips.
- Environmentally friendly – includes waste disposal containers.

Membrane Filter Method for microbiological tests:
- The membrane filter method uses ready made nutrient pad sets (complete with Petri dishes) without the need for preparation of culture media or sterilisation.
- It is only necessary to add sterile water for moistening the pads and this can be carried out in the field.
- The wide choice of nutrient pads allows for a full range of micro-organisms to be identified, including not only thermo-tolerant coliforms, but also streptococcus faecalis, salmonellae, etc.
- A filtration unit made of stainless steel is included in the kit, complete with a vacuum pump and gauge, and a filtering bottle made of unbreakable Nalgene.

Quality Requirements:
- Conforms to International/National Standards.
**SUBMERSIBLE BOREHOLE PUMP**

Shipping weight: approx. 85 kg  
Shipping volume: approx. 0.1 m³  
UNCCS Code: 432236

**Use:**  
- For water supply and liquid transfer such as ground-water supply for single-family houses or waterworks, irrigation systems for horticulture or agriculture, ground-water lowering or pressure boosting as well as various industrial applications.

**Description:**  
- Multistage centrifugal or mixed flow submersible pump for installation in boreholes with submersible electric motor.

**Technical Specifications:**  
- Life span: 5 years.  
- Water temp.: max 40° C.  
- Typical performances:
  - Borehole size min: 4"  
  - Flow/m²/h: 1-90  
  - Max head/m: 600  
  - Q/H: 2.5 m³/h/600m  
  - 6"  
  - 12-70  
  - 400  
  - 12 m³/h/400m  
  - 8"-12"  
  - 25-280  
  - 500  
  - 25 m³/h/510m  
  - 70 m³/h/150m  
  - 280 m³/h/150m

**Construction type:**  
- Multistage centrifugal/mixed flow.
- Multistage centrifugal / mixed flow pump.
- Radial or semi axial impellers, directly coupled to a 2-pole submersible motor. Suitable for vertical as well as horizontal operation.
- Built-in non-return valve.
- Water lubricated bearings.

**Material:**  
- The outer casing of the pump (pump bowls) should be of close grained cast iron or stainless steel.
- The impellers of the pump should be cast iron or bronze or stainless steel or thermosplastic.

- **Sizes:**  
  100mm – 280 mm.
### Submersible Borehole Pump, Contd..

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping weight:</td>
<td>approx. 85 kg</td>
</tr>
<tr>
<td>Shipping volume:</td>
<td>approx. 0.1 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>432236</td>
</tr>
</tbody>
</table>

**Motor:**
- 3-phase submersible, 2-pole AC-motor.
- 3-phase 380 VAC / 3-phase 415 VAC, 208 VAC/460 VAC 3-phase.
- Frequency: 50 Hz / 60 Hz
- Effect: 0.37 kW – 220 kW @ maximum flow rate (depending on type of pump being used).
- Made of stainless steel or cast iron.

**Accessories:**
- Installation, operation and maintenance manuals.
- Tool kit for installation and maintenance.
- Spare parts for 2 years.
- Dropable of suitable cross-sectional diameter according to installation depth and motor size.
- Starting device with dry running protection (Direct on line or Autotransformer).

**Optional:**
- Generating set (must match applicable motor/service).
- Built-in, permanently set frequency converter for optimum performance.
- Continuous rating: kVA (depending on size of motor/service).
- Speed: 1500/3000rpm.
- Voltage: According to motor voltage.
- Direct on-line switch.

**Quality Requirements:**
- Conforms to International/National Standards.
MOBILE CENTRIFUGAL PUMP, MEDIUM YIELD

Shipping weight: 250 kg
Shipping volume: 2 m³
UNCCS Code: 432237

Use:
- For surface waters and shallow wells.

Description:
- 3" (75 mm) x 3" (75 mm) self priming centrifugal pump close coupled to a diesel engine and mounted on a 2 wheel site trolley.

Technical Specifications:

Duty:
- Delivery head: unto 30m.
- Discharge Rate: unto 50 m³/hr.
- Suction Lift: unto 7 m.

Operating Conditions:
- Water Temperature: Max. 4 - 80°C.
- Ambient Temperature: Max. 50°C.
- Altitude: Max. 1,000 metres AMSL.

Pump Features:
- Cast iron construction with replaceable wear plate and stainless steel shaft or shaft sleeve.
- Threaded (BSPT or NPT) or quick release type coupling connections.
- Mechanical seal.
- Check valve or flap to prevent water loss from body.
- Able to handle small solids in suspension (upto 15 mm ø).
- Durable paint finish.

Engine Features:
- 4 stroke, air cooled, naturally aspirating.
- Variable speed control.
- Max 3 hr. hours mounted fuel tank.
- Manual start (handle or recoil).
- Replaceable element air, oil and fuel filters.
MOBILE CENTRIFUGAL
PUMP, MEDIUM YIELD, Contd..

Shipping weight: 250 kg
Shipping volume: 2m³
UNCCS Code: 432237

Accessories:
- Operators, maintenance and spare parts manuals for pump and engine (English).
- Tool kit for routine maintenance.
- Spare parts for 2000 hours operation.
- 25 m x 3” PVC suction hose complete with couplings to match pump.
- 1 x 3” suction hose filter foot valve complete with coupling.
- 50 m x 3” lay flat PVC discharge hose complete with couplings to match pump.

Options:
- Start up kit: comprising 25 liters of engine oil in suitable reusable container, empty 20 litre steel ‘Jerry’ can for diesel fuel, funnel and strainer.
- Overhaul kit: spare parts for both pump and engine for 6000 hours operation including engine workshop manual in English.

Packing:
- Each pump set complete with accessories to be packed in a strong wooden case suitable for sea/air freight or storage in dry conditions for up to six months.
- One packing list in strong plastic bag to be attached to outside of case and one packing list to be placed inside box.

Quality Requirements:
- Conforms to International/National Standards.
MOBILE CENTRIFUGAL PUMP
HIGH YIELD

Shipping weight: 250 kg
Shipping volume: 0.5 m³
UNCCS Code: 432238

Use:
- For surface waters and shallow wells.

Description:
- 4" (100 mm) x 4" (100 mm) self priming centrifugal pump close coupled to a diesel engine and mounted on a 2 or 4 wheel site trolley.

Technical Specifications:

Duty:
- Delivery head: unto 40m
- Discharge Rate: unto 100 m³/hr
- Suction Lift: unto 7 m.

Operating Conditions:
- Water Temperature: 4 - 80°C.
- Ambient Temperature: 50°C
- Altitude: unto 1,000 metres AMSL.

Pump Features:
- Cast iron construction with replaceable wear plate and stainless steel shaft or shaft sleeve.
- Threaded (BSPT or NPT) or quick release type coupling connections.
- Mechanical seal.
- Check valve or flap to prevent water loss from body.
- Able to handle small solids in suspension (up to 15 mm φ).
- Durable paint finish.

Engine Features:
- 4 stroke, air cooled, naturally aspirating.
- Variable speed control.
- Max 3 hr. hours mounted fuel tank.
- Manual start (handle or recoil).
- Replaceable element air, oil and fuel filters.
MOBILE CENTRIFUGAL PUMP
HIGH YIELD, Contd..

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>250 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.5 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>432238</td>
</tr>
</tbody>
</table>

Accessories:
- Operators, maintenance and spare parts manuals for pump and engine (English).
- Tool kit for routine maintenance.
- Spare parts for 2000 hours operation.
- 25 m x 102 mm PVC suction hose complete with couplings to match pump.
- 1 x 102 mm suction hose filter foot valve complete with coupling.
- 50 m x 102 mm lay flat PVC discharge hose complete with couplings to match pump.

Options:
- Start up kit: comprising 25 liters of engine oil in suitable reusable container, empty 20 litre steel 'Jerry' can for diesel fuel, funnel and strainer.
- Overhaul kit: spare parts for both pump and engine for 6000 hours operation including engine workshop manual in English.

Packing:
- Each pump set complete with accessories to be packed in a strong wooden case suitable for sea/air freight or storage in dry conditions for up to six months. One packing list in strong plastic bag to be attached to outside of case and one packing list to be placed inside box.

Quality Requirements:
- Conforms to International/National Standards.
WATER PUMPING PACK

Shipping weight: 250 kg
Shipping volume: 1 m³
UNCCS Code: 432276

Use:
- For surface waters and shallow wells.

Description:
- Water pump coupled to diesel engine.

Technical Specifications:

Materials:
- Cast iron/aluminium alloy and stainless steel.

Output: Head Life Span Suction Lift
- 20-40 m³/hour 30 m. 5-7 years Maximum 7 m.

Operating conditions:
- Water temperature: Max. 90° C.
- Ambient temperature: Max. 50° C
- Altitude: Max. 1,000 m.

Pumps:
- Self-priming centrifugal pumps.
- Close-coupled to diesel engines.
- Variable speed control.

Drive:
- 4-stroke air-cooled diesel engine.
- Approx. 6 litre fuel tank.
- Variable speed control.

Connections:
Suction: 2" Discharge: 2"

Features:
- Dry running protection.
- Corrosion resistant materials.
- Check valve to help maintain prime.
- Flange connection.
WATER PUMPING PACK, Contd..

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>250 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>1 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>432276</td>
</tr>
</tbody>
</table>

**Accessories:**
- Fittings and oiling equipment.
- Operation and maintenance manual.
- Tool kit for repairs and maintenance.
- Spare parts for 2 years.
- Engine starting device, manual.
- Flexible suction hose (25-30 m.).
- Flexible discharge hose (50 m.).

**Quality Requirements:**
- Conforms to International/National Standards.
WATER STORAGE EQUIPMENT

WATER STORAGE TANKS,
(PILLOW OR BLADDER TYPE)

Shipping weight: See below
Shipping volume: See below
UNCCS Code: 369511

- Capacity (Litres)  Shipping weight (kg)  Shipping volume (m³)
  2,000             18               0.15
  5,000             31               0.20
  10,000            43               0.25
  15,000            60               0.25
  20,000            70               0.35
  50,000            130              0.50
  100,000           230              1.15
(Other sizes available up to 300,000 litres)

Use:
- Transportation, storage and distribution of water.

Description:
- Pillow/layflat tank.

Technical Specifications:
Filling/vent:
- 1 x 120mm unit with screwed cap. 50-100mm connections.

Discharge:
- Standard 2” valve connection. 25-50mm connections.

Construction:
- Fabricated from reinforced polyester fabric, with high UV resistance and high frequency double-welded joints.

Temp. resistance:
- Flexible in the range of -25°C to +70°C.

Material:
- Reinforced polyester fabric, non-toxic food grade approved material, according to international standards.

Thickness:  Weight:  Coating
Minimum 1 mm.  Minimum 1000 g/m²  PVC + polyurethane, high UV-resistant
WATER STORAGE EQUIPMENT

WATER STORAGE TANKS,
(PILLOW OR BLADDER TYPE)
Contd..

Shipping weight: See below
Shipping volume: See below
UNCCS Code: 369511

Strength:
- Tear resistance: Minimum 600N.
- Tensile strength: Warp minimum: 4500N.
- Weft minimum: 4000N.
- Adhesion: 20kg/cm².
- Protection against UV, weathering, abrasion, puncture and temperature resistant.

Fittings:
- Stainless steel and fibre glass reinforced polypropylene.

Features:
- Maintenance free.
- Easy to install.
- Stability with potable water.
- Non transfer of plasticizers in the water.

Packing:
- Folded and wrapped in PVC carrying bag with handles.

Accessories:
- 1 repair kit.
- Instructions for use, cleaning, repair and installation in appropriate language.

Optional:
- Linings, fittings and air release valve.
- Harness for vehicle installation for tanks up to 5000 litres.
- Ground cover sheet.

Quality Requirements:
- Conforms to International/National Standards.
OXFAM, 14 LITRE WATER CONTAINER

Shipping weight: 220 KGS
Shipping volume: 100 x 120 x 120 CMS
UNCCS Code: 367961 (new)

Use:
- For storing and carrying water.

Description:
- Multi purpose heavy duty stackable water container.

Technical Specifications:
- Removable tight-fit lid, green or other colour as required.
- Opening in lid with a cap attached - easy to pour from.
- Plastic handle
- Bottom ridge to prevent scraping of the base.
- Reinforced top to prevent ovaling.
- Tough durable UV treated plastic (suitable for food & drinking water).
- Curved inside base to wall joint for easy cleaning.

Size:
- 14 litres.

Material:
- Food quality, UV resistant plastic.

Features:
  i) Cleanliness: studies have shown that while it is important to have a clean water source, the majority of water contamination takes place at the household level where water is stored and distributed. The OXFAM water container addresses this problem with the following features:
  - A push on cap for a hygiene seal, the cap is attached to the lid of the bucket so that people do not need to improvise caps, using pieces of wood etc, after the original lid is lost.
  - The lid of the bucket can be taken off so that the inside of the container can be cleaned periodically.
  - Where the wall meets the base it is curved to prevent dirt and bacteria lodging in the corners and enables better cleaning.

  ii) Stackability: Normally in the first phase of an emergency many jerry cans are transported to the site. With traditional jerry cans this means most of the volume is air that is being transported. One pallet which would have contained 40 twenty-litre jerry cans can take 180 Oxfam buckets. This means there is a considerable saving on freight costs.

  iii) Durability: the bucket, if treated correctly, should last many years. Many of the collapsible plastic types of water containers only last about 1 week in the arduous refugee camp conditions.
WATER STORAGE TANKS, STEEL

<table>
<thead>
<tr>
<th>Capacity (litres)</th>
<th>Height (m)</th>
<th>Diameter (m)</th>
<th>Shipping weight (Kg.)</th>
<th>Shipping volume (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000</td>
<td>2.3</td>
<td>2.5</td>
<td>400</td>
<td>1.50</td>
</tr>
<tr>
<td>45,000</td>
<td>1.5</td>
<td>6.4</td>
<td>700</td>
<td>4.00</td>
</tr>
<tr>
<td>70,000</td>
<td>2.3</td>
<td>6.4</td>
<td>900</td>
<td>4.00</td>
</tr>
<tr>
<td>95,000</td>
<td>3.0</td>
<td>6.4</td>
<td>1100</td>
<td>4.50</td>
</tr>
</tbody>
</table>

Use:
- On site storage and distribution of water.

Description:
- Prefabricated open top tank of steel panels, supplied in kit form, ready for installation on site.

Technical Specifications:
Discharge:
- 2"/3" outlet (50/75 mm).

Life span:
- Minimum 10 years.

Tank panels:
- Hot dip galvanized.

Tank roof:
- Reinforced PVC cover with eyelets, UV-resistant and rot-proof.

Tank liner:
- Reinforced synthetic rubber liner, non-toxic approved material.
- UV resistant and rot-proof, or unreinforced liner with strong geotextile underlay.

Parts:
Complete with parts and fixings for:
- Assembly of tank panels.
- Securing of tank roof.
WATER STORAGE EQUIPMENT

WATER STORAGE TANKS, STEEL, Contd..

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>See below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>See below</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>422357</td>
</tr>
</tbody>
</table>

Features:
- Easy installation by non-technical personnel.
- Corrosion resistant.

Accessories:
- Tool kits for assembly, repair and maintenance.
- Instructions for installation and use.
- Chlorination kit for water treatment.
- Pipework kit for external connections.

Quality Requirements:
- Conforms to International/National Standards.
**FOLDABLE CONTAINER**

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>68 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.52 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>360516 (new)</td>
</tr>
</tbody>
</table>

**Use:**
- Designed to use for water handling in combination with a plastic liner bag.
- Transportation, storage and distribution of water and other products, in large quantities when the tanks are stacked or linked together.

**Description:**
- Foldable distribution and storage container.
- Can be used individually, as water towers or as serial connections.

**Technical Specifications:**
- **Material:** High Density Polyethylene
- **Capacity:** Approximately 860 litres per container

**Dimensions:**
- **Length:** 1200 mm
- **Width:** 1000 mm
- **Height:** Approximately 975 mm (406mm when folded)

**Features:**
- Can be stacked to form water tower, or side by side to form serial connection.

**Accessories:**
- 860 l plastic liner for water
- 51 mm water tap (2 for each container)
- Serial connection (3-5 containers)
- Lashing straps (for transportation on flat bed trucks)
- Lifting systems (for lifting with crane and hook)
- Adapter to water pipe (for water collection points)
- Sealing and locking systems (including lock lid to container).

**Quality Requirements:**
- Conforms to International/National Standards.
WATER TREATMENT EQUIPMENT

WATER PURIFICATION TABLETS

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>approx. 1.5 kg/pack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>approx. 0.003m³/pack</td>
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<tr>
<td>UNCCS Code:</td>
<td>356461</td>
</tr>
</tbody>
</table>

Use:
- For small volume disinfection of water in all water sources.

Description:
- Effervescent tablets.

Technical Specifications:
- Sodium dichloroisocyanurate (chlorine donor). Effervescent base.

Exposure time:
- Approx. 30 minutes.

Treatment:
- Disinfection of microbial contamination in water.

Stability:
- Minimum of 3 years in unopened tubs.

Features:
- Non-toxic to humans.
- Rapidly dissolving.
- Added directly to water.

<table>
<thead>
<tr>
<th>Tablet size</th>
<th>Dose (available chlorine)</th>
<th>Treated water</th>
</tr>
</thead>
<tbody>
<tr>
<td>85 mg</td>
<td>5 mg/l</td>
<td>10 litres</td>
</tr>
<tr>
<td>167 mg</td>
<td>5 mg/l</td>
<td>20 litres</td>
</tr>
<tr>
<td>1670 mg</td>
<td>5 mg/l</td>
<td>200 litres</td>
</tr>
<tr>
<td>8680 mg</td>
<td>5 mg/l</td>
<td>1000 litres</td>
</tr>
</tbody>
</table>

Packing:
- Strip packed in paper/foil laminated and/or packed in screw-capped plastic tubs.

Quality Requirements:
- Conforms to International/National Standards.
SAND WATER SLOW FILTRATION PLANT

- Shipping weight: 3,500 kg
- Shipping volume: 15 m³
- UN/CELS Code: 439425 (a)

Use:
- For filtering and storage.

Description:
- Gravity sand filter and storage tanks for drinking water supplies.

Technical Specifications:

- Capacity:
  - Approximately 6 m³/hour

- Treatment:
  - Slow sand filtration based on gravity force only.

Contents:
- 4 standard water tanks with floating covers and re-inforced.
  - LDPE geo-membrane liner.
- Connecting pipework, parts and fittings.
- Filtration media.

Tanks:
- Pre-fabricated open top tanks built from a shell of heavy, hot-dio-galvanised corrugated 1.2 m. steel sheets.
- 4 tanks: Ø 6.6 m. X 3.0 m. wall height. 95 m³ for filtration and storage, of corrugated galvanised 1.2 mm steel sheets.
- Prepared for interconnection and assembly.

Tank roof:
- Floating disc of closed cell polyethylene foam encapsulated to LDPE.

Tank liner:
- LDPE geo-membrane liner (SABS 1526-1991), non toxic, UV and rot-proof.

Filters:
- Multi-layer sand and underbedding. (high multi-media filters).
SAND WATER SLOW FILTRATION PLANT, Contd..

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping weight:</td>
<td>3,500 kg</td>
</tr>
<tr>
<td>Shipping volume:</td>
<td>15 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>439425</td>
</tr>
</tbody>
</table>

**Features:**
- Easy to install, operate and maintain.

**Accessories:**
- Instructions for installation, use and maintenance.
- Tool kit for installation and repair
- Essential spare parts for 2 years – i.e. filter media for upper layer filtration.

**Quality Requirements:**
Conforms to International/National Standards.

*Note: Sand filtration will not be effective if turbidity is greater than 20 ntu.*
**Use:**
- For water purification.

**Description:**
- Field portable off-road trailer mounted water treatment system.
- Chlorination system: (Gamma 5a, 13,) 1 l/hr.

**Technical Specifications:**
- Chlorination based on a 1% solution.
- Feed rates: 0-8 mg/l (ppm), automated regulation.

**Capacity:**
- 12-15 m³/hr

**Operation:**
- Can be operated by one man.

**Power unit:**
- 4-stroke diesel engine with integrated fuel tank, variable speed and air-cooled.
- Capacity: 4.5 kW, 50 hz (or 10 kW).
- Fuel consumption: 1.5 litres/hour (or 3 L/hour of fuel).

**Pump:**
- Self-priming centrifugal pump.
- Power: 1.2-2.2 kW.
- Material: Bronze and stainless steel/aluminium.
- Head: 0-30 m.
- Capacity: 4-8 m³/hr.
- Connections: 2" (50mm) (or 1¾").

**Frame:**
- Robust welded aluminium/steel frame.
- Protective finish, coated with synthetic material.

**Features:**
- Self-contained to produce approx. 100 m³ (10 days).
- Easy to transport, handle and run.
- Set up in max. 30 min.
WATER TREATMENT UNIT, Contd..

Shipping weight: 500 kg
Shipping volume: 3.5 m³
UNCCS Code: 439411

Accessories:
- Off-road trailer of bogie type.
- Tool kit for maintenance and repair.
- Instructions for use.
- Hoses and strainers.
- Chlorine granules and chlorine test kit.
- Protection cover for storage.
- Spare parts for 2 years.
- Consumables.

Quality Requirements:
- Conforms to International/National Standards.

Note: Check for turbidity. If over 5ntv then chlorination will not be effective.
Use
- To produce potable water to World Health Organizations Standards.

Description:
- Containerized stationary water treatment plant, non-pressure type.

Technical Specifications:
- 12/24 kW diesel generator (1500 rpm).
- Built-in fuel tank.
- Manual start.

Pumps:
- Self-priming centrifugal pump for water input.
- Maximum suction: 7 m.
- Centrifugal pump for water output.
- Maximum pressure: 220 kPa.

Treatment:
- Sand filtration by oxidation.
- UV disinfection.

Filter:
- Pressure type multi-media sand filter. Diam. 800 mm. capacity, each filter 8 m3/hour.
- Type: 2 micron UF-48 automatic sand filter.
  Size: Ø 1.2 –2.0 m.

UV Unit:
- UV disinfection unit with ozone free lamps.
- Burning time:8000 hours.
- Capacity: 30-40 m3/hour.
- Operating pressure: 6 bar.
- Transmission:3%/5cm.

Water tank:
- Available in capacities of 2, 5 and 10 m3.
WATER TREATMENT EQUIPMENT

WATER TREATMENT PLANT, Contd..

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>2500 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>1 standard container</td>
</tr>
<tr>
<td></td>
<td>(6 x 2.4 x 2.4 m)</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>439423</td>
</tr>
</tbody>
</table>

Features:
- Solar or electrically powered.
- Easy to operate and install.
- Fully automatic.
- Alkaline filtration if necessary.

Accessories:
- Tool kit for maintenance and repair.
- Instructions for installation and use.
- 25 m. suction hose.

Quality Requirements:
- Conforms to International/National Standards.
KIT, WATER TREATMENT UNIT, 5 TO 8 m³ (MSF Unit)

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>500 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>3000 dm³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>439424 (new)</td>
</tr>
</tbody>
</table>

Use:
- Designed to provide drinking water to cholera units, health or feeding centres and small communities (up to 25,000 persons) from bad quality surface water.

Description:
- Portable water treatment unit for the production of between 5 and 13 m³/hr of drinking water, through coagulation, direct filtration and chlorination processes of bad quality water (up to 300 NTU).

Technical Specifications:
- Open article:
  - Connections' diameter: 2"; DN50, with Guillermin couplings.
  - Supplied with 8 m of 2" spiralled hose for suction, and 37.5 m of flat 2" hoses for delivery.

This kit is available in two versions:

Yield: 5-8 m³/hr
60-80 m³/day (12 hr/day).

Yield: 8-13 m³/hr.
100 - 150 m³/day (12 hr/day).

Composed of:
- Pallet Nr. 1: pre-filter & injector
- Pre-filter
- Filtration material Nr. 2
- Connection for pre-filter (symm. half couplings)
- Spiralled hose 2" with symm. half couplings
- Coagulant (ferric chloride)
- Plastic jerrycans
- Injection / regulation system for coagulant
- (T-piece 2" + flowmeter + regulation valve)
- Beaker of 1 l
- Syringe of 20 ml
- Test kit for iron determination

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallet Nr. 1: pre-filter &amp; injector</td>
<td>1</td>
</tr>
<tr>
<td>Pre-filter</td>
<td>1</td>
</tr>
<tr>
<td>Filtration material Nr. 2</td>
<td>150 l</td>
</tr>
<tr>
<td>Connection for pre-filter (symm. half couplings)</td>
<td>2</td>
</tr>
<tr>
<td>Spiralled hose 2&quot; with symm. half couplings</td>
<td>1</td>
</tr>
<tr>
<td>Coagulant (ferric chloride)</td>
<td>15 kg</td>
</tr>
<tr>
<td>Plastic jerrycans</td>
<td>2</td>
</tr>
<tr>
<td>Injection / regulation system for coagulant (T-piece 2&quot; + flowmeter + regulation valve)</td>
<td>1</td>
</tr>
<tr>
<td>Beaker of 1 l</td>
<td>4</td>
</tr>
<tr>
<td>Syringe of 20 ml</td>
<td>1</td>
</tr>
<tr>
<td>Test kit for iron determination</td>
<td>1</td>
</tr>
</tbody>
</table>
KIT, WATER TREATMENT UNIT, 5 TO 8 m³ (MSF Unit)

Shipping weight: 500 kg
Shipping volume: 3000 dm³
UNCCS Code: 439424

Pallet Nr. 2: Pre-filter:
- 1 pre-filter
- Filtration material Nr. 2 150 l
- Connection for pre-filter (symm. Half couplings) 2
- Spiralled hose 2" with symm. half couplings" 2
- Reduction symm. half coupling from 4" to 3" 1
- Reduction symm. half coupling from 3" to 2" 1
- Double elbow 4" of 180° with symm. half coupling 1
- Delivery hose 4" with summ. half coupling couplings 2

Pallet Nr. 3: filter & tools & spares 1
- Filter
- Filtration material Nr. 1 150 l
- Connection for pre-filter (symm. half couplings) 2
- Spiralled hose 2" with symm. half couplings 4
- Reduction symm. half coupling from 4" to 3" 1
- Control panel 1
- Delivery hose 2" with symm. half couplings 1
  Tools:
  - Spanner 10/11 1
  - Spanner 12/13 1
  - Hook spanner 2" 2
  - Hook spanner 3" - 4" 2

Spare parts:
- Dome 1
- Dome O' ring 1
- Bulkhead fitting 3
- Bulkhead fitting O' ring 3
- Bulkhead spacer 3
- Valve O' ring 6
- Manual air relief cap 3
- Air relief cap O'ring 3
- Drain cap 6
- Drain cap gasket 6
- Turbidimeter glass 2
- Symm. half coupling O'ring 2" 10
- Symm. half coupling O'ring 3" 1
- Symm. half coupling O' ring 4" 3
- Roll of Teflon tape 5
### KIT, WATER TREATMENT UNIT, 5 TO 8 m³ (MSF Unit)

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>500 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>3000 dm³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>439424</td>
</tr>
</tbody>
</table>

**Pallet Nr. 4: filter & disinfection**

- Filter 1
- Filtration material Nr. 1 150 l
- Connection for pre-filter (symm. half couplings) 2
- Spiralled hose 2" with symm. half couplings 4
- T-piece with symm. half couplings 1
- Manometer /gatevalve with symm. half coupling 1
- Turbidity / flow meter with symm. half couplings 1
- Automatic chiorinator with symm. half couplings 1
- Disinfectant 10 kg
- Pooltester (DPT 1, DPD3, Phenol Red) 1
- Delivery hose 2" with symm. half couplings 1

**Instructions for use:**

Some data is needed before ordering and installing this unit:
- Quantity of water needed (m³/hr or m³/day)
- Raw water sources available, and quality: turbidity, alkalinity, conductivity, pH,...

**Expected duration of use.**

- The installation should be supervised by a specialised person. The field technician will be trained to operate and maintain it.
- Designed to provide drinking water to cholera units, health or feeding centres and small communities (up to 25,000 persons) from bad quality surface water, the unit is to be used during the first phase of an emergency (3 to 6 months). Due to its functioning costs and the need of supervision, other options have to be considered for longer term water supply.

**Important:**

The kit is part of a water chain. It does not include the pump(s) nor the bladders nor the distribution pipes. These should be ordered separately according to your needs.
WATER COLLECTION POINT

Shipping weight: 25 kg
Shipping volume: 0.05 m³
UNCCS Code: 432484

Use:
- For use in emergency situations for safe and easy water distribution and collection.
- To be connected to a water distribution system.

Description:
- Water collection point with 6 water-saving taps mounted on a frame, to include appropriate pipes and fittings. Two or several of these ramps can be connected.

Technical Specifications:

Capacity: Approx. 150 m³/day
(Approx. 6 m³/hour).

Taps:
- Type: Self-closing.
- Pressure: To stand maximum 6 bar.
- Material: Brass and stainless steel.

Frame:
- Pre-assembled frame top made of galvanised steel.
- Material: Mild steel angles.

Pipes:
- 2" steel inlet to be connected to 2" hose pipe.
- 1½" polypropylene inlet to be connected to 1½" hose pipe.
- 1¼" polypropylene inlet to be connected to 1¼" hose pipe.
- Inlet sizes should be specified with request.

Features:
- Easy to install and operate.
- Difficult to dismantle without tools, thus preventing theft of small parts.
- Rigid to withstand crowds.
WATER COLLECTION POINT, Contd..

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping weight</td>
<td>25 kg</td>
</tr>
<tr>
<td>Shipping volume</td>
<td>0.05 m³</td>
</tr>
<tr>
<td>UNCCS Code</td>
<td>432484</td>
</tr>
</tbody>
</table>

Accessories/Spare Parts:
- Instructions for installation and use.
- Tool kit for installation and maintenance.
- Essential spare parts for 2 years.
- Water collecting tray.
- Holding down brackets.
- Polyethylene tubing.
- Tapping saddle.

Quality Requirements:
- Conforms to International/National Standards.
WATER DISTRIBUTION EQUIPMENT

WATER PIPES, HDPE

Shipping weight: See below
Shipping volume: Approx. 1 m³/bundle
UNCCS Code: 367221

<table>
<thead>
<tr>
<th>Outer Diameter (mm)</th>
<th>Wall thickness (mm)</th>
<th>Unit weight (kg/linear metre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>2.0</td>
<td>0.12</td>
</tr>
<tr>
<td>25</td>
<td>2.3</td>
<td>0.15</td>
</tr>
<tr>
<td>32</td>
<td>3.0</td>
<td>0.27</td>
</tr>
<tr>
<td>40</td>
<td>3.7</td>
<td>0.43</td>
</tr>
<tr>
<td>50</td>
<td>4.6</td>
<td>0.65</td>
</tr>
<tr>
<td>63</td>
<td>5.8</td>
<td>1.04</td>
</tr>
<tr>
<td>75</td>
<td>6.8</td>
<td>1.50</td>
</tr>
<tr>
<td>90</td>
<td>8.2</td>
<td>2.14</td>
</tr>
</tbody>
</table>

Use:
- Used for connection to pumps, water storage and trenchless laying, etc.

Description:
- Piping for potable water conduit.

Technical Specifications:

Material:
- High density polyethylene (HDPE).
- Approx. 0.95 g/cm³ density.
- Non toxic material, food grade approved.
- Resistant to high pressures.
- UV-stabilized.

Pressure:
- 10 bar at 20° C (PE63).
- 10 bar at 20° C (PE80) (thinner walls).

Length:
- 100-200 m. for OD of 20-75 mm.
- 50 m. for OD of 90 mm.
WATER DISTRIBUTION EQUIPMENT

WATER PIPES, HDPE, Contd..

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>See below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>Approx. 1 m³/bundle</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>367221</td>
</tr>
</tbody>
</table>

Features:
- Quick compression fittings.
- Bundled in coils.
- Coils tightly strapped and end-protected.
- Abrasion and weather-resistant.
- Suitable for butt-welding at fusion temperature of 200-220°C.
- Coils labelled with waterproof non-tear label.
- Supplied in bundles of 50 m., 100 m. and 200 m.

Quality Requirements:
- Conforms to International/National Standards.
QUICK PIPE COUPLINGS

<table>
<thead>
<tr>
<th>Outer diameter (mm)</th>
<th>Unit weight (grammes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>32</td>
<td>150</td>
</tr>
<tr>
<td>40</td>
<td>250</td>
</tr>
<tr>
<td>50</td>
<td>375</td>
</tr>
<tr>
<td>63</td>
<td>600</td>
</tr>
<tr>
<td>75</td>
<td>900</td>
</tr>
</tbody>
</table>

Use:
- For pipe connections in water supply systems.

Type:
- Quick-fit couplings (can also be a pushfit version).

Technical Specifications:
- Material:
  - PP (Polypropylene) for use with HDPE or MDPE pipes.
  - Resistant to high pressures.
  - Reinforced, high impact strength.
  - Resistant to high pressures.
  - Co-polymer (PP).

Pressure:
- 16 bar at 20° C.

Features:
- UV-stabilized.

Quality Requirements:
- Conforms to International/National Standards.
ADAPTORS

Shipping weight: See below
Shipping volume: Approx. 0.50
               m³/1,000 units
UNCCS Code:    367275

Use:
- For pipe connections.

Description:  Outside Diameter    Unit weight
              (g)
- Female adapter
  Female/Female threaded 25mm x 19mm 60
  32mm x 19mm 88
  32mm x 25mm 95
  40mm x 32mm 155
  50mm x 38mm 235
  63mm x 51mm 375
  75mm x 76mm 550

Technical Specifications:

Material:
- PP (Polypropylene) for use with HDPE or MDPE pipes.
- Resistant to hinge pressures.
- Reinforced, high impact strength.
- Resistant to high pressures.
- Co-polymer (PP).

Pressure:
- 16 bar at 20° C.

Features:
- UV-stabilized.

Other Requirements:
- Conforms to International/National Standard.
GATE VALVES

Shipping weight: 3kg (1" valves)
Shipping volume: 0.005 (1" valves)
UNCCS Code: 432417

Use:
- Normally used for starting or stopping flow. Can be used on uPVC or HDPE pipes.

Description:
- Gate or sluice valve used in water distribution systems.

Technical Specifications:
- Made of brass or PVC, coated with non-toxic and non-corrosive material.
- A gate or wedge plug that can be raised or lowered in a slide track. Female socket.

Dimensions:
- OD sizes: 15mm, 20mm, 25mm, 32mm, 40mm, 50mm, 80mm and 100mm.

Quality Requirements:
- Conforms to International/National Standards.
CHECK VALVES

Shipping weight: 0.3kg (1" valves)
Shipping volume: 0.001 (1" valves)
UNCCS Code: 432413

Use:
- For preventing back-flow in controlling and closing off flow in the pipeline.
- Can be used horizontally or vertically.

Description:
- Swing or flapper type check valve.

Technical Specifications:
Material: Cast iron or brass.
- Female sockets.

Pressure:
- Maximum.

Dimensions:
- 50 mm., 80 mm. or 100 mm.

Optional:
- Ball type can also be used for handling fluids where sediment is present.

Quality Requirements:
- Conforms to International/National Standards.
SELF CLOSING TAPS

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>60 kg/100 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.2 m³/500 units</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>432483</td>
</tr>
</tbody>
</table>

Use:
- Self-closing tap for community standpost.

Description:
- Rugged construction and able to cope at low pressure. Horizontal or vertical push-button or lever.

Technical Specifications:
- Size: ½-1" (12-25 mm).

Features:
- Easy to operate.
- Potential wear points kept to a minimum.
- Certain parts can be replaced at village engineering level.

Thread:
- Whitworth thread/Female.

Material:
- Brass and stainless steel.

Quality Requirements:
- Conforms to International/National Standards.
BALL VALVES

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>Approx. 50-100 kg*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>Approx. 0.5-1.0 m³*</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>432411</td>
</tr>
</tbody>
</table>

*1,000 units

Use:
- For controlling and regulating flow.

Description:
- Ball type valve for water distribution pipelines.

Technical Specifications:
- Made of PVC, bronze or gun metal.
- Lever action, free-flowing and quick-acting ball valves are inert to corrosive media.
- Reversible self-lubricating teflon seals and viton "o" rings; seat tension can be adjusted to compensate for wear.
- Female sockets.

Dimensions:
- 12-50 mm. (Nominal: 15 mm.).

Pressure:
- Maximum 10.34 bar.

Quality Requirements:
- Conforms to International/National Standards.
PUMP TOOL SET

Shipping weight: 20 kg
Shipping volume: 0.06 m³
UNCCS Code: 429253

Type:
- Tool set for maintenance of water pump.

To include:
- 2 pcs. Strap wrenches, 200mm Ø capacity.
- 1 pcs. Adjustable pipe wrench, 140mm capacity.
- 1 pcs. Junior hacksaw complete with 10 blades.
- 1 pcs. 8" (20.3 cm) adjustable spanner.
- 1 pcs. Screwdriver 6" (15.2 cm) blade.
- 1 set Combination spanners 7/16 - 3/4" (11 - 19 mm) A.F.
- 1 pcs. Combination spanner 1/4" (6.3 mm) B.S.F.
- 1 set Allen keys 7/32" (5.6 mm), 3/16" (4.8 mm) & 3 mm.
- 1 pcs. Pair of pliers.
- 1 set Metric feeler gauges.
- 1 pcs. Oil can.

WATER DISTRIBUTION TOOL SET

Shipping weight: 10 kg
Shipping volume: 0.01 m³
UNCCS Code: 429254

Type:
- Tool set for installation and maintenance of pipes in a water supply system.

To include:
- 1 pcs. Tool box, steel.
- 2 pcs. 12" (30.5 cm) screwdrivers.
- 1 pcs. 8" (20.3 cm) half round file with handle.
- 1 pcs. 4" (10.2 cm) round file with handle.
- 1 pcs. Knife needle file with handle.
- 2 pcs. 8" (20.3 cm) adjustable spanner, capacity 1" (25 mm).
- 2 pcs. Strap wrenches, 200mm Ø capacity.
- 1 pcs. Stilson pipe wrench, 65 mm Ø capacity.
- 1 pcs. Adjustable pipe wrench, 150 mm Ø capacity.
- 1 pcs. 12" (30.5 cm) hacksaw complete with 6 blades.
- 1 pcs. Surform plane complete with 2 blades.
- 1 pcs. Retractable knife with 5 blades.
- 10 rolls. Teflon tape.
- 1 pcs. Pencil, workers.
HOSES CONNECTORS AND FITTINGS

UNCCS CODE: 367266 (new)

Use:
- As accessories to standpipe and other distribution kits.

Description:
- Hoses and connectors to fit standard distribution and storage equipment.

Technical Specifications:
- Materials:
  - uPVC or PE.

  Dimensions/Sizes:
  - Nominal sizes: 10 mm – 203 mm

Quality Requirements:
- Conforms to International/National Standards
**HOSES, CONNECTORS AND FITTINGS. Contd.**

Shipping weight:  
Shipping volume:  
UNCCS Code: 367200

<table>
<thead>
<tr>
<th>HOSES</th>
<th>25 mm - 300 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELBOWS</td>
<td>13 mm - 75 mm</td>
</tr>
<tr>
<td>COUPLERS</td>
<td>50 mm - 150 mm</td>
</tr>
<tr>
<td>NUTS AND BOLTS</td>
<td>SUPPLIED WITH GASKETS</td>
</tr>
<tr>
<td>TEFLOW TAPE</td>
<td>STANDARD TEFLOW</td>
</tr>
</tbody>
</table>
HOSES, CONNECTORS AND FITTINGS. Contd..

Shipping weight: 
Shipping volume: 
UNCCS Code: 367200

<table>
<thead>
<tr>
<th>Component</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>FERRULES</td>
<td>12 mm - 150 mm</td>
</tr>
<tr>
<td>END PLUGS</td>
<td>12 mm - 150 mm</td>
</tr>
<tr>
<td>REDUCING SOCKETS</td>
<td>10 mm - 200 mm</td>
</tr>
<tr>
<td>NIPPLES</td>
<td>15 mm - 150 mm</td>
</tr>
<tr>
<td>REDUCING BUSH</td>
<td>12 mm - 200 mm</td>
</tr>
<tr>
<td>Component</td>
<td>Dimensions</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------</td>
</tr>
<tr>
<td>HOSES, CONNECTORS AND FITTINGS, Contd..</td>
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<tr>
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<tr>
<td>BENDS</td>
<td>50 mm - 300 mm</td>
</tr>
<tr>
<td>FLANGES</td>
<td>12 mm - 300 mm</td>
</tr>
<tr>
<td>CONNECTORS</td>
<td>13 mm - 40 mm</td>
</tr>
<tr>
<td>UNION TEE</td>
<td>10 mm - 50 mm</td>
</tr>
<tr>
<td>PIPE CLIPS</td>
<td>10 mm - 75 mm</td>
</tr>
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</table>
**HOSES, CONNECTORS AND FITTINGS. Contd..**

- **Shipping weight:**
- **Shipping volume:**
- **UNCCS Code:** 367200

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>BACKING RING</strong></td>
<td>12 mm - 300 mm</td>
</tr>
<tr>
<td><strong>RUBBER GASKET</strong></td>
<td>TO FIT RANGE OF PIPE SIZES</td>
</tr>
<tr>
<td><strong>SOLVENT CEMENT</strong></td>
<td>GOOD VISCOSITY, HIGH BONDING</td>
</tr>
<tr>
<td><strong>CLEANING FLUID</strong></td>
<td>STANDARD PRODUCT</td>
</tr>
<tr>
<td><strong>RUBBER RING LUBRICANT</strong></td>
<td>STANDARD PRODUCT</td>
</tr>
<tr>
<td><strong>Y-CONNECTOR</strong></td>
<td>50 mm - 100 mm</td>
</tr>
</tbody>
</table>
HOSES, CONNECTORS AND FITTINGS. Contd.

Shipping weight:
Shipping volume:
UNCCS Code: 367200

| THREADED TAP SECTION | 13mm-40mm |
| TAPPING SADDLE | TO ADAPT TO A RANGE OF PIPES AND FITTINGS |
| UNION | 10 mm - 25 mm |
| PLASTIC STOPCOCK | 10 mm - 25 mm |
HOSES, CONNECTORS AND FITTINGS. Contd...

Shipping weight:
Shipping volume:
UNCCS Code: 367200

**T-INSERT**

15 mm x 12 mm -
100 mm x 75 mm

**REDUCER**

50 mm - 300 mm
Chapter 4 FOOD ITEMS
NEEDS AND RECOMMENDED RESPONSES

General

The purpose of this chapter is to provide guidance to the donors and to the procurement staff as to what food commodities should be provided in emergencies. Apart from the potential waste of resources and flooding of relief operations with unwanted products, there are other consequences related to health, social and economic situations that can occur when improper food commodities are supplied. There are several misconceptions related to food and nutrition, and one of them is that starving people can eat anything. This attitude is inhumane and incorrect. Even if hungry, people often do not consume adequate quantities of unfamiliar foods for long times. Moreover, starving people are often ill and may not have a sufficient appetite. They will therefore languish in an emaciated state or become even weaker. Therefore, it is essential to provide familiar and nutritionally adequate food items which are palatable.

This chapter therefore provides a checklist and a set of standard specifications for use by donor countries who are trying to buy food commodities for emergency relief and/or donate food, with the aim of minimizing their inappropriate use.

The standardized specifications of food commodities will not only facilitate the identification of potential suppliers and prices, but will create a method for better quality control.

The Needs

Food supplies the body with energy, protein, fats, vitamins and minerals. Food also provides the body with materials such as amino acids, vitamins and minerals. These materials help the body to control the growth and maintenance of the cells, while losses of some of these materials will result in an unhealthy population. This will make an emergency situation even worse. When choosing food, these aspects have to be taken into consideration.

To feed a population, the following important factors should also be considered when selecting the products for food aid:

- Suitability
- Local habits
- Availability of fuel and clean water
- Acceptability

a) Nutritional needs

Nutrition is an important factor for consideration when selecting the type of food for a specific operation. The short term nutrition needs of disaster relief are not as stringent as those of population groups subsisting for longer periods of time on food supplied through aid sources. Energy is the most important nutritional requirement in food aid. Generally, if enough energy is provided in a mixed diet, the protein required is also present. For food aid where only two or three foods may be available, there is a need to ensure that protein quality and quantity is adequate.

While primarily energy and protein needs have to be met, the micronutrients requirements have to be given immediate serious consideration, particularly in cases where the population is already malnourished or entirely depending on food aid. Deficiency of vitamin A, iron and iodine are the three nutritional problems targeted by WHO as the most significant in developing countries.
b) Food basket

Ideally the "basket" should provide a specific amount of energy, calculated in terms of the given amount of calories and protein derived from cereals, milk, meat, fish, oils etc. The commodities chosen for the "basket" should furthermore correspond as closely as possible to the normal eating habits of the persons receiving the food aid.

The items normally required for first phase of emergencies could be classified as follows:

- Cereals
- Dried legumes
- Dairy product
- Edible oils
- Meats and fish
- Blended/processed food
- Miscellaneous

In deciding the mix, the following factors need also to be considered, and may usually lead to various compromises:

- Nutritional requirements may vary according to type of activity, to location and to season.
- There may be some local products available for purchase, these should then be bought and not included in the food basket from external sources.
- The limited shelf life of certain commodities under conditions of high humidity and/or temperature needs to be taken into consideration.
- The local transport capacity and storage facility may be inadequate.

Cereals
These account for 90 percent of all food aid in volume terms and 75 percent in value terms. In general, cereals for food aid comprise wheat, maize and rice.

a) Wheat
Wheat which has been shipped as bulk grain, forms the major share of food aid allocation. Some type of processing will therefore be required before it can be consumed. In some cases, processing is a problem. For this reason, wheat is sometimes sent as flour rather than as grain.

- The flour is usually bagged in thin cotton sacks and has a limited shelf life in hot and humid conditions.

b) Maize
There is considerable production of maize in the traditional donor group countries. Maize is a staple in many parts of Africa, Latin America and the Caribbean. In the case of Africa, most of the local maize is of white variety, particularly in eastern Africa where it is generally the only type acceptable for human consumption.

c) Rice
Rice is a staple in most parts of Asia. It is generally shipped parboiled or polished to facilitate direct consumption.

d) Other cereals
Cereals such as barley, rye, sorghum and oats are products which are common in some smaller regions. These products are normally not provided in first phase food baskets, but in "long term" or "temporary maintenance" feeding programs. These products should be considered as food which is closely related to traditional local consumption.
NEEDS AND RECOMMENDED RESPONSES

Dried legumes

In tropical and sub-tropical countries a wide variety of beans and peas are a part of the traditional diet. The lower-cost varieties most commonly grown in temperate climates are lentils, chick peas and cow peas, which in recent years have become part of food-aid. Since pulses are more time consuming to soak and cook, hence requiring more fuel, there is a tendency to restrict the use of pulses. Nevertheless, they form an important protein and micronutrient source.

Dairy products

Milk products are now mainly used for treatment of severe malnutrition. Powdered dried skimmed milk mixed with oil and sugar, and sometimes with cereal flour added, is still unsurpassed as recuperation food for severely malnourished children. Major relief agencies have come to very strict policies regarding the use of dairy products in emergency situations. Usually, milk products are distributed only in a supervised environment for on-the-spot feeding of severely malnourished children.

Powdered dried skimmed milk and dried whole milk cannot be given directly to malnourished children. Their mineral content and their high protein concentration makes them unsafe to use when the kidney cannot produce concentrated urine, which frequently occurs among young or malnourished infants. Moreover, the high lactose content of dried skimmed milk may induce or aggravate diarrhoea, especially in the malnourished child. These dairy products can be used safely only after addition of oil and sugar in hygienic conditions and under close supervision.

High energy fortified blended food on milk basis has its protein, carbohydrate, oil and mineral content adapted for the treatment of severe malnutrition. It also contains vitamins and trace elements in therapeutic amount to correct coexisting deficiencies.

Edible oils

This covers oils derived from maize, rape, soybean, sunflower, palm, ground nuts etc. These oils are used for frying which is considered one of the safest means of cooking. Normally, the oils used for food aid are rapeseed, soybean, sunflower or palm oil because of their price and availability.

Meats and fish

Meat is seen as the most desirable source of animal protein but its supply is limited due to both availability and cost. When providing meat in food baskets, it is important to choose meat which is commonly used in, and is in accordance with the religion and traditions of the disaster area.

Fish is supplied in dry or canned forms. Most frequently the canned form is being provided in food parcels. The advantage with both canned meat and fish is that they are good protein sources and have a long shelf life.

Blended / processed foods

A number of blended foods have been made available in food aid, mostly in the form of fortified cereal blends. One of these is corn soya blend (CSB). Blended foods are useful in food aid for providing protein and micronutrients. If local production facilities are available, these foods can be an economical alternative to cereals or pulses procured on a CFR basis. Presently various UN organizations that procure blended foods use different specifications.
NEEDS AND RECOMMENDED RESPONSES

Miscellaneous

a) Biscuits

In many situations biscuits are provided as a part of the food parcels, and in supplemental foods for children, pregnant and lactating mothers, the biscuit is very valuable. Although their volume is relatively large, biscuits have a high energy density and high contents of protein and can be fortified with essential vitamins and minerals.

b) Packaging

When deciding the packaging requirements, the following three subjects should be considered:

- The type of food to be transported
- The type of transportation from manufacturer to end-user
- The cost and availability of the packing to be used

The guidelines for each group of food product is explained below:

Cereals

- Jute sacks
- Composite Jute/polypropylene sacks
- Woven polypropylene sacks

Cereal flour, blended foods

- Jute sacks lined with woven polypropylene
- Cotton sacks lined with woven polypropylene
- Composite jute/polypropylene sacks
- Woven polypropylene sacks, polyethylene liner
- Multilayer kraft paper, 4 plies, polyethylene liner

Canned foods

- Cans with a non-toxic coating to prevent corrosion and contamination with built-in openers.

Products of second-stage processing (e.g. pasta, etc.)

- Outer packaging shall be of cardboard or shrink-wrapped polyethylene film of sufficient strength to survive transportation.

Oleaginous products

- Metal containers coated externally with varnish and internally with edible varnish. The container shall be hermetically sealed after filling in an atmosphere of nitrogen.
- Plastic drums or PET bottles.

In general, when containers or cartons are used, the following recommendations should be observed:

- Individual items such as cans etc. shall be suitably packed in cartons or boxes, and strapped before palletizing.
- All carton should be of at least double-wall construction to withstand a bursting strength of 17.6 kg/cm². Each container, carton, box, packet, bag etc. should contain a net weight not exceeding 25 kg.
- All containers, cartons, boxes, packages etc. shall be tightly sealed and strapped with steel or nylon straps.
- A transparent plastic cover of reasonable strength shall be installed as protection against water.
CEREALS

WHEAT (TRITICUM)

Stowage factor: 680-830 kg/m³
UNCCS Code: 011100

Types:
- Soft wheat: For average bread-making qualities.
- Hard wheat: For average superior bread-making qualities.

General Description:
- Common wheat of fair, sound and marketable quality, free of odour and live pests. Should produce dough that is not sticky and that can be milled.

Typical Quality Specifications:
- Moisture: 14% maximum
- Foreign matter: 1 % maximum
- Broken grains: 4 % maximum
- Heat damaged grains: 0.5% maximum
- Sprouted grains: 1% maximum
- Specific weight: 76 kg/hl minimum
- Protein content: 11 % minimum (n x 5.7 of dry matter)
- Hagberg falling number: 220 minimum (inc. preparation, agitation time of 60 seconds)
- Zeleny index: 20 minimum.
- Crop year: To be specified

Quality specifications:
- According to official government standards of country of origin.
CEREALS

RICE, HUSKED (ORYZA SATIVA)

Stowage factor: 800 - 900 kg/m³
UNCCS Code: 011400

Types:
- **Indica type:** Long grain white rice.
- **Japonica type:** Short/round grain white rice.

General Description:
- White milled grain rice of fair, sound and marketable quality, free of odour and live pests, fit for human consumption.

Typical quality Specifications:
- 5 % Broken: 35% Broken
- Moisture: 14% max 14 % max
- Foreign matter: 1 % max 14 % max
- Broken rice: 5 % max 35 % max
- Chalky grains: 4 % max 10 % max
- Grains streaked with red: 3 % max 5 % max
- Spotted grains: 1.5%max N/A
- Stained grains: 1 % max N/A
- Yellow grains: 0.05% max 2 % max
- Amber grains: 0.2 % max N/A
- Damaged grains: N/A 2.5 % max
- Glutinous rice: N/A 2.5 % max
- Paddy (grains/kg): N/A 35 max
- Crop year: To be specified

*Tolerance of extraneous matter consisting of:*
- Inedible mineral and vegetable substances (non-toxic): 0.01 % maximum
- Edible extraneous grains or parts thereof: 0.10 % maximum

Quality specifications:
- According to official government standards of country of origin.
CEREALS

SORGHUM GRAIN
(SORGHUM BICOLOR)

Stowage factor: 650 - 780 kg/m³
UNCCS Code: 011920

Types:
- White.
- Yellow/brown.

General Description:

Typical quality specifications:
- Moisture: 14.5 % maximum
- Total defects: 8 % maximum
- Of which:
  - Diseased grains: 0.5 % maximum
  - Broken kernels: 5 % maximum
  - Other grains: 1 % maximum
  - Foreign matter: 2 % maximum
  - Crop year: To be specified

Sorghum grains must be free from toxic or noxious seeds in amounts which may represent a hazard to health.

Quality specifications:
- According to official government standards of country of origin.
CEREALS

MAIZE (ZEA MAIS)

Stowage factor: 640-750 kg/m³
UNCCS Code: 011220

Types:
• White or yellow maize (corn).

General description:
• Maize of fair, sound and marketable quality, free of odour and live pests, fit for human consumption.

Typical quality specification:
• Moisture: 14 % maximum
• Foreign matter: 1.5 % maximum
• Sprouted grains: 0.5 % maximum
• Broken kernels: 5 % maximum
• Weevilled damaged kernels: 3 % maximum
• Other types: 3 % maximum
  (dented/semi dented)
• Other colour: 3 % maximum
• Aflatoxin: 20 ppb maximum
• Crop year: From the current crop
• Type: Flint or dent (to be specified)

• Maize not to contain fungus produced toxins.

Quality specifications:
• According to official government standards of country of origin.
WHEAT PRODUCTS

WHEAT FLOUR
Stowage factor: 490 - 560 kg/m³
UNCCS Code: 231110

Types:
- White.
- Dark.

General description:
- Wheat flour of fair, sound and marketable quality, free of odour and live or dead pests.
  Should produce a dough which does not stick during the mechanical kneading process.
  From grain not older than 2 years.

Typical quality specification:
- Moisture: 14 % maximum
- Protein: 10.5 % minimum (N x 6.25 of dry matter)
- Ash content: 0.62 % maximum (dry matter)
- Hagberg falling no.: 220 minimum incl. preparation (agitation time of 60 seconds)
- Zeleny index: 20 minimum

Quality specifications:
- According to official government standards of country of origin.

MAIZE FLOUR
Stowage Factor: 460 - 500 kg/m³
UNCCS Code: 231240

Types:
- Maize grits.
- Maize flour.
- Maize meal.

General description:
- Maize flour of fair, sound and marketable quality, free of odour and live or dead pests.

Typical quality specifications:
- Moisture: 13.5 % maximum
- Protein: 8 % minimum (N x 6.25 of dry matter)
- Fibre: 1.2 % maximum
- Fat: 3-4 % maximum
- Granulation to pass through 1.4 mm sieve: 90 % minimum

Quality specifications:
- According to official government standards of country of origin.
WHEAT PRODUCTS

PASTA AND NOODLES WHEAT

Stowage factor: 300 kg/m³
UNCCS Code: 237100

Types:
- Long pasta
- Short pasta
- Noodles

General description:
- Pasta made from durum wheat meal.

Typical quality specifications:
- Moisture: 12.5 % maximum
- Protein content: 10.5 % minimum (n x 6.25 of dry matter)
- Ash content: 0.70 %minimum (dry matter)
- Cellulose: 0.20 %minimum (dry matter)
- Acid value: Not more than the acid value expressed by the number of cm³ of normal alkaline solution required to neutralize 100g of dry matter.

Quality specifications:
- According to official government standards of country of origin.
**PULSES**

**DRIED BEANS (PHASEOLUS VULGARIS)**

Stowage factor: 900 kg/m³  
UNCCS Code: 012270

Type:
- Red speckled kidney beans.
- Mixed coloured beans.

**General description:**
- Beans of fair, sound and marketable quality, free of odour and live pests, fit for human consumption. The beans must be shelled, clean and fumigated.

**Typical quality specification:**
- Moisture: 9% minimum
- Foreign matter/impurities: 1% maximum
- Split, rotten or diseased: 4% maximum
- Insect damaged: 2% maximum
- Other varieties: 2% maximum
- Cooking time after soaking for 24 hours: 60 min. maximum
- Crop year: To be specified

**Quality specifications:**
- According to official government standards of country of origin.

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**HORSE BEANS (VICIA FABA)**

Stowage factor: 900 kg/m³  
UNCCS Code: 012227

Type:
- Horse beans (also broad or Faba beans).

**General description:**
- Horse beans of fair, sound and marketable quality, free of odour and live pests, fit for human consumption. The beans must be washed and fumigated.

**Typical quality specification:**
- Moisture: 16% maximum
- Foreign matter: 5% maximum
- Broken beans: 2% maximum
- Damaged beans: 8% maximum
- Cooking time after soaking for 24 hrs: 90 min maximum
- Crop year: To be specified

**Quality specifications:**
- According to official government standards of country of origin.
WHOLE PEAS (PISUM SATIVUM/ARVENSE)

Stowage factor: 880 kg/m³
UNCCS Code: 012254

Type:  • Dried, whole green peas.
       • Dried, whole yellow peas.

General description:
• Peas of fair, sound and marketable quality, free of odour and live pests, fit for human consumption.

Typical quality specifications:
• Moisture: 15% maximum
• Foreign matter: 1 % maximum
• Purity:
  of which
  • Broken/Split: 3 % maximum
  • Damaged/Weevilled/Eaten: 1.5% maximum
  • Spoiled/Brownish stained: 2 % maximum
  • Wrinkled: 2.5% maximum
• Crop year: To be specified

Quality specifications:
• According to official government standards of country of origin.

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SPLIT PEAS (PISUM SATIVUM/ ARVENSE)

Stowage factor: 880 kg/m³
UNCCS Code: 012252

Type:  • Split green peas
       • Split yellow peas

General description:
• Peas of fair, sound and marketable quality, free of odour and live pests, fit for human consumption.

Typical quality specifications:
• Moisture: 15 %
• Foreign matter: 0.1 % maximum
• Purity: 99.9 % minimum
• Broken/Split: 1 % maximum
• Damaged/Weevilled/Eaten: 0.3 % maximum
• Colour: Good natural colour
• % other colour: 1 % maximum
• Cooking time after soaking for 24 hrs: 60 min maximum
• Fumigation: To be specified
• Crop year: To be specified maximum

Quality specifications:
• According to official government standards of country of origin.
PULSES

**DRIED LENTILS (LENS ESCULENTA)**

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<th>Stowage factor:</th>
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</table>

**Type:**
- Whole red lentils.
- Whole green lentils.

**General description:**
- Dried lentils for human consumption shall be clean, fumigated, dry and free from mould and living vermin.

**Composition:**
- Moisture: 13% maximum
- Foreign matter: 1% maximum
- Damaged lentils: 3% maximum
- Of which vermin damaged: 1% maximum
- Ash: 3% maximum

**Quality specifications:**
- According to official government standards of country of origin.

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**CHICKPEAS**

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<th>Stowage factor:</th>
<th>750 kg/m³</th>
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<tr>
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<td>012233</td>
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</tbody>
</table>

**Chickpeas type:**
- Spayola, size 28/30.

**General description:**
- Chickpeas of fair, sound and merchantable quality, free of odour and live pests, fit for human consumption, fumigated maximum ten days prior to delivery.

**Typical quality specifications:**
- Moisture content: 14% maximum
- Foreign matter: 1% maximum
- Weevilled grains: 1% maximum
- Total defective grains: 13% maximum
  (discolored, rotten, broken, diseased, mouldy)
- Cooking time: 90 min. maximum
  (after soaking 24 hrs)
- Undersized: 10% maximum
- Size 28: 30% maximum

**Quality specifications:**
- According to official government standards of country of origin.
RAPESEED OIL

Stowage factor: 860 kg/m³
UNCCS Code: 216561

Type:
- Refined rape seed oil.

General description:
- Freshly produced, fully refined and deodorized rape seed oil, fit for human consumption.

Typical quality specification:
- Water and impurities: 0.2 % maximum
- Free fatty acids: 0.15 % maximum, expressed as oleic acid
- Erucic acid: 5 % maximum, of total fatty acids present
- Brassicasterol: 5 % minimum, of total sterol content
- Soap: Absent
- Foreign odours and flavours: Absent
- Peroxide number: Below 10 milliequivalents of active oxygen per kilogram of oil
- Authorized additives: 100 mg of butylated hydroxytoluene (BHT-E-321) per kilogram of oil

Quality specifications:
- According to official government standards of country of origin.

SOYA BEAN OIL

Stowage factor: 870 kg/m³
UNCCS Code: 216510

Type:
- Soya bean oil

General description:
- The fully refined and deodorized soya bean oil must be of sound, fair and marketable quality. Fit for human consumption.

Typical quality specification:
- Moisture & volatile matter at 105°C: 0.1 % maximum
- Free Fatty Acid:
  (expressed as oleic acid) 0.1 % maximum
- Colour:
  (5½° Lovibond scale) 20 yellow/2 red maximum
- Iodine value: 120/143
- Saponification value: mg KOH/G oil 189 - 195
- Soap content: 0.005 % maximum
- Unsaponifiable matter: 1.5 % maximum
- Peroxide number:
  - Maximum 2 milliequivalents peroxide oxygen per kg of oil.
  - Clear and brilliant in appearance at 70 - 85°C.

- According to official government standards of country of origin.
SUNFLOWER OIL

Stowage factor: 870 kg/m³
UNCCS Code: 216551

Type:
- Sunflower oil.

General description:
- Refined sunflower oil of sound, fair and marketable quality.

Typical quality specification:
- Water and impurities: 0.2 % maximum
- Free fatty acids: 0.15 % maximum (oleic acid)
- Linolenic acid: 5 % maximum (of total fatty acids present)
- Delta-7-stigmastrol: 9 % minimum (of total sterol content, and absence of brassicasterol)
- Soap: Absence
- Foreign odours and flavours: Absence
- Peroxide number: Below 10 milliequivalents of active oxygen per kg of oil
- Authorized additives: 100 mg of butylated hydroxytoluene (BHT-E-321) per kilogram of oil

Quality specifications:
- According to official government standards of country of origin.
EDIBLE OILS

PALM OIL

Stowage factor: 840 kg/m³
UNCCS Code: 216720

Type:
- Palmolein oil

General description:
- The refined palmolein oil must be of sound, fair and marketable quality

Typical quality specification:
- Water and impurities: 0.1 % max
- Free fatty acids: 0.1 % max
- Colour: red 6 max (5¼ inch lovibond cell):
- Phosphorus: 4 ppm max
- Iodine value: 50 to 60 min
- Palmitic acid: 41-45 % of total fatty acids present
- Cholesterol: 4 % max of total sterol content
- Oleic acid: 36-41 % of total fatty acids present
- Melting point: 24 °C max (slip point, softening point or rising point)
- Peroxide value: 10 mg / 1 kg max
- Unsaponifiable matter: 1.2 % max
- Refractive index at 40°C: 1.4580 - 1.4590
- Relative density: 0.910 - 0.915 (27°C/water at 27°C)
- Saponification value: 195-205 (as mg KOH/GM)

Quality specifications:
- According to official government standards of country of origin
EDIBLE OIL

**BUTTER OIL**

Stowage factor: 600 kg/m³
UNCCS Code: 229420

Type:
- Butter oil

General description:
- Butter oil made from milk fat

Typical quality specification:
- Moisture: 0.1 % maximum
- Milk fat: 99.8 % minimum
- Free fatty acids: 0.3 % expressed as oleic acid
- Peroxide value: 0.3 meq/kg maximum
- Copper: 0.05 ppm maximum
- Iron: 0.3 ppm maximum
- Absence of pathogenic/toxic bacteria and/or salmonella and/or mouse disease

Quality specifications:
- According to official government standards of country of origin

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MARGARINE

Stowage factor: 700 kg/m³
UNCCS code: 216810

Type:
- Margarine

General description:
- Margarine made of edible fats and/or oils containing water, milk and/or milk products

Typical quality specification:
- Water contents: 16 % maximum
- Fat: 80 % minimum
- Iron: 1.5 ppm maximum
- Copper: 0.1 ppm maximum
- Lead: 0.1 ppm maximum

Quality specifications:
- According to official government standards of country of origin
DAIRY PRODUCTS

DRIED SKIMMED MILK
POWDER (DSM)
Stowage factor: 700 kg/m³
UNCCS Code: 229115

Type:
• Spray dried skimmed milk powder, vitamin enriched.

General description:
• Non fat dry milk, A.D.M.I. extra grade, fortified with A and D3 vitamins, fit for human
  consumption and manufactured not more than 6 months before shipment.

Typical quality specifications:
• Moisture content: 4 % maximum
• Fat content: 1.25% maximum
• Vitamin A: 5,000 - 10,000 I.U./100g
• Vitamin D3: 500 - 1,000 I.U./100g
• Total acid (Lactic acid): 1,500 mg / 100g
• Additives: None
• Neutralizers: None
• Phosphate: Negative i.e. not more than 4 micrograms of phenol
  per gram of reconstituted milk.
• Solubility index: 1.25 ml maximum
• Burnt particles: Max 15.0 mg i.e. disc B
• Micro-organism content: 50,000/g maximum
• Coliform test: Negative in 0.1 g
• Taste and smell: Clean
• Appearance: White or slightly yellowish colour, free from impurities
  or coloured particles, caking or lumps.

Absence of pathogenic/toxic bacteria and/or salmonella and/or mouse disease.

Nuclear radiation:
• To meet the values specified in the area of consumption. If these limits are not defined
  the content of Caesium (Cs¹³⁴ & Cs¹³⁷) must be less than 50 bq/kg and Strontium 90 must
  be less than 1 bq/kg.

Quality specifications:
• According to official government standards of country of origin.
FETA CHEESE

Stowage factor: 800 kg/ m³
UNCCS Code: 229532

Cheese type:
- Feta cheese

General description:
- The feta cheese must be made using solely cow milk.

Typical quality specifications:
- Water content: 72 % maximum on non-fat solids
- Fat contents: 40 % maximum of dry matter
- pH value: Variable
- Salt contents: Variable

Quality specifications:
- According to official government standards of country of origin.
DAIRY PRODUCTS

F100 THERAPEUTIC DIET

Stowage factor: 700 kg/m³
UNCCS Code: 229116

Type:
- High energy fortified blended food on milk basis. Milk proteins or spray dried skimmed milk powder with added vegetable oil, carbohydrates, vitamins and minerals.

General description:
- Milk based diet for treatment of severe malnutrition. This low iron diet is not suitable for long term feeding of well nourished children and is only to be used under the supervision by personnel specifically trained in it use.

Typical quality specifications:
- Moisture content: 2.5 % maximum
- Energy: 520-550 kcal/100g
- Protein: 10 to 12 % total energy
- Fat: 45% to 60% total energy
- Sodium: 290 mg/100g maximum
- Potassium: between 1100 mg and 1400 mg/100g
- Calcium: between 300 and 600 mg/100g
- Phosphorus: between 300 mg to 600mg/100g
- Magnesium: between 80 mg to 140 mg/100g
- Iron: 0.35 mg/100g maximum
- Zinc: between 11 mg and 18 mg/100g
- Copper: between 1.4 mg and 1.8 mg/100g
- Selenium: between 20 μg and 40 μg/100g
- Iodine: between 70 μg and 140 μg/100g
- Vitamin A: between 0.8 mg and 1.6 mg/100g
- Vitamin D: between 15 μg and 20 μg/100g
- Vitamin E: 20 mg/100g minimum
- Vitamin K: between 15 μg and 30 μg/100g
- Thiamine: minimum 0.5 mg/100 mg
- Riboflavin: minimum 1.6 mg/100 mg
- Ascorbic acid: minimum 50 mg/100 mg
- Vitamin B6: 0.6 mg/100g minimum
  Vitamin B12: 1.6 μg/100g minimum
- Folic acid: 200 μg/100g minimum
- Nicotinic acid: 5 mg/100g minimum
- Pantothenic acid: 3 mg/100g minimum
- Biotin: 60 μg/100g minimum
- n-6 fatty acid: between 3 and 10% of total energy
- n-3 fatty acid: between 0.3 and 2.5% of total energy
- Phosphatases: Negative (i.e not more than 4 μg phenol/g of reconstituted milk)

Contd....
Dairy Products

F100 Therapeutic Diet, Contd...

Stowage factor:
UNCCS Code:

- Solubility index: maximum 0.5 ml
- Burnt particles: maximum 15 (i.e. disc B minimum)
- total microorganisms: maximum 10,000/g
- Coliform: negative in 1 g
- Clostridium perfringens: negative in 1 g
- Yeast: maximum 10 in 1 g
- Moulds: maximum 50 in 1 g
- Staphylococci: negative in 1 g
- Salmonella: negative in 125 g
- Listeria: negative in 25 g
- Taste and smell: clean, fresh dairy smell.
- Appearance: White of slightly yellowish fine powder, free from impurities, coloured particles, caking or lumps.

- The carbohydrate used shall be readily soluble in water.
- Added minerals should be in the form of water soluble salts. The minerals used for fortification shall be units that are known to be biologically available. Iron salts should not be added.
- The sum of strong anions (chloride) should be less than the sum of strong cations (sodium, potassium) when expressed in molar terms. For the purposes of these specifications, magnesium and calcium are to be counted as weak cations and phosphate as a weak anion.
- Nutritional levels of essential L-amino acids, choline, taurine, carnitine, inositol carotene and other semi-essential or biologically useful nutrients may be added to levels which current scientific opinion considers to be within a desirable and safe range for the nutrition of severely malnourished children.
- The product should not contain detectable levels of antibiotics or other drugs used in animal husbandry.

Nuclear radiation:
- To meet the values valid in the area of consumption. If these limits are not defined the value must not exceed 370 bq/kg (Cs\textsuperscript{134} & Cs\textsuperscript{137}).

Quality specifications:
- According to official government standards of country of origin.
FORTIFIED CORN SOYA BLEND

Stowage factor: 600 kg/m³
UNCCS Code: 229125

Type:
- Formulated Supplementary Food for older infants and young children.

Manufactured by:
- Extrusion
- Roasting/milling

Composition:
- Whole maize: 80% by weight
- Whole soyabeans: 20% by weight
- Sugar: 0-10%

Maize can be partly or fully replaced by whole wheat.

Mineral mix:
Micronutrient per 100 g finished product

- Vitamin A 1664 IU
- Thiamine 0.128 milligram
- Riboflavin 0.448 milligram
- Niacin 4.8 milligram
- Folate 60 microgram
- Vitamin C 48 milligram
- Vitamin B12 1.2 microgram
- Iron 8 milligram as Ferrous Fumarate
- Calcium 100 milligram as Calcium Carbonate
- Zinc 5 milligram as Zinc Sulfate

Product Specifications:
- Shall be suitable as a dietary supplement for older infants and young children as well as other vulnerable groups for serving as porridge, gruel, or extender to other foods.

The following requirements to be met:

Taste
- It shall have a pleasant smell and palatable taste, which young children will like and enjoy.

Shelflife
- It shall retain above qualities for at least 6 months from date of manufacture when stored dry at ambient temperatures prevalent in the country.
MAIZE BASED DIET

FORTIFIED CORN SOYA BLEND,
Contd..
Stowage factor: 600 kg/m³
UNCCS Code: 229125

Flour Characteristics:
- It shall be a uniform fine texture with the following particle distribution:
  95% must pass through a 600 micrometer sieve.
  100% must pass through a 1000 micrometer sieve.

Dispersibility:
- It shall be free from lumping or balling when mixed with water or ambient temperature.

Cooking time:
- It shall be suitable for older infants after a cooking time not exceeding ten minutes when prepared in water of ambient temperature.

Moisture and crude Fiber:
- It shall contain a moisture content not exceeding 10% and a fiber content (based on dry product) not exceeding 5%.
  (dehulling of soya or pulses is not required).

Nutritional Value:
- It shall contain not less than the following nutritional value per 100 g dry product:
  - 400 kcal
  - 14% protein (Nx6.25)
  - 6% fat
  - vit/min supplement

Energy Density:
- It shall contain, when prepared as a gruel, not less than 100 kcal/100 ml.

Safety:
- It shall be free from objectionable matter.
- It shall not contain any substances originating from microorganisms, or any other poisonous or deleterious substances like heavy metals or pesticide residues, in amounts which may represent a hazard to health (permitted level of aflatoxin: 20 ppb).
- Not exceed the following levels of microbiological contamination (maximum/gram/finished product):
  - Mesophilic aerobic bacteria: 100,000
  - Coliforms: 100
  - Salmonellae (per 25 g sample) 0

- The variation of the final product with respect to contents of moisture, fiber, protein, fat and micronutrients shall not exceed plus or minus 5% of the original value using standard analytical techniques: products not meeting this requirement are liable for rejection.

Quality specifications:
- According to official government standards of country of origin.
MEAT AND FISH

CORNED BEEF

Stowage factor: 470 kg/m³
UNCCS Code: 211361

Type:
- Corned beef (EEC product code 16.02.50.31.1.25)

General description:
- The corned beef must not contain bones, ligaments, gristle, hair or any foreign substances or additives, particularly fattening agents other than tendon collagen. Moreover, it must not be finely minced and must be of acceptable odour and taste.

Typical quality specifications:
- Moisture: 60 % maximum
- Protein: 21% minimum
- The proportion of collagenous protein in relation to total protein content: 30 % maximum
- Fat: 15.5 % maximum
- Salt: 2% maximum; (50 ppm of max. total nitrate content expressed as sodium nitrate)
- Sugar: 1 % maximum
- Ash: 3.5 % maximum

Quality specifications:
- According to official government standards of country of origin.

CANNED MEAT

Stowage factor: 470 kg/m³
UNCCS Code: 211313

Type:
- Canned meat - meat cooked in its own juice.

General description:
- The meat must not contain bones, ligaments, gristle, hair or any foreign substances or additives, particularly fattening agents other than tendon collagen from meat. It must be free of disagreeable odours and tastes.

Typical quality specification:
- Meat contents: 90 % minimum
- Fat content: 30 % maximum
- Protein: 13.5% minimum
- Proportion of collagenous protein in relation to total protein content: 35 % maximum
- Salt content: 2 % maximum
- Sodium nitrate: 0.01% maximum
- Sodium phosphates: 0.5 % maximum
- Sugar content: 1 % maximum
- Ash content: 2.5 % maximum
- Must comply to official government standards of country of origin.
CANNED FISH

Stowage factor: 520 kg/m³
UNCCS Code: 212410

Fish type:
- Mackerel, sardines and herrings.

General description:
- Canned Mackerel in vegetable oil (EEC product code no.16.04.15.1.00)
- Canned Sardines in vegetable oil.
- Canned Herring in vegetable oil.

Typical quality specification:
- Moisture: 70 % maximum
- Contents of fish: 70 - 75 % of the declared contents
- Contents of oil: 10 - 15 % of the declared contents
- Fishwater: No water may be added to this product
- Contents of salt: 1 - 2 % in fish flesh

Quality specifications:
- According to official standards of country of origin.
FORTIFIED BISCUITS

Stowage factor: 3 m³/mt
UNCCS Code: 234300

Type:
- Biscuits

General description:
- Biscuits for food aid

Nutritional values per 100g:
- Energy: 370 kcal minimum
- Protein: 10 g minimum
- Carbohydrates: 70 g minimum
- Fat: 10 g minimum
- Calcium: 600 mg minimum
- Magnesium: 30 mg minimum
- Iron: 15 mg minimum
- phosphorous: 100 mg minimum
- Iodine: 110 μg minimum
- Folic acid: 5 μg minimum
- Vitamin B1: 60 μg minimum
- Vitamin B2: 30 μg minimum
- Vitamin B6: 0.1 mg minimum
- Niacin: 0.8 mg minimum
- Vitamin A: 500 I.U. minimum

Quality specification:
- According to official standards of country of origin.
HIGH PROTEIN BISCUITS

Stowage factor: 1.5 m³/MT
UNCCS Code: 239972

Type:
• High energy biscuits.

General description:
• High energy biscuits, especially developed for emergency supply.

Nutritional values per 100g:
• Energy: 450 kcal
• Protein: 15g maximum
• Carbohydrates: 56 g
• Fat: 21 g
• Calcium: 250 mg
• Magnesium: 30 mg
• Iron: 15 mg
• Phosphorous: 170 mg
• Iodine: 30 μg
• Folic acid: 5 μg
• Vitamin B1: 1.2 mg
• Vitamin B2: 1.3 mg
• Vitamin B6: 1.5 mg
• Niacin: 12 mg
• Vitamin A: 1500 I.U.
• Vitamin D: 90 I.U.
• Vitamin E: 5.0 mg

Quality specification:
• According to official standards of country of origin.
WHITE SUGAR

Stowage factor: 820 kg/m³
UNCCS Code: 235330

Type:
- White sugar.

General description:
- White crystal sugar according to EEC specifications, category 2. Fit for human consumption, sound, dry in crystals of uniform medium grain size and free running.

Typical quality specifications:

- Polarization: 99.7 degrees minimum
- Humidity/moisture: 0.06 % maximum
- Invert sugar: 0.04 % approx.
- Ash: 0.027 % maximum
  (Not more than 15 points⁴)
- Colour: Not more than 9 points
- Colour in solution: Not more than 6 points
- 45 units (ICUMSA) max.
- Points in total: 22 points maximum

1 point equals:
1) 0.0018 % ash
2) 0.5 units of colour type units
3) 7.5 attenuation index for colour in solution at 420 NM (ICUMSA)

Quality specification:
- According to official government standards of country of origin.
MISCELLANEOUS

TEA

- Stowage factor: 300 kg/m³
- UNCCS Code: 239131

Black tea:
- Dried and sound processed leaves, buds and tender stalks.

Composition:
- Water Extract: 33 % minimum
- Total Ash: 8 % maximum
- Ratio of soluble of total Ash: 45 % minimum
- Ash soluble in acid: 0.8% maximum
- Crude fibre: 15 % maximum
- Caffeine: 2.5% minimum
- Tannin: 10 % minimum

IODIZED SALT

- Stowage factor: 800 kg/m³
- UNCCS Code: 357811

Type:
- Iodized salt.

General description:
- Edible iodized salt, fit for human consumption.

Typical quality specification:
- Moisture content: 1.70 % maximum (dried at 140°C)
- Sodium chloride as NaCl: 99.16 % (on dry basis)
- Alkalinity as Na₂CO₃: 0.07 % maximum (on dry basis)
- Iodine as KI/IO₃: 15 ppm minimum (on dry basis) 50 ppm maximum (on dry basis)

Acid insoluble matter: 0.02 % maximum (on dry basis)
Barium (spot test): No trace

The salt shall be white and 10 g of salt in 100 ml of water shall give a colourless solution having neutral reaction.

Quality specification:
- According to official government standards of country of origin.
### MISCELLANEOUS

#### YEAST

<table>
<thead>
<tr>
<th>Stowage factor:</th>
<th>450 kg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNCCS Code:</td>
<td>239964</td>
</tr>
</tbody>
</table>

**Type:**
- Dried instant yeast.

**General description:**
- Dried instant yeast, fit for human consumption.

**Typical quality specification:**
- Dry matter: 95 %
- Crude protein: 51 % on dry matter
- Total carbohydrate calculated as % dextrose on dry matter: 38 %
- Nitrogen: 8.2 % on dry matter
- Crudes fat: 6 %
- Ash: 6 %
- Rehydrated agent: 1.5 %
- Chlorides as NaCl: 0.5 %

**Quality specification:**
- According to official government standards of country of origin.

#### FOOD BASKET

<table>
<thead>
<tr>
<th>Stowage factor:</th>
<th>20 kg/packs</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNCCS Code:</td>
<td>239975</td>
</tr>
</tbody>
</table>

**Type:**
- Food parcel of family size to meet the basic nutritional needs.

**Contents of kit:**

<table>
<thead>
<tr>
<th>Product</th>
<th>UNCCS Code</th>
<th>Packaging size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat flour</td>
<td>231110</td>
<td>6 x 1 kg</td>
</tr>
<tr>
<td>Rice</td>
<td>011400</td>
<td>3 x 1 kg</td>
</tr>
<tr>
<td>Pasta</td>
<td>237100</td>
<td>4 x 500 g</td>
</tr>
<tr>
<td>Dried red beans</td>
<td>012210</td>
<td>3 x 1 kg</td>
</tr>
<tr>
<td>Rapeseed oil</td>
<td>216561</td>
<td>2 x 1 litre</td>
</tr>
<tr>
<td>Sugar</td>
<td>235330</td>
<td>2 x 1 kg</td>
</tr>
<tr>
<td>Corned beef</td>
<td>211362</td>
<td>6 x 340 g</td>
</tr>
</tbody>
</table>

**Packaging:**
- Packing size for each product must meet the specifications provided earlier. The parcel must be packed in a heavy duty carton.

**Quality specifications:**
- Each of the above products should conform to quality specifications provided under the corresponding technical bulletin in this catalogue.

**Note:** Food parcels delivered from WFP are always 20 kg net and contain the listed types of products. Other items like DSM or sugar is delivered beside and "normally" in 25 kg bags. In addition to the food parcel some of the items are:
- Meat
- Milk powder
- Feta cheese (depending on the place of the disaster)
FUMIGATION SHEET

Stowage factor: 50 kg/sheet
UNCCS Code: 485252

Type:
- Fumigation sheeting, water and gas proof.

Size:
- Approx 15 x 15 m

Texture:
- Small textile tape of HDPE with 14 x 17 thread/inch, 100 g/m²
- One side covered with LDPE 30 g/m², 3 % UV-stabilised.
- Other side covered with LDPE 40 g/m² and a 5 layer sandwich foil 60 g/m² for gas tightness.
- Stable to light

Weight:
- Minimum 230 g/m²
- Tear strength: Warp: Approx. 90 kg
- Weft: Approx. 92 kg

Resistance:
- Temperature resistant from -30°C to +8°C

Packaging:
- Each sheet packed in a strong bag of woven PE.

Accessories:
- Adhesive tape
- Pieces of sheet
- Good adhesive tape for repairs
PACKAGING AND STORAGE: FUMIGANTS

**ALUMINIUM PHOSPHIDE**

*Stowage factor:*
*UNCCS Code:* 345837

**Area of use:**
- For fumigation of cereals and pulses.

**Contents:**
- Aluminium Phosphide in tablets of approx 5 g.

**Packaging:**
- Packed in resealable tins or flasks of 1 kg.

---

**MAGNESIUM PHOSPHIDE**

*UNCCS Code:* 345921

**Area of use:**
- For fumigation of cereals and pulses.

**Contents:**
- Magnesium Phosphide in tablets of approx 5 g.

**Packaging:**
- Packed in resealable tins or flasks of 1 kg.

---

**METHYL BROMIDE**

*UNCCS Code:* 342423

**Area of use:**
- For fumigation of cereals and pulses.

**Contents:**
- Methyl bromide.

**Packaging:**
- Packed in 25 litre gas cylinder.
Type:
- Equipment used during fumigation of food products.

GAS DETECTOR:
- UNCCS Code: 482627
- Type: Detector with detector tubes for Phosphine or methyl bromide.
- Detecting range: 0.01 - 10,000 ppm minimum
- Features:
  - Rechargeable batteries
  - Battery charger

GAS MASK:
- UNCCS Code: 369739
- Type: Full-face mask with chin mounted cannister furnished.
- Filters:
  - Approved cannister for phosphine
  - Approved cannister for methyl bromide
- Features:
  - High-impact plastic face piece
  - Plastic carrying case

HALIDE DETECTOR LAMP:
- UNCCS Code: 482620
- Type: Lamp to check for methyl bromide leakage.

OVERALLS:
- UNCCS Code: 282313
- Area of use: Protective overalls for complete body protection.
- Material: Dark blue cotton.

MEASURING TAPE:
- UNCCS Code: 482351
- Material: Tape measure of steel
- Features:
  - Spring rewind
  - 2m / 6 feet long
  - Calibrated in cm/inches

Note: Detector and detector tubes must be from the same manufacturer.
PROCESSING EQUIPMENT

HAMMER MILLS

<table>
<thead>
<tr>
<th>Shipping volume:</th>
<th>1.5 m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stowage factor:</td>
<td>550 kg</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>441852</td>
</tr>
</tbody>
</table>

Type:
- Hammer mill of rugged construction, milling grain for human consumption.

Area of use:
- Suitable for maize, wheat, sorghum and other cereals.

Capacity:
- Approx 80 kg/h of wheat flour of bread quality using screen size 0.7 mm.

Screen:
- Size of masks: From 0.7 to 1.5 mm.

Drive:
- Diesel driven with hand start unit, approx 7 hp.

Material:
- Milling house of heavy steel plates, painted steel frame.

Accessories:
- Spare parts for 2 years of operation.
- Usage and maintenance manual.

HAND MILLS

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>25 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.05 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>441851</td>
</tr>
</tbody>
</table>

Type:
- Hand-operated grinding mill with grinding plates, milling grain for human consumption.

Area of use:
- Suitable for maize, wheat, sorghum and other cereals.

Capacity:
- Approx 10 kg/h of wheat flour of bread quality.

Grinding plates:
- Size: Approx. 150 mm in diameter.

Material:
- Steel or stone plates.

Material:
- Milling housing of rugged construction, fabricated of steel or steel casting.

Accessories:
PACKAGING

JUTE BAGS
Stowage factor: UNCCS Code: 292264

Type:
- Ghanny bags.
- Hessian bags (min. 500 g/m²).

Area of use:
- Sugar, coffee and pulses.

General description:
- New jute bags of 50 kg net content, weighing min. 500 g and max. 700 g

POLYPROPYLENE BAGS
UNCCS Code: 368191

Type:
- Polypropylene bags (min. 120g/m²).

Area of use:
- Sugar, salt, tea and malt.

General description:
- New, sound, woven polypropylene bags stitched at mouth and of up to 20/50 kgs content net with a minimum tare of 110/120 grams. Fabric to contain an inhibitor to resist ultraviolet absorption along with an anti-skid coating.

JUTE/POLYPROPYLENE BAGS
UNCCS Code: 368192

Type:
- Jute/polypropylene bags (min. 300g/m²).

Area of use:
- Grains, seeds, potatoes, sugar and flour.

General description:
- Woven as cloth with jute in the porter and polypropylene yarns in the shot - 60 x 100 cm - minimum 335 gr weight, of 50 kg content each. All bags to be clean, dry, undamaged and firmly sewn.

Quality specifications:
- According to official government standard of country of origin.

Emergency Relief Items - May 2000
MULTIPLE PLY PAPER
BAGS
Stowage factor:  
UNCCS Code: 321550

Type:
- Multiple ply paper bags.

Area of use:
- Flour, sugar, grains and milk powder.

General description:
- Waterproof multiple ply paper bags (4/5 ply) with a separate inner polyethylene bag of 8/100 to 12/100 thickness, fit for export of a net content of 25 kgs net.

PLASTIC CONTAINERS

UNCCS Code: 368968

Type:

- Plastic containers:
  - Plastic jars.
  - PET bottles.

Area of use:
- For storage of oils and edible foods.

General description:
- 4 or 5 litre plastic container, suitable for foodstuffs. They must have stoppers fitted with safety devices and be hermetically sealed weighing minimum 160 gr.
Chapter 5 SANITATION AND HYGIENE ITEMS
NEEDS AND RECOMMENDED RESPONSES

General

When disaster occurs, one of the major concerns is to save the lives of affected people, protect their health and help them return to a normal way of life. Since health protection cannot be effective without the creation of a healthy environment, it is clear that one of the primary tasks in disaster relief is the immediate provision of adequate sanitary facilities. In order to achieve this task, excreta and other waste have to be properly disposed of, food and milk treated and general disinfection and disinfestation measures taken. This includes the rapid control of flies, mosquitoes and other insects, rats and other rodent pests. All sanitation measures must be closely coordinated with those for water supply and health services.

Recommendations

The priority activities are:

- to prevent the spread of disease and promote the establishment of a safe environment.
- to provide the means for reasonable personal hygiene.

For support of these priority areas the necessary equipment and supplies for emergency sanitation work have been identified, and specifications for these have been compiled (see technical specifications). In order to estimate the equipment needed and ensure efficient use of the sanitation items, the following data based on past field experience should be considered.

a) Refuse containers
- Metallic with tight lid.
- Capacity: 50-100 litres, one for every 25-50 persons.

b) Latrine accommodation
- 5-6 seats per 100 persons.
- Distance from tents 30-50 m.

c) Latrines
- Shallow trench latrine:
  Width: 30 cm or as narrow as it can be dug.
  Depth: 90 - 150 cm.
  Length: 3 - 3.5 meters.

- Deep trench latrine:
  Width: 75 - 90 cm.
  Depth: 1.8-2.4 meters.
  Length: 3 - 3.5 meters.

- Bore hole latrine:
  Diameter: 40 cm.
  Depth: 5 - 6 meters.
  1 for every 20 persons.

d) Refuse disposal
- Trench:
  Width: 1.5 meters.
  Depth: 2 meters.
  Length: 1 meter per 200 persons, so that trench is filled in one week.
NEEDS AND RECOMMENDED RESPONSES

Time allowed for decomposition: 4 - 6 months

e) Washing
   - Bench, double sided, 3 meters long, 2 for every 100 persons

f) Food sanitation
   - Disinfecting the eating utensils
   - Boiling water for 5 minutes
   - Chlorine solution, 100mg/litre for 30 seconds

g) Vector control
   - Insecticides
   - Rodenticides

List of sanitation equipment and supplies

The tentative list of sanitation equipment and supplies required to satisfy the needs of 10,000 people is provided below for guidance. In certain countries or localities additional items may be needed and others may be deemed necessary.

Waste water, sewage and excreta disposal

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile mud pump</td>
<td>2 - 5</td>
</tr>
<tr>
<td>Sludge pump (non-clogging diaphragm type)</td>
<td>2 - 5</td>
</tr>
<tr>
<td>Sludge tank trucks, capacity 7 m³</td>
<td>5</td>
</tr>
<tr>
<td>Augers (earth type)</td>
<td>5</td>
</tr>
<tr>
<td>Pipes (plastic) and fittings</td>
<td></td>
</tr>
<tr>
<td>Cement and reinforcing bars</td>
<td></td>
</tr>
<tr>
<td>Cresol-base disinfection material</td>
<td>50 - 100 barrels</td>
</tr>
<tr>
<td>Timber, boards, nails etc.</td>
<td></td>
</tr>
<tr>
<td>Repair kit</td>
<td></td>
</tr>
</tbody>
</table>

Vector and vermin control

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand-pressure sprayers 20-30 litres</td>
<td>50</td>
</tr>
<tr>
<td>Thermal foggers</td>
<td>20</td>
</tr>
<tr>
<td>Insecticides</td>
<td></td>
</tr>
<tr>
<td>Rodenticides</td>
<td>1 - 2 kg</td>
</tr>
<tr>
<td>Protective gear</td>
<td></td>
</tr>
<tr>
<td>Rodent traps</td>
<td>100</td>
</tr>
<tr>
<td>Screen for fly control</td>
<td>10 rolls</td>
</tr>
</tbody>
</table>

Sanitarian's kit

<table>
<thead>
<tr>
<th>Item</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparator for chlorine residual and pH</td>
<td></td>
</tr>
<tr>
<td>Thermometer, 0-100°C</td>
<td></td>
</tr>
<tr>
<td>Tape measure, 30 meters (cloth or metal)</td>
<td></td>
</tr>
<tr>
<td>Flashlight (pocket type)</td>
<td></td>
</tr>
<tr>
<td>Plums rod</td>
<td></td>
</tr>
<tr>
<td>Hand level</td>
<td></td>
</tr>
<tr>
<td>Collection vials</td>
<td></td>
</tr>
<tr>
<td>Mosquito larval dipper</td>
<td></td>
</tr>
<tr>
<td>Magnifying glass</td>
<td></td>
</tr>
<tr>
<td>Felt pen</td>
<td></td>
</tr>
<tr>
<td>Safety Shoes</td>
<td></td>
</tr>
<tr>
<td>Mask</td>
<td></td>
</tr>
<tr>
<td>Gloves</td>
<td></td>
</tr>
</tbody>
</table>
COLLECTION BINS, PLASTIC

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>according to size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>42 x 43 x 63 cms*</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>369428</td>
</tr>
</tbody>
</table>

*0.2 m³ for 10 bins

Area of use:
- Wash basin: personal hygiene.
- Wash basin: utensils, clothes.
- Small scale transport and storage of food, water and waste.
- Garbage can.

Description:
- Heavy duty plastic vats, multi-purpose, with lid built-in.

Specifications:
Size:
- 10 litres, 50 litres, 100 litres.

Material:
- Heavy duty structural foam Polyethylene.
- UV-resistant.
- Acid-, alkali- and corrosion resistant.
- Tasteless, odourless, and non-toxic.

Design:
- Must be stackable and preferably of rectangular / square shape with lid built-in

Features:
- For 100 litre bins: 2 built-in handles for ease of transportation.

Quality Requirements:
- Conforms to International/National Standards.
REFUSE COLLECTION AND DISPOSAL

BAGS, PLASTIC

Shipping weight: 10 KG/ROLL
Shipping volume: 25 ROLLS/m³
UNCCS Code: 368114

Area of use:
- For use as waste receptacle liners or alone for collection of clothes or waste materials.

Description:
- Disposable black plastic bags.

Specifications:
- Bag size: (capacity) Approx. 100 litres.
- Thickness: Approx. 0.05 mm
- Length: Approx. 100 cm

Material:
- Polyethylene

Packaging:
- Rolled in coils of approx. 100 pieces.

Quality Requirements:
- Conforms to International/National Standards.
REFUSE COLLECTION AND DISPOSAL

BODY BAGS

Shipping weight: 4 kg/roll
Shipping volume: 30 rolls m³
UNCCS Code: 388310

Area of use:
- Used in mortuaries and morgues to store and preserve cadavers. Can be used to remove a contagious or contaminated body from institution.

Description:
- Non transparent body bag with full length zipper closure.

Technical Specifications:
- Bag size: Length: Approx. 230 cms
  Width: Approx. 90 cms
- Material:
  Heavy vinyl or biodegradeable material with easy access.

Packaging:
- Rolled in coils of 10 pieces

Quality Requirements:
- Conforms to International/National Standards.
DESCRIPTION:
- Wheelbarrow of rugged construction for long life under demanding conditions.

TECHNICAL SPECIFICATIONS:
- Capacity: Approx 130 litres.
- Body: Length: approx. 100 cms.
  Width: approx. 70 cms
  Depth: approx. 50 cms.
- Wheel: Pneumatic wheel (approx) - 40 x 10 cms.

MATERIAL:
- Painted or galvanized metal body welded to tubular frame.
- Plastic hand grips.
- Constructed from 18 gauge steel (approx.).

DESIGN:
- The construction must be a knock down type for ease of transportation.

QUALITY REQUIREMENTS:
- Conforms to International/National Standards.
SLUDGE PUMP

Shipping weight: 5.50 kg
Shipping volume: 2.5 m³
UNCCS Code: 432296

Area of use:
• Used for handling fluids with solid particle contents.

Description:
• 4" (100 mm) x 4 (100 mm) self priming centrifugal pump coupled to a diesel engine and mounted on a 2 or 4 wheel site trolley.

Technical Specifications:
• Materials: Corrosion resistant cast iron and stainless steel.
• Delivery Head: Unto 20 meters.
• Discharge: Min. 50 m³/h.
• Life span: Minimum 5 years.
• Suction lift: Unto 7 meters.
• Engine: 4 stroke diesel engine, approx. 15 hp, air cooled Mechanical governor.
• Speed: 2500 - 3000 rpm.
• Connections: Suction Ø: 4 inches.
              Discharge Ø: 4 inches.

Operating Conditions:
• Water Temperature: 4 - 80° C.
• Ambient Temperature: Unto 50° C.
• Altitude: Unto 1000 m AMSL.

Pump Features:
• Corrosion resistant cast iron construction with abrasion resistant impeller and stainless steel shaft.
• Threaded (BSPT, or NPT,) or Quick Release type coupling connections.
• Mechanical seal suitable for severe duty such as Tungsten Carbide/Tungsten Carbide type.
• able to handle solids tin suspension (up to 50 mm).
• Pump/driver, coupled unit (up to 50 mm ø).
• Durable paint finish.

Engine Features:
• 4 stroke, air cooled, naturally aspirating.
• Multi - cylinder.
• Variable speed control.
• Up to 4 hr. hours mounted fuel tank with fuel agglomerator.
• 12 volt key type electric start, battery charging and mounted battery pack (dry charged for shipping) plus emergency manual start.
• Replaceable element air and oil filters.
SLUDGE PUMP, Contd..

Shipping weight: 550 kg
Shipping volume: 2.5 m³
UNCCS Code: 432296

Accessories:
- Operators, maintenance and spare parts manuals for pump and engines (in English).
- Tool kit for routine maintenance.
- Spare parts for 2000 hours operation.
- Motor starting device, manual.
- 25 m x 102 mm PVC suction hose complete with couplings to match pump.
- 50 m x 102 mm lay flat PVC discharge hose complete with couplings to match pump.

Packing:
- Each pump set complete with accessories to be packed in a strong wooden case suitable for sea/air freight or storage in dry conditions for up to six months. One packing list in strong plastic bag to be attached to outside of case and one packing list to be placed inside box.

Quality Requirements:
- Conforms to International/National Standards.
DIGGING TOOL KIT

Shipping weight: 
Shipping volume: 
UNCCS Code: 

Use:
- Hand operated tools for digging wells etc..

SPADE:  UNCCS Code: 429211
- Type: Square point with D-handle.
- Blade: 
  - High quality carbon steel blade.
  - Sharp cutting edge.
  - Blade approx. 300 x 180 mm.
- Handle: 
  - Fitted with ash handle.
  - Approx. length: 85 cms.

SHOVEL:  UNCCS Code: 429215
- Type: Round point with long straight ash handle.
- Blade: 
  - High quality carbon steel blade.
  - Approx. blade length: 320 mm.
  - Approx. blade width: 260 mm.
- Length: 
  - Approx. 160 cms.

PICK AXE:  UNCCS Code: 429223
- Type: Point/chisel type pick, head forged.
- Head: 
  - High quality carbon steel with oval eye.
  - Head length approx 550 mm.
  - Chisel width approx 50 mm.
  - Head weight approx 2.0 kg.
- Handle: 
  - Separate prefitted wooden handle.
  - Handle length approx 900 mm.

Quality Requirements: 
- Conforms to International/National Standards.
SQUATTING PLATES

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>4 kg/units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>1.2 x 0.8 x 1.5 m/pallet</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>369393</td>
</tr>
</tbody>
</table>

Use:
- For the disposal of excreta; to be fitted over hand dug pit.

Description:
- Pit latrine squatting plate.

Technical Specifications:
Material:
- Thermoplastic (Polypropylene).

Dimensions:
- Approx. 800 x 600 x 60 mm (50 units per pallet).

Weight:
- Approx. 3.5 kg each.

Features:
- Resistant to commonly used chemicals, urine and faeces.
- Easy to clean.
- Removable cover with handle.
- Feet placement areas designed to prevent slipping.

Quality Requirements:
- Conforms to International/National Standards.
EXCETRA COLLECTION AND DISPOSAL

WIRE GALVANIZED

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>5 kg/coil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.1 m³/coil</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>429653</td>
</tr>
</tbody>
</table>

Description:
- General purpose utility wire.

Technical Specifications:
  Material:
  - Galvanized mild steel wire.
  - Dimension: Diameter: 1.5 to 2 mm.
  - Weight: Approx. 1 kg/12 m.
  - Coil weight: Approx. 5 kg.

Quality Requirements:
- Conforms to International/National Standards.

CEMENT

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>50 kg/bag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.05 m³/bg</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>374400</td>
</tr>
</tbody>
</table>

Use:
- For making squatting slabs and other on-site reinforced concrete works.

Type:
- Portland cement.

Quality class:
- 400 to BS 12 or equivalent.

Packaging:
- 50 kg / pack
- Plastic or six-ply kraft paper bags, with one bitumen or plastic layer.
- Stitched both sides.

Quality Requirements:
- Conforms to International/National Standards.
STEEL REINFORCING RODS

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping weight</td>
<td>1000 kg</td>
</tr>
<tr>
<td>Shipping volume</td>
<td>0.5 m³ per bdl (1mt)*</td>
</tr>
<tr>
<td>UNCCS Code</td>
<td>412460</td>
</tr>
</tbody>
</table>

* approximately

Use:
- For reinforcement of concrete.

Type:
- Bars of mild steel (plain or ribbed) for easy bending.

Dimensions:
- Diameter: 6 mm.
- Length: 6 mtr.

Packing:
- Supplied in bundles of 1 to 2 MT, securely strapped with binding wire.

Quality Requirements:
- Conforms to International/National Standards.
HAND TOOLS, CARPENTRY

Shipping weight: [value]
Shipping volume: [value]
UNCCS Code: 429465

Contents of carpenter's kit:

- Hand drill: Double-pinion, 1/4" (6 mm) capacity
- Twist drill bit: HSS: 1/16" (1.6 mm) to 1/4" (6 mm), set of 13
- Hand saw: Cross-cut 500 mm 20 points/50 mm
- Coping saw: Throat depth 120 mm, blade 165 mm
- Blades: For coping-saw 160 mm set of 12
- Hand brace: 8-pt open ratchet 250 mm sweep
- Clamp: 76 mm opening
- Clamp: 100 mm opening
- File: Half-round machinists' bastard cut 250 mm
- Handle: File handle 100 mm length.
- Claw Hammer: Head of 450 g
- Paint brush: 35 mm wide
- Pliers: Combination type, 200 mm long and 30 mm capacity.
- Rule: 300 mm/12" (30.5 cm), graded in mm and inches steel
- Screwdriver: 250 mm x 9.5 mm
- Square: Carpenter's try/mitre 200 x 200 mm
- Vice: Vice screw jaw for woodworking, continuous, width 175 mm
- Glue: Liquid waterproof, 480 ml
- Nails: Roofing 25 mm long, wire 2.5 mm, non-toxic, 1 kg
- Nails: Woodworking flat-head assorted sizes, 1 kg
- Sandpaper: Assorted grains, pack of 12 sheets
- Wood screws: 19 mm # 4 pack of 200
19 mm # 6 pack of 200
32 mm # 8 pack of 200
38 mm # 10 pack of 200

Quality Requirements:
- Conforms to International/National Standards.
### PERSONAL HYGIENE

#### TOILET SOAP

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping weight</td>
<td>750 kg/pallet</td>
</tr>
<tr>
<td>Shipping volume</td>
<td>80x120x250 cms</td>
</tr>
<tr>
<td>UNCCS Code</td>
<td>362211</td>
</tr>
</tbody>
</table>

**Type:**
- Soap in bars.

**Weight:**
- Approx. 200 g/bar.

**Packaging:**
- 30 cartons per pallet, approx. 120 soaps (200 g each) per carton.

**Properties:**
- Fatty acid: 70% min.
- Moisture: 20% max.
- NaOH content: 0.2% max.
- NaCl content: 0.5% max.
- No contents of mercury.

**Quality Requirements:**
- Conforms to International/National Standards.

#### TOILET PAPER

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping weight</td>
<td>180 kg/pallet</td>
</tr>
<tr>
<td>Shipping volume</td>
<td>2.1 m³/pallet</td>
</tr>
<tr>
<td>UNCCS Code</td>
<td>321311</td>
</tr>
</tbody>
</table>

**Type:**
- 100% recycled paper, double sheeted.

**Size:**
- Approx 300 sheets/roll.
- Width: Approx. 100 mm.
- Weight: Approx. 2 x 20 g/m²

**Packaging:**
- 10 rolls/pack.
- Approx. 1100 rolls/pallet.

**Quality Requirements:**
- Conforms to International/National Standards.
PERSONAL HYGIENE

SHAMPOO

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>approx. 760/kg*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>120x80x190 cms*</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>362323</td>
</tr>
</tbody>
</table>

* per pallet

Type:
- General use shampoo.

Packaging:
- Supplied in unbreakable container.
- Approx. 12 x 1 ltr bottles per carton.
- Approx. 60 carton per pallet.

Properties:
- Easy-lathering shampoo formulated for normal hair.
- To clean hair and scalp.

Quality Requirements:
- Conforms to International/National Standards.

SHAMPOO, MEDICATED

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>1000 kg*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>100x120x150 cms*</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>362328</td>
</tr>
</tbody>
</table>

*approximately per pallet

Type:
- Medicated shampoo.

Area of use:
- For the prevention and treatment of scabies/fleas.

Packaging:
- Supplied in unbreakable container.
- Approx. 52 x 250 ml bottles per carton.
- 36 cartons per pallet.

Quality Requirements:
- Conforms to International/National Standards.
PERSONAL HYGIENE

HYGIENE KIT

Shipping weight:
Shipping volume:
UNCCS Code: 362350

Contents of hygienic kit:

Washing powder:
• 2 bags of 1 kg/bag.

Toothpaste:
• 4 tubes of 75 ml/tube.

Toothbrush:
• 10 pieces (in cellophane).

Toilet paper:
• 3 packs of 4 rolls of 250 sheets (eco natural).

Sanitary towel:
• 4 bags of 20/bag.

Razor:
• 1 pack of 5/pack (safety, disposable).

Soap:
• 6 pieces of 100g/bar (individually packed).

Shampoo:
• 2 bottles of 500 ml/bottle.

Comb:
• 1 piece (plastic).
WASHING AND DISINFECTON

WASH BASINS, PLASTIC

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping weight</td>
<td>approx. 1.5 kg</td>
</tr>
<tr>
<td>Shipping volume</td>
<td>approx. 0.04 m³</td>
</tr>
<tr>
<td>UNCCS Code</td>
<td>369312</td>
</tr>
</tbody>
</table>

Type:
- Heavy duty plastic basin, multi-purpose.
- Rectangular shape.

Technical Specifications:
- Material: High density polyethylene (HDPE).
- Capacity: Approx. 40 litres.
- Thickness: Approx. 0.5 mm.
- Dimensions: Approx. height: 30 cm.
- Features: 2 built-in handles, 1 at each end.

Quality Requirements:
- Conforms to International/National Standards.

WASH BASINS, METAL

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping weight</td>
<td>approx. 2.5 kg</td>
</tr>
<tr>
<td>Shipping volume</td>
<td>approx. 0.05 m³</td>
</tr>
<tr>
<td>UNCCS Code</td>
<td>429113</td>
</tr>
</tbody>
</table>

Type:
- Heavy duty steel basin, multi-purpose.
- Round shape.

Technical Specifications:
- Material: Galvanized steel, rust-proof.
- Capacity: Approx. 30 litres.
- Thickness: Approx. 0.5 mm.
- Dimensions: Approx. top diameter: 50 cm.
  Approx. height: 25 cm.

Features:
- 2 built-in handles, 1 at each end.

Quality Requirements:
- Conforms to International/National Standards.
WASHING AND DISINFECTION

LAUNDRY SOAP

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>12 kg/100 carton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>12 x 42 x 28 cms</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>362241</td>
</tr>
</tbody>
</table>

Use:
- For hand washing clothes.

Type:
- Laundry soap.

Properties:
- Fatty acids: min 70.0 %.
- Moisture: max 23.0 %.
- NaOH content: max 0.1 %.
- NaCl content: max 0.6 %.
- No mercury content.

Packaging:
- 100 bars of 125 g, packed in a corrugated carton box.

Features:
- Must not be harmful for the skin.

WASHING TUBS, PLASTIC

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>approx. 5 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.1 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>369427</td>
</tr>
</tbody>
</table>

Use:
- Mainly for washing utensils and clothes
- For indoor or outdoor use

Type:
- Small plastic vessels for multipurpose washing

Design:
- Double vessel, each of a capacity of approx. 50 litres

Material:
- Polyethylene or polypropylene, UV-resistant, moulded in one piece

Features:
- Durable construction
- Good insulation ability
- Draw-off valve
CALCIUM HYPOCHLORITE

Shipping weight: 16,000 kg/20' cont.
Shipping volume: 350 drums/20' cont.
UNCCS Code: 356465

Use:
- Concentrated cleaner, disinfectant and virucide, suitable for use on all hard surfaces, floors, walls, clothes, etc.
- Effective against HIV Virus (AIDS), especially on surfaces where body fluids are present.

Description:
- Granular, tablet or powder form.
- Packed in 1 kg or 5 kg plastic containers.

Technical Specifications:
Minimum 60% available chlorine.

Dose-available chlorine: Amount (mg) Treated Water (litres)
- 5mg/litre
  - 85
  - 167
  - 1670
  - 8680
- 10
- 20
- 200
- 1000

Exposure time:
- Approx. 30 minutes.

Stability:
- Stable for minimum 3 years, unopened.

Features:
- Non-toxic to humans.
- Rapidly dissolving.
- Added directly to water.

Packing:
Drums of 25/50kg.

Accessories:
- User guide.

Quality Requirements:
- Conforms to International/National Standards.
CHLORAMINE

Shipping weight: 
Shipping volume: 
UNCCS Code: 356493

Use:
• Disinfection of floors, surfaces and medical instruments.

Description:
• Chlorine-releasing compound disinfectant.

Packaging:
• Powder or tablets of 250 mg, 500 mg or 1 g, with a slight odour of chlorine, packed in strong export-worthy cartons.

Properties:
• Contains approx. 25 % active chlorine.
• Can be used as antiseptic.
• Used for the disinfection of drinking water.

Quality Requirements:
• Conforms to International/National Standards.
PROPONUR

Shipping weight:  
Shipping volume:  
UNCCS Code: 345834

Use:
- For the control of mosquitoes, flies, cockroaches, bugs, ticks, fleas, etc.
- Suitable for the control of numerous household and public health pests.

Formulation:
- Emulsifiable concentrate.
- Wettable powder.
- Hot fogging concentrate.
- Cockroach bait.
- Fly bait.
- Dust.
- Oil based spray.

Toxicity (1% dust):
- LD50, oral, rat approx. 100 mg/kg.
- LD50, dermal, rat above 4000 mg/kg.

Packaging:
- Varying depending on bait form. Typically 1 or 25 kg bags or 25, 50 or 200 litre fibre drums.
- Packed in tightly closed containers with detailed instructions of use and handling.

Features:
- Propoxur is a carbamate insecticide with a broad spectrum of activity.
- Contact and stomach poison action.
- Rapid knockdown and long residual action.

Quality Requirements:
- Conforms to International/National Standards.
VECTOR AND VERMIN CONTROL: INSECTICIDES

MALATHION

Shipping weight:  
Shipping volume:  
UNCCS Code: 345862

Use:
- Insecticide used in locust, vector and crop control and as household pest management and protection of stored grain. Also used as a ULV spray against mosquitoes and as a dust for flea control.

Formulation:
- Emulsifiable concentrate.
- Wettable powder.
- Dust.

Toxicity (approx.):
- LD50, acute oral, rat approx. 2000 mg/kg.
- LD50, dermal, rat above 3000 mg/kg.

Packaging:
- Emuls. concentrate: - In 1 or 25 litre bottles.
  - 200 litre drum.
- Wettable powder: - 10, 25 or 50 kg bags.
- Each container to be labelled with information containing the content of the product as well as usage and storage instructions.

Features:
- Broad spectrum organophosphate insecticide with non- bioaccumulating properties.
- Low toxicity to mammals.

Quality Requirements:
- Conforms to International/National Standards.
FENITROTHION

Shipping weight: 
Shipping volume: 
UNCCS Code: 345821

Use:
• Insecticide used in locust, vector and crop control and as household pest management and protection of stored grain.
• To be used with a sprayer or thermal fogger. Mainly used when there is resistance to Malathion.

Formulation:
• Wettable powder.
• Emulsifiable concentrate.

Toxicity (approx.):
• LD50, acute oral, rat 700 mg/kg.
• LD50, dermal, rat 1100 mg/kg.

Packaging:
• Emuls. concentrate: - 1 or 25 litre bottle
  - 200 litre drum
• Wettable powder: - 1 or 25 kg bags
  - 30 kg fibre drums

Each container labelled with information concerning the content of the product as well as usage and storage instructions.

Features:
• Organophosphate insecticide with fast knockdown and kill time.
• Broad spectrum, effective against a wide range of flying and crawling insects.

Quality Requirements:
• Conforms to international/National Standards.
Use:
- Used mainly as a residual insecticide and larvicide for outdoor pest control.

Formulation:
- Emulsifiable concentrate
- Wettable powder
- Dustable powder
- Hot fogging concentrate
- Granules.

Toxicity:
- LD50, oral, rat 190-330 mg/kg
- LD50, dermal, rat 330-500 mg/kg

Packaging:
- Depending on bait form, but typically:
  - Emuls. concentrate: - 1 or 25 litre bottles
  - 200 litre drums
  - Wettable concentrate: - 1 or 25 kg bags
  - 30 kg fibre drums

Features:
- Organophosphate insecticide, stable on alkaline surfaces.
- Effective larvicide for treatment of ditches, ponds and swamp areas.
- Compatible with other pesticides, except those of highly alkaline nature.

Quality Requirements:
- Conforms to international/National Standards.
VECTOR AND VERMIN CONTROL: INSECTICIDES

PERMETHRIN

Shipping weight:  
Shipping volume:  
UNCCS Code: 345886

Use:
- Pest control, mosquito net impregnation.
- Very efficient for mass and/or individual delousing

Formulation:
- Wettable powder.
- Emulsifiable concentrate.

Toxicity:
- LD50, acute oral, rat approx. 5000 mg/kg
- LD50, dermal, rat approx. 4000 mg/kg

Packaging:
- Emuls. concentrate: - 1 or 25 litre bottles  
  - 5, 25 and 200 litre drums  
- Wettable powder:  - 1 or 25 kg bags  
  - 30 kg drums  
- All packaging containing information on use and handling.

Features:
- Fast acting broad spectrum synthetic pyrethroids insecticide.
- Multi purpose insecticide suitable for use as a thermal fog.
- Contact and stomach action, with slight repellent action.

Quality Requirements:
- Conforms to International/National Standards.
VECTOR AND VERMIN CONTROL: INSECTICIDES

**BROMADIOLONE**

Shipping weight:  
Shipping volume:  
UNCCS Code: 345932

**Use:**  
- For use against mice and rats, in and outdoors

**Formulation:**  
- All-weather cakes or waxed blocks; Solution

**Toxicity:**  
- LD50, acute oral, rat 1.1 mg/kg

**Mode of action:**  
- Anticoagulant

**Packaging:**  
- 5 to 20 kg plastic pails  
- Approx. 0.5 kg waxed blocks  
- 25, 30 or 50 litre drums

**Feature:**  
- Kills warfarin resistant rodents

---

**WARFARIN**

UNCCS Code: 345938

**Use:**  
For use against mice and rats, in-and outdoor

- **Bait form:** Meal bait packaged in place packs, granules
- **Toxicity:** LD50, acute oral, rat 15 - 320 mg/kg
- **Mode of action:** Anticoagulant

**Packaging:**  
- Approx 10 kg bulk pails  
- Cartons of 50 to 100 packs  
- 25 - 30 kg drums  
- 1, 5 or 25 kg bags

**Feature:**  
- Low hazard to humans
VECTOR AND VERMIN CONTROL: INSECTICIDES

KNAPSACK TYPE, MANUAL

Shipping weight: 5.5 kg
Shipping volume: 0.02 m³
UNCCS Code: 441611

Use:
- For application of all types of cleaning solutions, pesticides and agro-chemical formulas including herbicides, insecticides and fungicides.
- Designed for portability and easy operation.

Type:
- Knapsack manual sprayer of rugged construction.

Technical Specifications:
- Capacity: 15 - 20 litres
- Pressure: To withstand minimum 5 bar.

Material:
- Stainless steel or high density polyethylene.
- UV and chemical resistant.

Pump:
- Hand-operated pump for both left and right.

Hose:
- Approx 0.5 meter of PP/Nitrile.

Spray nozzle:
- One single head nozzle.
- Adjustable from straight stream to cone spray pattern.

Features:
- Safety valve built-in.
- Adjustable carrying straps and backrest.
- Large filling opening with strainer.

Accessories:
- Set of spare joints.

Quality Requirements:
- Conforms to International/National Standards.
HANDHELD TYPE, MANUAL

Shipping weight: 4 kg
Shipping volume: 0.04 m³
UNCCS Code: 441673

Use:
- Compressed air sprayer for application of chemical solutions and treatment of exposed surfaces.

Type:
- Handheld manual sprayer.

Technical Specifications:
- Fill capacity: Approx. 10 ltrs.
- Operating pressure: Approx. 3 bars.
- Tank Dimensions: Diameter: approx. 20cms.
- Height: approx. 60cms.

Features:
- Relief valve for safety.
- Packed in single seaworthy cardboard box.

Quality Requirements:
- Conforms to International/National Standards.
FOG GENERATORS

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>15 kg/unit</th>
</tr>
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<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.1 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>441660</td>
</tr>
</tbody>
</table>

Use:
- For fast, easy and effective dispensing of oil, water and petroleum based products and for large area insect control.
- To be used with appropriate protective clothing and breathing apparatus.

Type:
- Thermal fogger for both water and oil based insecticides.

Engine:
- 4-cycles.
- 5 hp.
- Lead-free gasoline fueled.

Tank capacity:
- Approx. 10 ltrs.

Dimensions:
- Approx. 65 x 55 x 30 cms.

Features:
- Flameless.
- Low maintenance.

Quality Requirements:
- Conforms to International/National Standards.
PROTECTIVE CLOTHES/ ACCESSORIES KIT

Shipping weight:  
Shipping volume:  
UNCCS Code: 369728

Respirators:  
  UNCCS Code: 369738  
  Type: Medium size half mask respirator  
  Area of use: To provide protection when spraying pesticides.  
  Also to be approved for organic vapors, dusts, fumes and mists.

Goggles  
  UNCCS Code: 483143  
  Type: Transparent protective goggles  
  Area of use: To protect eyes from dust and chemical splash  
  Features: Indirect vent system for air circulation  
  Lightweight flexible vinyl

Rubber gloves:  
  UNCCS Code: 366621  
  Type: Chemical resistant gloves  
  Area of use: To protect hands when handling chemicals  
  Features: Nitril latex gloves resistant to animal fats  
  Tear, puncture and abrasion resistant  
  Thickness: Approx. 0.4 mm

Protective coveralls:  
  UNCCS Code: 369728  
  Type: Full length disposable plastic protective gown  
  Area of use: For protection when handling insecticides  
  Features: Chemical resistant, cuff design to prevent leakage between glove and sleeve  
  100% non-woven polypropylene

Rubber boot covers  
  UNCCS Code: 295321  
  Type: Latex rubber boot covers  
  Area of use: For protection against hazardous chemicals  
  Features: Ribbed, textured soles for safe, dependable traction  
  Thickness: Approx. 0.7 mm

Quality Requirements:  
  Conforms to International/National Standards.
SANITARIAN'S KIT

Shipping weight:  
Shipping volume:  
UNCCS Code: 429257

Contents of sanitarin's kit

- Comparator: For chlorine residual and pH, together with orthotolidine and pH indicator solutions.
- Thermometer: 0°C to 100°C, with protective casing.
- Tape measure: 30 meters, cloth or metal, graduated in m and cm.
- Flashlight: Pocket type, including batteries and spare bulbs.
- Plumb rod: Handle of wood, head of rubber/plastic.
- Mask: Regular dust mask.
- Gloves: Working gloves with finger and palm of leather and back of cotton.
- Hand level: With 1 horizontal and 1 vertical spirit level made of corrosion-resistant metal.
- Collection vials: Including standard measuring cup, 500 ml.
- Mosquito larvae dipper
- Chemical test kit: Insecticide resistance test kit.
- Magnifying glass: Pocket size, 5x to 20x.
- Felt-tip pen: Ink marking pen.
- Safety Shoes
VECTOR AND VERMIN CONTROL: INSECTICIDES

MOSQUITO SCREENS

Shipping weight: 5 kg/100 mtr. roll
Shipping volume: 0.01 m³
UNCCS Code: 421230

Type:
- Mosquito netting, to be placed on windows or doors for insect screening.

Technical Specifications:
Size:
- Approx. 90 to 120 cms wide.
- 100 mtrs per roll.
Material:
- Knitted polyester, plastic-coated or impregnated fiber-glass yarn.
Properties:
- Denier: 75 or 100 (weight in gms of 9000 mtrs of thread).
- Mesh: 156 (i.e. 12 x 13 holes per square inch) or 196 (14 x 14).

Packaging:
- 20 to 25 rolls per pallet.

IMPREGNATED BEDNETS

Shipping weight: 35 kg/100 nets
Shipping volume: 60x60x65 cms
UNCCS Code: 421231

Type:
- Insecticide impregnated bednets.

Technical Specifications:
- Size:
  - Single: 70 x 180 x 150 cms (w x l x h).
  - Family: 130 x 180 x 150 cms.
- Material:
  - Knitted polyester, plastic coated or impregnated fiber-glass yarn.
- Properties:
  - Denier: 75 or 100 (weight in gms of 9000 mtrs of thread).
  - Mesh: 156 (i.e. 12 x 13 holes / square inch) or 196 (14 x 14).
- Features:
  - Sheeting border (reinforcement at the bottom of the net for increased life span).
  - Slit door for easy access into the net, with overlap of approx. 60 cms
  - Optional kit for impregnation including basin, bucket, gloves and instructions

Packaging:
- Pressure baled into small packs, wrapped in water resistant PE bags

Quality Requirements:
- Conforms to International/National Standards
VECTOR AND VERMIN CONTROL: INSECTICIDES

DRAIN AND DRAIN FITTINGS

Shipping weight:  
Shipping volume:  
UNCCS Code: 367262

Area of use:  
- Water drainage

Technical Specifications:
- **Material:** Polyvinyl chloride (PVC).  
- **Type:** Plastic water pipes, vent tees, bends, wyes, P-traps, cleanout plugs, closet flanges, adaptors (male and female), coupling.
- **Size:** Length: Delivered in length of approx. 3 mtrs.  
  Diameter: 4" (10.2 cm) diameter.

- Tough PVC plastic pipes and fittings to connect quickly and easily with solvent welds.  
- Highly resistant to impact, yet easy to work with and lightweight.  
- Can be used with cast iron and galvanized steel piping systems.

Quality Requirements:  
- Conforms to International/National Standards.

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SOLVENT CEMENT FOR WATER PIPES

Shipping weight: approx. 1 kg/liter  
UNCCS Code: 412827

Use:  
- Cement for repairs of PVC plastic drainage pipes and fittings.

Type:  
- Solvent cement for PVC pipes and fittings.

Features:  
- Furnished in cans with applicator caps.

Quality Requirements:  
- Conforms to International/National Standards.
Chapter 6 MATERIALS HANDLING
EQUIPMENT
NEEDS AND RECOMMENDED RESPONSES

General

Materials handling is concerned with the moving, packing and storing of materials to meet specific objectives. The cheapest and most reliable power for this operation is the manpower available in the field. However, to facilitate easy and safe handling of material, some equipment is required during the first phase of emergency relief operations. Depending on the application, they can be categorized as follows:

- Lifting Equipment
- Transportation Equipment
- Storage Items
- Safety Items

Surface transport vehicles such as heavy trucks and pickups are not covered in this publication, since they are already covered in the UN standards developed by IAPSO.

Lifting equipment

The first stage of handling is to load or unload the material. The lifting facility required for this can either be stand alone or built into the trolley or truck. This catalogue covers stand alone equipment only, which is broadly categorized as follows:

- Chain pulley blocks
- Winches
- Jacks

a) Chain pulley blocks

A chain pulley block can be mounted in different ways depending on the purpose. In this catalogue, a gantry crane has been selected for its suitability in emergency operations. The hoist can be used with or without this crane depending on the specific purpose.

A lifting sling such as a polyester or polypropylene rope, steel chain or wire rope is required in addition to the chain pulley block. It is necessary to remember the capacity of the equipment when it is being used for this purpose. This document includes a lifting sling specifically designed for lifting and a type of rope which could be used for lifting lightweight goods.

b) Pulling winches

Pulling winches facilitate the lifting of goods with higher mechanical efficiency as they require less force and can be used for both lifting and pulling. They are ideally utilized for the removal of large rubble or other heavy loads when cleaning-up an area.

c) Jacks

Jacks are commonly used as a lift for trucks or vehicles when changing tyres or for maintenance. Usually, a jack is included with a vehicle at the time of purchase, however, there may be a requirement for additional supplies of this type of equipment.

Transportation Equipment

There are two types of trucks, manually operated and powered trucks which can be utilized for the transportation of material. The use of hand-operated trucks allows for the participation of several people within the area of distribution. Different types of hand trucks are designed to suit various applications. When unloading heavy trucks, ships or airplanes, a powered truck is very useful. The different types of forklift trucks, should in particular be carefully chosen. It is advisable that care is taken to ensure some protection from the weather when equipment is to be used in tropical and sub-tropical locations, as otherwise, this can lead to maintenance problems. In
addition to trucks, inflatable boats are included in the catalogue for transportation of supplies by sea. The types of equipment covered in this section are as follows:

a) **Hand-operated trucks**
   - Hand trucks
   - Platform and cage trucks
   - Pallet trucks

b) **Powered trucks**
   - Forklift trucks, light duty
   - Forklift trucks, medium duty

c) **Inflatable boats**

a) **Hand-operated trucks**

Choosing a hand-operated truck for the movement of goods is essential in setting up a reliable system. This type of truck requires minimum maintenance and is therefore very useful in emergency situations where reliability of supplies is very important.

* **Hand trucks**

There are many types of hand trucks designed for specific purposes. There are two varieties of hand trucks discussed in this catalogue; a simple type for the transportation of food parcels, food sacks or other sacks and a specialized type for the transportation of drums e.g. fuel drums.

* **Platform and cage trucks**

A major portion of the activity in storage is the movement of goods from one location to another. This task can be simplified through the use of a platform truck or a cage truck, provided the goods are not loaded on pallets. If the goods are lightweight and are space-consuming, a cage truck is to be preferred. Then the goods can be stacked vertically without the risk of overturning.

* **Pallet trucks**

Hand operated pallet trucks are very useful in the distribution of goods which are being freighted on pallets. Although the freight costs are higher, the use of a pallet truck, makes it possible to distribute goods more quickly and easily.

b) **Powered trucks**

The powered trucks included in this catalogue are differentiated according to use. There are basically three uses; loading and unloading of aeroplanes or other elevated sources, loading and unloading of heavy trucks, and loading and unloading of containers. The three uses require different criteria for selection of a forklift truck. In airports, the required lifting height is often 5 - 8 meters. This must be specified if ordering a truck for this purpose. In containers, the forklift truck must have a high free lift to be able to load and unload the goods. Otherwise the mast will exceed the height limit of the container, as soon as the fork is lifted. When loading and unloading a heavy truck, the high free lift is not important, but to standardize and to make the truck usable in all cases a forklift truck with high free lift should be selected.

Only forklift trucks for containers and for heavy trucks are included in this volume. When selecting the capacity of the truck it should be calculated to be 30% above what is expected to be the heaviest actual load.

The powered trucks included in this document are all diesel driven.
c) **Inflatable boats**
In the event of a flood or similar situation, some transportation must be provided by seaway. An inflatable boat is therefore included in this catalogue to meet this special need.

**Storage items**
In the storage of emergency items, various items are required to provide a simple and systematic means of stocking goods. The most commonly used items which are covered in this volume are as follows:

- Storage racks
- Cupboards
- Scales
- Ladders
- Gravity roller conveyors
- Warehouse tool kits
- Repacking equipment

The above items are the basic necessities for the establishment of stockpiles.

a) **Storage racks**
To organize the warehouse, when handling smaller items e.g. medical equipment, a storage rack is very useful. This can be extended by separating the loose items into bins placed in the storage rack. The different types and sizes of bins will usually be chosen to fit the specified group of items. In an emergency situation, the usage of the bins and racks may change to fulfill the specific needs in the field. The storage racks contained in this catalogue are the type commonly used for these situations.

b) **Pallets**
When pallets are being freighted with goods to a distribution point or a warehouse, a special type of pallet can be used which acts as a storage rack. This pallet type, as listed in the catalogue, also provides significant protection of the goods during freighting.

c) **Scales**
Scales are an essential item used in the process of re-packing food products, in particular for their distribution in the field. The most commonly utilized scales are included in this catalogue.

d) **Ladders and wheelbarrows**
Ladders and wheelbarrows are very useful for handling different goods and for the maintenance of warehouse stockpile items.

e) **Tool kits**
The basic tools required for the opening or packing of goods are included in the "Materials handling tool kit". For the handling of food products however, a special kit is recommended which contains equipment for the opening and repairing of packages.

**Safety Items**
In order to establish a minimum safety level when working with trucks and hoists, a range of products are available. Lifesuits are also included to provide the required level of safety when transporting equipment by boat. The items included are as follows:

- Working gloves
- Safety helmets
- Dust masks
- Ear-muffs
- Lifejackets

Dust masks and working gloves are also very useful during the clean-up after an earthquake.
LIFTING EQUIPMENT

GANTRY CRANE

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<td>Shipping volume:</td>
<td>1.2 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>435213</td>
</tr>
</tbody>
</table>

Use:
- For lifting of goods in loading areas, warehouses, machine shops.

Type:
- Mobile gantry crane on four wheels. All steel construction.

Technical Specifications:
- Lifting capacity: Minimum 2000 kg
- Beam: Standard I-beam profile
- Height: Approx. 200 mm
- Flange width: Approx. 100 mm
- Length: Approx. 3300 mm
- Base:
  - Width: Approx. 2000 mm
  - Overall height: Approx. 3600 mm

Quality Requirements:
- Conforms to International/National Standards.

BALL BEARING TROLLEY

<table>
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<th>25 kg</th>
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<tr>
<td>Shipping volume:</td>
<td>15 pieces/m³</td>
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<tr>
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<td>435351</td>
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</table>

Use:
- To be used with gantry crane.

Type:
- Trolley with four steel wheels with bearings and side plates joined with one steel shaft for a hoist.

Technical Specifications:
- Lifting capacity: Minimum 3000 kg.
- Options: Steel wheels with ball bearings.
- Flange width adjustable: 100 - 200 mm.

Quality Requirements:
- Conforms to International/National Standards.
LIFTING EQUIPMENT

CHAIN PULLEY BLOCK

Shipping weight: 20 kg
Shipping volume: 60 pieces/m³
UNCCS Code: 435116

Use:
- To use on ball bearing trolley with the gantry crane.

Type:
- Hand-operated chain hoist with overload limiter.
- Steel link chain, swivel and safety hooks included.

Technical Specifications:
- Lifting height: 3 meters.
- Brake: Fitted with automatic brake.
- Construction: Fully enclosed spur gear with strong frame.
- Hooks: Forged steel safety hook conform to recognized safety standards.

Accessories:
- Tools used for maintenance.

Quality Requirements:
- Conforms to International/National Standards.

LIFTING SLINGS

Shipping weight: 0.5 kg
Shipping volume: 300 pieces/m³
UNCCS code: 435712

Type:
- Flexible lifting sling.

Technical Specifications:
- Material:
  - Loop made of polyester fibre with double protective cloth cover.
  - Temperature limit approx 85°C.
  - Length of loop: 3 meters (circumferential).

Quality Requirements:
- Conforms to International/National Standards.
WINCH

Shipping weight: 0.5 kg
Shipping volume: 300 pieces m³
UNCCS Code: 435712

Use:
- Pulling and lifting heavy loads.

Type:
- Hand-operated winch of rugged construction, wire included.

Technical specifications:
Load capacity:
- Lifting capacity: 1500 kg approx.
- Pulling capacity: 2500 kg approx.

Wire:
- Diameter: 11.6 mm.
- Length: 20 meters.
- Breaking strength: 75 kN minimum.

Wire lock:
- A self-perpetuating self-locking type.
- Protection against overload.

Lever:
- Length: 1040 mm approx.

Hooks:
- Safety hook conforms to recognized safety standards.

Necessary power:
- Maximum 45 kg lever effort at maximum pulling load.

Accessories:
- 2 extra shear pins.

Quality Requirements:
- Conforms to International/National Standards.
**JACK**

Shipping weight: 15 kg  
Shipping volume: 0.1 m³  
UNCCS Code: 435354

**Type:**  
- Manually operated hydraulic trolley jack of rugged construction.

**Technical Specifications:**
- Lifting height: Minimum approx. 125mm.
- Maximum: approx. 500 mm.
- Handle:
  - Removable.
  - Full 90° pumping action.
- Wheels:
  - Two fixed steel wheels and two swivel castors.
- Safety feature:
  - Fitted with safety valve to prevent overloading.

**Quality Requirements:**  
- Conforms to International/National Standards.

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**ROPES**

Shipping weight:  
Shipping volume:  
UNCCS code: 273160

**Diameter:**
- 6 mm  
- 16 mm  
- 24 mm

**Material:**
- Polypropylene  
- Polypropylene  
- Polypropylene

**Weight:**
- 2.5 kg/100 m  
- 20 kg/100 m  
- 45 kg/100 m

**Coil of approx.:**
- 200 m  
- 200 m

**Safe load:**
- 50 kg  
- 500 kg  
- 1050 kg

**Quality Requirements:**  
- Conforms to International/National Standards.
HAND TRUCK

Shipping weight: 15 kg
Shipping volume: 0.1 m³
UNCCS Code: 435364

Type:
- Tubular sack truck of rugged construction.

Capacity:
- 200 kg.

Material:
- Tubular steel construction.
- Painted frame.

Toe plate:
- Approx. 320 x 200 mm.
- Solid.

Wheels:
- Roller bearing rubber-tyred wheels.
- Size: 200 x 50 mm approx.

Handles:
- Plastic grip handles.

Quality Requirements:
- Conforms to International/National Standards.

DRUM TRUCK

Shipping weight: 30 kg
Shipping volume: 0.5 m³
UNCCS code: 435355

Type:
- Tubular drum truck of rugged construction.

Capacity:
- 300 kg.

Material:
- Tubular steel construction.
- Painted frame.

Toe bars:
- Welded onto the frame.

Wheels:
- Solid rubber tyred wheels.
- Size: 250 x 50 mm approx.

Handles:
- Plastic grip handles.

Quality Requirements:
- Conforms to International/National Standards.
TRANSPORTATION EQUIPMENT

PLATFORM TRUCK

<table>
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<tr>
<th>Shipping weight:</th>
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<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.4 m³</td>
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<tr>
<td>UNCCS Code:</td>
<td>435352</td>
</tr>
</tbody>
</table>

Type:
- Tubular platform truck of rugged construction.

Capacity:
- 1000 kg.

Material:
- Base frame is welded steel with rounded corners.
- Handle is tubular steel construction.
- Abrasion proof paint.

Platform:
- 1400 x 700 mm approx.

Wheels:
- Roller bearing with rubber tyre wheels.
- 2 fixed and 2 swivel castors.
- Size: 200 x 50 mm approx.

Handles:
- Tubular metal handle, removable.

Quality Requirements:
- Conforms to International/National Standards.

CAGE TRUCK

<table>
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<tr>
<th>Shipping weight:</th>
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<tr>
<td>Shipping volume:</td>
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<tr>
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</tr>
</tbody>
</table>

Type:
- Welded steel tube frame and mesh sides with 2 removable sides.

Capacity:
- Minimum 250 kg.

Size:
- Platform:
  - 1000 x 600 mm approx.
  - Height of sides: 800 mm approx.

Material:
- Frame: Painted mild steel tube.
- Mesh sides: Corrosion resistant steel or painted.

Wheels:
- 2 fixed and 2 swivel solid rubber tyres.
- Diameter: Minimum 60 mm.
TRANSPORTATION EQUIPMENT

PALLET TRUCK, MANUAL

<table>
<thead>
<tr>
<th>Shipping weight:</th>
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<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.4 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>435326</td>
</tr>
</tbody>
</table>

Use:
- To move pallets within a store or warehouse.

Type:
- Manual pallet truck operated from operation handle.

Material:
- All steel construction.

Fork:
- Width: 520 mm.
- Length: 1125 mm approx.
- Height:
  - Lowered: 80 mm.
  - Raised: 120 mm.

Pump:
- Heavy-duty sealed hydraulic jack unit.

Hand operated lever:
- 3 position control for lower, neutral and raise.

Load:
- Lifting capacity 2000 kg.

Wheels:
- Nylon wheel with built-in bearings.
- Fork wheels in single or bogie-mounting.
- Dimensions:
  - Steering wheel: approx. 175 Ø x 60 mm wide.
  - Fork wheel: approx. 85 Ø x 100 mm wide.

Accessories:
- Spare parts for two years of operation.
- Handtools used for maintenance.
- Operation and service manual.

Quality Requirements:
- Conforms to international/national standards.
FORKLIFT TRUCK, LIGHT DUTY

Shipping weight: 2700 kg
Shipping volume: 5.5 m³
UNCCS Code: 435312

Area of use:
- To load and unload heavy trucks and containers. Also to operate inside 20’ standard containers.

Type:
- Forklift truck, diesel driven.

Technical Specifications:
Fork:
- Adjustable fork width.
- Length: 1000 mm approx.
Lifting:
- Load capacity: 1500 kg at 500 mm load centre.
- Lifting height: 3000 mm.
- Lift speed (loaded): 600 mm/sec approx.
Body:
- Strong steel framed body.
- Safety cab with adjustable drivers seat.
Wheel:
- Pneumatic tyre type
- Front tyre: 6.50 x 10-10 ply.
- Rear tyre: 5.00 x 8-8 ply.
Drive:
- Diesel engine output.
Travelling speed:
- Approx. 20 km/h (without load).
Turning radius:
- Approx. 2000 mm.

Accessories:
- Tool kit for maintenance.
- Spare parts for two years of operation.
- Tool kit to repair punctured tyres.
- Operation and maintenance manual.

Quality Requirements:
- Conforms to International/National Standards.
TRANSPORTATION EQUIPMENT

FORKLIFT TRUCK, MEDIUM DUTY

| Shipping weight: | 8150 kg |
| Shipping volume: | 22 m³  |
| UNCCS Code:      | 435313 |

Use:
- To load and unload heavy trucks and container. Also to operate inside 20’ standard containers

Type:
- Forklift truck, heavy type, diesel driven.

Technical Specifications:
Fork:
- Adjustable fork width
- Length: 1200 mm approx
Lifting:
- Lifting method: High freelift
- Load capacity: Minimum 5000 kg at 600 mm load centre.
- Lifting height: Minimum 3100 mm.
Body:
- Strong steel framed body.
- Safety cab with adjustable drivers seat.
Wheel:
- Pneumatic tyre type.
- 4 wheels in front and 2 rear, all same size.
Tyres:
- 7.50 x 15-12 ply.
Drive:
- Diesel
- Indicative values:
  - Engine power: 50 kW
  - Consumption: 5 litres/h
Speed:
- Travelling without load: Approx. 25 km/h.
- Turning radius: Approx. 3400 mm.

Accessories:
- Tool kit for maintenance.
- Spare parts for two years of operation.
- Tool kit to repair punctured tyres.
- Operation and Maintenance manual.

Quality Requirements:
- Conforms to international/National Standards.
DOLLY

Shipping weight: 8 KG
Shipping volume: 0.01 m³
UNCCS Code: 435691

Use:
- For moving heavy equipment.

Type:
- Roller Skid Dolly with swivel top.

Technical Specifications:
Capacity:
- Minimum 1250 kg.

Size:
- Height: 110 mm approx.
- Width: 300 mm approx.
- Length: 230 mm approx.

Swivel top:
- Rotates 360°

Roller bearing rollers:
- Diameter: 100 mm approx.
- Width: 105 mm approx.

Frame:
- 6 mm thick steel.

Material:
- Frame: Steel.
- Axels: Steel.
- Rollers: Steel.

Quality Requirements:
- Conforms to International/National Standards.
BOAT, INFLATABLE

Shipping weight: 450 kg
Shipping volume: 1 m³
UNCCS Code: 494200

Type:
- Inflatable boat for approx. 10 persons, including outboard motor.

Technical Specifications:
- Capacity: Minimum 1200 kg
- Collar: Lifeline built-in
- Inflated:
  - Total length: Approx. 4.7 m
  - Total width: Approx. 2.0 m
  - Air chamber diameter: Approx. 0.5 m

Material:
- Heavy duty nylon weave, coated on both sides.

Accessories:
- Outboard motor, 1 x 50 hp or 2 x 25 hp (twin installation).
- 2 Paddles.
- Baler, approx. 1.5 litres.
- Boat-hook.
- Foot pump with hose.
- Repair kit.
- Operation manual.

Alternative:
- Boat for 6 persons, 650 kg capacity.
- Outboard motor 40 hp maximum.
- Size: 4.0 x 1.7 x 0.4 m.

LIFE-JACKET

Shipping weight: 650g
Shipping volume: 35 pieces/m³
UNCCS code: 271921

Use:
- During handling of materials on boats.

Type:
- Life-jacket, adult size.

Technical Specifications:
- Lifting material: Foam with a buoyancy covering a weight from 40 to 80 kg.
  - Covered with nylon.
  - Mounted with reflectors.
  - Colour: Orange.

Accessories:
- Signal whistle.
STORAGE ITEMS

STORAGE RACK

Shipping weight: 50 kg/bay
Shipping volume: 5 bays/m³
UNCCS Code: 381631

Use:
- Storage of smaller items, boxes, medicine etc...

Type:
- Open shelf unit, consisting of one or several bays joined together side-by-side.

Technical specifications:
Size:
- Indicative dimensions:
  - Height: 2000 mm
  - Width of a bay: 1000 mm
  - Depth: 500 mm

Capacity:
- Minimum 150 kg per shelf.

Material:
- Frame: Galvanized steel angle profile.
- Shelves: Galvanized steel.

Accessories:
- Tools for mounting.

Options:
- Bay extensions.

Quality Requirements:
- Conforms to International/National Standards.
STORAGE ITEMS

CUPBOARD

Shipping weight: 70 KG  
Shipping volume: 0.2 m³  
UNCCS Code: 381720

Use:  
- Storage of tools, medicine etc...

Type:  
- Cupboard of steel.  
- Cupboard with 4 adjustable shelves and two doors with lock.  
- Knock-down type.

Technical specifications:  
Size:  
- Indicative dimensions:  
  - Height: 2000 mm  
  - Width: 1000 mm  
  - Depth: 500 mm  
Material:  
- All material of painted steel.

Accessories:  
- Tools for mounting included.

SCALE

Shipping weight: 30 kg  
Shipping volume: 0.1 m³  
UNCCS Code: 482331

Type:  
- Mechanical bench dial scale.

Technical specifications:  
- Capacity: Approx. 110 kg.  
- Material: Cast iron base fully enclosed.  
  Plexiglass cover on dial.  
- Platform: 340 x 480 mm approx.  
- Dial: Diameter: 330 mm approx.  
  Metric reading, graduation in kg or lbs.

Features:  
- Springs unaffected by the temperature.  
- Easy to maintain.
STORAGE ITEMS

LADDER ALUMINIUM

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>12 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>2900x500x70mm</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>42931</td>
</tr>
</tbody>
</table>

Use:
- Free standing ladder or fitted together as an adjustable ladder.

Type:
- A double ladder for free standing application and as an adjustable ladder consisting of 2 single robust light metal ladders.

Technical specifications:
- Length: Overall height: Approx. 5.0 m.
- Free standing height: Approx. 2.7 m.
- Steps: Approx. 9 steps on each ladder.
- Profile: Approx. 70 x 35 mm.

Material:
- Aluminium ladder with steel fittings
- Strength: Conforms to recognized safety standard.

Accessories:
- Fittings for freestanding mode and for extended mode.
- Security fittings.

GRAVITY ROLLER CONVEYOR

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>60 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.01 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>435551</td>
</tr>
</tbody>
</table>

Type:
- Section of conveyor line on support stand.

Technical specifications:
- Length: 3 m.
- Frame: Painted, galvanized steel frame on 4 adjustable support stands.
- Capacity: 400 kg.

Rollers:
- Capacity: 20 kg/roller.
- Width: 400 mm.
- Diameter: 50 mm.
- Pitch: 90 mm.
- High impact plastic rollers fitted with stainless steel ball bearing race.

Ball bearings:
- Sealed type.

Height:
- Adjustable 700 to 900 mm.
MATERIALS HANDLING TOOL KIT

Shipping weight: 5 kg
Shipping volume: 200 sets/m³
UNCCS Code: 429255

HAMMER: UNCCS Code: 429414
- Type: Claw hammer for general use
- Head: Forged grade, alloy steel head
Polished and chamfered on edge to resist chipping
- Handle: Wooden handle
Pre-shrunk and triple wedged into head

PLIERs: UNCCS Code: 429324
- Type: Diagonal cutting pliers to cut steel banding up to 1.8 mm thick, or steel wire up to 3.0 mm diameter
- Material: Chromium or forged alloy steel.
Chromium plated
- Options: Built-in spring to keep the pliers open when not in use

CROW BAR: UNCCS Code: 429351
- Material: Carbon steel hex bar
- Type: Gooseneck claw at one end and a pinch at the other
- Size: Approximately 700 mm long

SNIP: UNCCS Code: 429522
- Type: Sheet cutting snips for mild steel sheets up to 1.5 mm thick
- Blades: Induction hardened

CHISEL: UNCCS Code: 429342
- Type: Standard cold chisel set. Set of five chisels
- Size: Cut: Approx. 1/4" (6 mm) to 1" (25 mm)
- Length: Approx. 5" (12.7 cm) to 8" (20.3 cm)
- Material: Forged, high-grade hexagon steel
STORAGE ITEMS

REPACKING TOOL KIT

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>10 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>sets/m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>429256</td>
</tr>
</tbody>
</table>

TAPE FOR REPACKING:

- **UNCCS Code:** 369936
- **Width:** Minimum 50 mm
- **Tensile strength:** Minimum 50 N/10 mm

TENSIONER/SEALER:

- **UNCCS Code:** 451673
- **Type:** Tensioner of rugged construction
  Sealer of rugged construction for plastic strapping
- **Size:** For 1/2" (12 mm) strapping
- **Accessories:** 10000 Strapping seals, semi-open

STAPLER:

- **UNCCS Code:** 389158
- **Type:** Manual stapler for carton closing
- **Stapler:** 1 1/4" (32 mm) x 5/8" (16 mm) staples
- **Accessories:** 1000 staples

KNIVES, UTILITY:

- **UNCCS Code:** 429155
- **Type:** Adjustable general utility knife
- **Accessories:** 3 extra blades
SAFETY ITEMS

PROTECTIVE MASK

Shipping weight: 0.6 kg/100 pieces
Shipping volume: 12.7 dm³/100 pieces
UNCCS Code: 369737

Use:
- Protecting against light concentrations of dust and mists which do not contain harmful vapors.

Type:
- Dust/mist respirators covering mouth and nose.

Material:
- Synthetic fibre.

Filters:
- Woven fibre filter.

Options:
- Double elastic headbands.

WORKING GLOVES

Shipping weight: 20 kg/100 pair
Shipping volume: 0.05 m³/100 pair
UNCCS Code: 282387

Type:
- Chrome leather gloves with elasticated gauntlet cuff.

Technical specifications:
Material:
- Full leather front and cotton back.
Size:
- 10.5 cm.
Option:
- With fingertip and knuckle protection of leather.

Quality Requirements:
- Conforms to International/National Standards.
SAFETY ITEMS

SAFETY HELMET

Shipping weight: 0.5 kg
Shipping volume: 100 pieces/m³
UNCCS Code: 369711

Type:
• Safety helmet of rugged construction.

Head band:
• Adjustable to fit size 6½ to 7½.

Material:
• High density polyethylene, with easily replaceable 4 point suspension.
• Conforms to recognized standards.

Quality Requirements:
• Conforms to international/National Standards.

HEARING PROTECTOR

Shipping weight: 0.15 kg
Shipping volume: 250 pieces/m³
UNCCS Code: 369735

Type:
• Ear muffs.

Technical Specifications:
Noise reduction:
• Approx. 30 dB

Material:
• Head band: Plastic reinforced glassfibres or stainless steel spring bands.
• Cups: Thermoplastic.
• Filling: Non-toxic sound absorbing foam.

Options:
• Easily adjustable cups.

Quality Requirements:
• Conforms to International/National Standards.
Type:
- Safety shoes with a protective sole and a built-in protective toe cap.

Size range:
- 6 to 12 (US size).

Material:
Toe cap:
- Steel.
- To withstand minimum 2500 kg static pressure.
Sole:
- Moulded rubber sole with a built-in steel arch at the instep.
Upper:
- Leather.

Quality Requirements:
- Conforms to International/National Standards.
GENERAL ITEMS

HAND SAW

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>0.4 kg</th>
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</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>500 pieces/m³</td>
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<tr>
<td>UNCCS Code:</td>
<td>429310</td>
</tr>
</tbody>
</table>

Type:
- Hand saw.

Technical Specifications:
- Length: 550 mm (22").
- Teeth: Universal tooth setting for cross-cutting and ripping. Approx. 7 teeth per inch.
- Material: Blade: Hardened and tempered chrome nickel alloy steel.
- Handle: Plastic or hard wood handle.

CIRCULAR SAW

<table>
<thead>
<tr>
<th>Shipping weight:</th>
<th>6.5 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume:</td>
<td>0.002 m³</td>
</tr>
<tr>
<td>UNCCS Code:</td>
<td>429315</td>
</tr>
</tbody>
</table>

Type:
- Portable circular saw for rip, cross and mitre cutting.

Technical Specifications:
- Power input: Approx. 1400 W
- Speed: No-load speed: 5000 rpm
- Capacity: At 90 degrees: 65 mm
- Continuous cutting depth adjustment: 0-65 mm
- Saw blade: Diameter: 90 mm
- Drilling diameter: 30 mm

Features:
- Interior retracting guard providing proper saw blade covering.
- Safety coupling for disengaging in case of blade jamming.
- Shavings blower keeping cutting point and track clean.
- Dust extractor.

Accessories:
- Allen key and parallel fence.
- One saw blade.
- Instruction and maintenance sheets.
SNOW CHAINS FOR VEHICLES

Shipping weight: 14 kgs/pce
Shipping volume: UNCCS Code: 491943

Use:
- To be used on trucks/light vehicles.

Type:
- Reinforced snow chain for vehicles.

Size:
- Truck tyre size to be specified when ordering.

Material:
- Case hardened steel with polished finish.

LEAD SEAL

Shipping weight: 3 kg
Shipping volume: UNCCS Code: 429685

Type:
- Blank lead and wire seals.

Technical Specifications:
Seal:
- Wire seals with attached lead discs.

Discs:
- Diameter: 12 mm
- Material: Lead

Wire:
- Material: 23-gauge galvanized steel wire.
- Length: 250 mm.
SEAL PRESS

Shipping weight: 0.5 kg
Shipping volume: 
UNCCS Code: 451644

Type:
- Combination seal press and wire cutter.

Size:
- To seal minimum 12 mm diameter lead seals.

Features:
- Built-in wire cutter.

ROLLER CROWBAR

Shipping weight: 14 kg
Shipping Volume: 
UNCCS Code: 429355

Use:
- In warehouses or freight terminals where heavy items have to be moved

Type:
- Crowbar with two rollers built in.

Technical Specifications:
Capacity:
- Minimum 2,500 kg
Crowbar style:
- Nose rolls
Wheels:
- Material: Steel
- Diameter: 150 mm
- Width: 50 mm
Handle:
- Material: Painted steel
Chapter 7  POWER SUPPLY
SYSTEMS
NEEDS AND RECOMMENDED RESPONSES

Introduction

This section has been prepared to facilitate the selection of appropriate power generating equipment suitable for installation as a part of emergency relief operations.

The range of equipment covered essentially addresses the requirements of electric power in an emergency relief camp with about three thousand to four thousand persons housed in approximately 800 - 1000 temporary shelters.

Camps of approximately the above size are estimated to require about 50-60 kVA to cope with the primary needs of adequate lighting in the community kitchens and security lighting, whilst also allowing some minimal lighting of the shared facilities such as toilets etc., and of the shelters themselves.

Apart from the above, there are perceived some specific power requirements for mobile communications and also for a field office set-up, which are desirable for the effective functioning of the personnel from relief organizations. These aspects are estimated to require approximately 5 kVA for basic office equipment, and a minimum of 0.3 kVA for mobile communications equipment.

It is recommended that when power generating sets of the larger capacities are purchased for emergency relief (i.e. over 45 kVA), these should be obtained along with weather proof or acoustic canopies, as available, to minimize the nuisance from noise, and also to obviate the need for provision of a separate shelter for the power generating equipment itself.

As a rule, the power generating equipment listed in this catalogue will need to be installed and commissioned at emergency sites. Hence, it is unlikely that properly prepared foundations can initially be made available. These are intended for standby duty in more permanent installations.

However, the smallest power generators (below 1.0 kVA) are suitable for use without any special foundations, whereas the larger equipment can be used for several days simply placed on firm and well-levelled ground (which must be able to support the weight of the set).

Basis for estimating power requirements

For the purpose of classification, the power supply equipment is categorized into the three generic types of:

- Power supply for 800 - 1000 emergency relief shelters
- Power supply for a field office of the relief agency
- Power supply for mobile communications

The power requirements for each of the above are arrived at as follows:

(i) Lighting for 800 - 1000 temporary shelters
   (an average lighting of 20 - 30 watts in each shelter)
   to house 3000 - 4000 persons .............................................. (approx) 20 kW

   Security lights for camp as above ........................................... 15 - 20 kW

   Lighting/power for community kitchens, first-aid rooms, toilets ........... 15 - 20 kW
(ii) Lighting/power for a field office equipped with:

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Approx. power requirements (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer (personal)</td>
<td>0.3 - 0.5</td>
</tr>
<tr>
<td>Computer (laser printer)</td>
<td>1.0</td>
</tr>
<tr>
<td>Lights (bulbs)</td>
<td>0.03 - 0.1</td>
</tr>
<tr>
<td>Lights (fluorescent tubes)</td>
<td>0.02 - 0.1</td>
</tr>
<tr>
<td>Lights (security, halogen)</td>
<td>0.1 - 0.5</td>
</tr>
<tr>
<td>Photocopier (desktop)</td>
<td>1.0 - 2.0</td>
</tr>
<tr>
<td>Typewriter/Word processor</td>
<td>0.2 - 0.4</td>
</tr>
</tbody>
</table>

(iii) Mobile communications systems of A, C and M types are currently supplied with a power requirement ranging between 120 watts and 250 watts.

**Spare Parts**

It is recommended that spare parts packs be ordered together with the equipment (for regions with poor or non-existing local services). Suppliers or IAPSO may be contacted for details of the content of recommended spare parts packs.

**Some notes on installation**

Advance planning and installation work is desirable before arrival of the larger power generators at site.

Some aspects to be considered in planning installations at emergency relief sites include:

a) **Generator Location**

The larger generators are supplied with anti-vibration mounts and on a fabricated skid base, which allows the equipment to be installed for temporary use without elaborate foundations.

However, it is important to ensure that the area of installation is on a firm and hard ground surface, which must be carefully checked and levelled. Any irregularities which can lead to unbalanced seating of the set on its base must be completely eliminated, and full and secure seating confirmed before starting up of the equipment.

b) **Foundations**

Though, the power generating sets may be used temporarily as above, without specially constructed foundations. It is important that proper foundations are prepared according to the manufacturer's specifications as soon as possible.
DIESEL GENERATING
SETS, 60 kVA

Shipping weight: Approx. 1000 kg
Shipping volume: Approx. 3 m³
UNCCS Code: 461133 (a)

Principal particulars:
Rated Power: 60 kVA continuous (10% overload for 1 hour in 12)
Power factor: 0.8
Voltage: 380V/220V [210/120V] 3 phase
Output: 90 A
Speed: 1500 [1800] rpm
Frequency: 50Hz [60 Hz]

Engine:
- Diesel, 4 stroke cycle
- Direct injection
- Turbo charged
- 4 or 6 cylinders in-line
- Water cooled with tropical radiator
- 12 or 24 Volt electrical system with starter and battery
- Electronic or mechanical governor
  Output: 48 kW at 1500 rpm

Alternator:
Output: Minimum 60 kVA at 1500 rpm base rating
- Insulation to class H
- To CEI 2.3, IEC 34.1, VDE 0530, BS 5000
- Self regulating, 4 pole, single bearing type
- Fabricated steel shell with drip proof air ducts (minimum level of drip proof protection: IP23)

General:
- Engine close coupled to alternator
- Mounted on anti-vibration mounts on fabricated skid base
- Fuel tank incorporated into base
- Lifting points for handling.

Control Panel: Steel panel fitted on the set including:
- Ammeter with switch, Voltmeter with switch, Hour meter, Tachometer and Frequency meter
- Key start/stop
- Main 3-pole circuit breaker
- Instruments:
  - Water temperature
  - Oil pressure
  - Battery volt meter

Standard Accessories:
- Automatic shutdown on low oil pressure or high engine temperature
- Engine Makers' tool kit
DIESEL GENERATING SETS, 60 kVA, Contd..

- Operator manuals
- Tropical radiator
- Oil, air and fuel filters
- Flexible exhaust pipe, heavy duty industrial silencer and guards
- Fuel tank gauge
- Heavy duty air cleaner

Spares and optional extras:
- Spare parts (2500 h)
- Automatic mains failure panel comprising of:
  (a) autostart control panel
  (b) battery trickle charger
  (c) auto changeover panel
- Weatherproof canopy
- Acoustic canopy (85 dBA at 1m)
- Fast moving road trailer
- Socket outlets (CEE type) - 1 x 32 AMP, 3 phase - 2 x 16 Amp. single phase
- 25 m supply cables (1 x 3 phase, 2 x single phase) with plugs
- Low resistance earth rod with 4 m cable.

Note: Values for [60 Hz, 220V, 3-phase] are shown in italics
POWER GENERATOR FOR FIELD OFFICE

DIESEL GENERATING
SETS, 5 kVA

Shipping weight: Approx. 180 kg
Shipping volume: Approx. 0.5 m³
UNCCS Code: 461131/461132 (a)

Principal particulars:
Rated Power: 5 kVA
Power Factor: 0.8
Voltage: 220/380 V [120/210 V] 3 phase
Output: 8 A [14 A]
Speed: 1500 rpm [1800 rpm]
Frequency: 50 Hz [60 Hz]

Engine:
- Diesel, 4 stroke cycle
- Direct injection
- Naturally aspirated
- 1 cylinder
- Forced Air Cooling by flywheel mounted/separate Fan or Water Cooling by Radiator and Fan
- Electric/Hand start
- Mechanical governor
  Output: 4.5 kW at 1500 rpm

Alternator:
  Output: 5 kVA at 1500 rpm
- Insulation to class H
- To IEC 34.1, VDE 0530, BS 5000 part 3, UTE 5100, NEMA MG1 22, CSA 22.2, AS 1359
- Self regulating, 4 pole, single bearing type
- Fabricated steel shell with drip proof air ducts to IP23

General:
- Engine close coupled to alternator
- Mounted on anti-vibration mounts on fabricated skid base
- Fuel tank mounted on engine or incorporated into base
- Lifting points for handling

Control Panel:
Panel fitted on the set including:
- 3 x Ammeter, Voltmeter with switch, Hour meter and Frequency meter
- 1 x 380/3/50 [210/3/60] outlet socket (CEE type) c/w circuit breaker
- 1 x 220/1/50 [120/1/60] outlet socket (CEE type) c/w circuit breaker
DIESEL GENERATING SETS, 5 kVA, Contd..

Shipping weight: Approx. 180 kg
Shipping volume: Approx. 0.5 m³
UNCCS Code: 461131/461132

Standard Accessories:
- Automatic shutdown on low oil pressure or high engine temperature when ordered with electric start option
- Low resistance earth rod with 4 m cable
- 1 x 25 m supply cable with plug (H07) suitable for sockets supplied
- Engine makers' tool kit
- Operator manuals
- Oil, air and fuel filters
- Engine mounted exhaust silencer

Spares and optional extras:
- Spare parts (500 h)
- Wheeled trolley kit
- Electric starting system with battery
- Acoustic canopy
- Engine instruments:
  - Temperature
  - Oil pressure
  - Battery ammeter

Note: Values for [60 Hz, 220V, 3phase] are shown in italics.
POWER GENERATOR FOR FIELD TELECOMMUNICATIONS

PORTABLE GENERATORS,
0.5 kVA

<table>
<thead>
<tr>
<th>Shipping weight</th>
<th>Approx. 20 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping volume</td>
<td>Approx. 0.05 m³</td>
</tr>
<tr>
<td>UNCCS Code</td>
<td>461141</td>
</tr>
</tbody>
</table>

**Area of use:**
- For use as a power supply for mobile field communication equipment

**Type:**
- Portable petrol power generator

**Principal Particulars:**

<table>
<thead>
<tr>
<th>Principal Particulars</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>220 V [120 V] 1 phase</td>
</tr>
<tr>
<td>Output</td>
<td>1.3 - 3 A [2.3 - 5.2 A]</td>
</tr>
<tr>
<td>Speed</td>
<td>3000 rpm [3600 rpm]</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 Hz [60 Hz]</td>
</tr>
</tbody>
</table>

**Engine:**
- Petrol, 4 stroke cycle
- 1 cylinder
- Forced Air Cooling by flywheel-mounted fan
- Hand start
- Fuel consumption: approx. 0.25 - 0.6 litres/hour
- Output: 0.65 - 1.1 kW at 3000 rpm
- Fuel tank: 1 - 3 litres (to last 4 - 5 hrs at approx. full power & output)

**Alternator:**

- Output: 0.5 kVA at 3000 rpm
- 220 volts - 50 Hz [120 V - 60 Hz]
- Construction to IP 23 or equivalent

**Features:**
- 2 - power outlets
- Quiet operation
- Easy starting
- Petrol level indicator
- Automatic power regulator

**Standard Accessories:**

- Battery charger, output: 12V, 72W
- Tool kit for routine maintenance
- Operation manuals
- Oil, air and fuel filters

**Note:** Values for [60 Hz, 110V, 1 phase] are shown in italics.
Logistics for emergency operations is a complex task aiming for mobilization and development of the necessary capacities to deliver assistance to the communities in need.

It contains actions *inter alia*, to ensure the provision of facilities to receive/discharge and store at ports and airports, any supplies to be imported, organize the transport of supplies within the country, organize storage for operational and any necessary contingency stocks at appropriate locations, ensure fuel supplies, maintenance for all means of transport, establish reliable means of communications between all key locations etc..

These elements of logistics operations are normally dealt with by logistics offices and operational managers and not by Procurement officers.

This chapter is therefore limited to the part of contracting the efficient forwarding of acquired relief items up to the first point of entry into the disaster-stricken country, and is intended to assist Procurement Personnel to do this job in an effective and professional way.

Apart from the acquisition of suitable products as identified in this catalogue, the timely and safe provision of the goods to the disaster area is the key to the success of any emergency relief operation.

Like the detailed technical specifications for relief items to be provided, a clear and comprehensive list of shipping requirements is also indispensable.

Based on practical field experience, this chapter will provide necessary details, specifications and useful information that is to be considered for essential elements of the forwarding process.

In particular, such important elements like

- Packaging
- Quality Inspection
- Selection of mode of transport and shipping arrangements
- Insurance

will be dealt with.
PACKAGING

General

One can hardly imagine what treatment relief supplies undergo during the journey from their country of origin to the place of distribution. A single item may be loaded or off-loaded up to a dozen times before it reaches its final destination. And then, it is possible that the eventual beneficiary will still need to carry it over long distances to his family.

Particular attention should therefore be given to adequate and durable packing of relief supplies, which in fact, encompass a considerable variety of items and need to deal with virtually every conceivable (and sometimes quite inconceivable) eventuality.

The objectives of packaging include:

a) Containment
   - Small items in quantity are contained for handling purposes and for issue in standard units.
   - Items of inconvenient shape are contained in regular containers for similar reasons.
   - Items may be contained in ways that permit their easier placement upright on shelves.

b) Protection
   - Fragile items need protection from handling.
   - Items to be temporarily stored outdoors need protection from the weather.
   - Handlers have, on occasion, to be protected from items.
   - Valuable items or items in bond require packaging for security.

c) Identification
   - Technical information of hazardous or potentially life-expired items (pharma-ceuticals, film) must be communicated to potential users.
   - Items are sometimes required to certain operating or usage instructions.

Further consideration should also be given:
   - to protect goods against breakage, contamination or distortion.
   - to reduce the volume and thereby cut freight costs.
   - to facilitate handling.
   - to facilitate storage.
   - to group goods into a convenient unit for distribution.
   - to reduce opportunities for pilfering.

Outer packing

a) Weight
   To allow acceptable ease of manual handling in field locations where mechanical equipment may sometimes not be available, maximum gross weights of some commonly encountered items should be restricted as follows:

   - Boxes or cartons: 25 kg
   - Bundles or sacks: 50 kg

b) Strength
   Strong outer material to ensure that packages do not twist or collapse during handling.
PACKAGING - cont'd

c) Fillers
Empty spaces should be filled with filling material like wood shavings, straw, shredded paper, plastic foam, corrugated paper board etc., to eliminate any free movement of the contents of the packages, and also to contribute towards the mechanical rigidity of the packages.

d) Stackability
Package sizes in each consignment should be standardized, and packages should preferably be stackable up to a height of 3.0 metres (Round or cylindrical packages should be avoided where possible).

e) Sealing
All packages should be closed or lidded and sealed.

f) Weatherproofing
Waterproof material or material treated for moisture resistance should be used for packing.

g) Seaworthiness
Fortified, strong, solid packaging material i.e. multi-wall cardboard or wood should be used.

h) Extra empty Bags or Cartons
Ask for extra empty bags or cartons, and the number should be equal to 2% of the total number of bags or cartons with large consignments.

i) General advice
* Never pack loose items in sacks.
* If several transfers are required along the way from vessel to rail, rail to lorry and finally to 4-wheel drive vehicle involving manual transfer, the packing will require special provision for this, and the weight of each package may need to be restricted to allow manual transfer.
* Where possible, the type of packaging should be specified in detail at the time of order placement.

Inner packing
Attention should be paid to the following points:
* The inner packing should be unbreakable and sealed
* Glass or brittle containers should be avoided
* Cellophane should not be used
* Lids should be fastened tightly
* There should be no sharp edges

a) Goods by Type
* Never mix medical with non-medical supplies.
* Generally, any one package should contain only one product, and only one size of that product.
* Goods should only be mixed if special mixed units are required, i.e. "Family parcels".

b) Edible and Inedible goods
* If packed with other goods, the contamination of edible foods must be prevented by provision of adequate barriers.
* Edible and inedible products must be packed separately in plastic wrapping when included in the same unit or consignment

c) Certification
* Shipper should certify that packing complies with I.A.T.A. regulations, as required.
Other considerations

a) Cartons, desirable qualities
   • Maximum content weight: 25 kg.
   • Strong export carton such as multi-wall cardboard container with one waterproof layer.
   • Strong and stackable when filled to capacity, solidly packed and sealed.
   • Resistant to humidity which can cause loss of corner strength or collapse.
   • Bound with tape or strapping.

b) Wooden Box or Case
   Used for breakable or valuable goods, for sea shipments and where especially difficult conditions of transportation are likely to be encountered.
   • Maximum gross weight: 50 kg, but preferably 25 kg.
   • Stackable
   • Strong quality wood
   • Treated for moisture resistance
   • Lined with heavy plastic or waterproof paper
   • Bound with strapping

c) Wooden crate
   Used to protect heavy articles such as generators and medical equipment.
   • Packing case made from slats of wood

d) Bag or Sack
   Used for packing bulk dry food items.
   • 3 ply paper sack with plastic inner sack, used for milk powder and enriched food products.
   • Jute outer sacks with cotton inner sack for legumes, grains etc.
   • Woven polypropylene or cotton/polypropylene blend outer sack, with cotton inner sack for cereals, grains etc..

e) Bale or Bundle
   Generally used for packaging blankets and clothing.
   • Generally maximum weight: 50 kg
   • Compressed and strapped
   • Covered with waterproof material

f) Pallet
   Generally used for outgoing relief consignments.
   • Good quality of wood
   • Covered with plastic shrink-wrap or plastic sheeting and bound with strapping or strapped thoroughly all around goods and the pallet
   • Size and type chosen to fit onto transport and loading equipment used
   • Packing list must itemize goods on each pallet
g) Standardized Trans-Container, most commonly used are:

- 20 foot container and 30 cubic meters capacity with a maximum load of 18 tons.
  
  **Internal dimensions:**
  
  - Length: 5.89 meters
  - Width: 2.32 meters
  - Height: 2.23 meters
  
  **Door:**
  
  - Width: 2.30 meters
  - Height: 2.14 meters

- 40 foot container and 60 cubic meters capacity with a maximum load of 30 tons.
  
  **Internal dimensions:**
  
  - Length: 12 meters
  - Width: 2.32 meters
  - Height: 2.34 meters
  
  **Door:**
  
  - Width: 2.30 meters
  - Height: 2.23 meters

- 45 foot containers are also in use, mainly in the U.S.A.

*Note:* Where containers are to be used for dispatch of supplies, the following points should be covered:

- It must be confirmed that the destination can handle the container
- Each package in container must be properly marked

h) Strapping, Taping

Bales, wooden boxes and cases are always strapped.

- Woven polyester strapping preferred to metal bands
- Strong packing tape may be preferred on cartons if under 10 kg
- Strap at least once around length and twice around width of package

i) Tins, Cans

- Re-usable containers preferred
- Accompanied by opening devices

j) Plastic Bags and Wrapping

- No cellophane
- Heavy duty plastic
- Possibly vacuum packed

k) Filling Materials

- Wood shavings
- Straw
- Shredded paper
- Styrofoam
- Air-bubble plastic sheet
- Corrugated paperboard partitions

**Markings**

In large scale relief operations, the simultaneous arrival of thousands of relief parcels is common. Information on the content of these consignments is thus of vital importance.
Accordingly, attention should be paid to the following issues:

a) Visibility
   - The vendor shall preferably stencil in bold letters and waterproof ink the address indicated in each purchase order on each pallet, package, carton etc.
   - Dark lettering on light background
     Non-detachable Labels:
     - Glue labels with heat-curing glue
     - Avoid self-adhesive stickers

b) Identification
   - To facilitate identification of shipments at the point of discharge, each pallet, package, arton etc., shall have a wide blue band in the form of a ribbon of blue paint, at least one inch wide (in the case of containerized shipments, the blue band is not required).

c) Addresses
   The actual address to be used shall be that indicated in the purchase order. The following information should be available "at a glance" on each label:
   - Symbol of the organization placing the order
   - Purchase order reference
   - Final destination (port of arrival)
   - Name of sender
   - Total number of pieces
   - Box number, if part of a set
   - Weight
   - Description of contents
   - Consignee address
     The language to be used depends on the destination of the consignment. In most cases, English, French or Spanish would be used.

d) Air consignments
   For air consignments, a label with the following information must be attached:
   - Airway bill number
   - Airport of destination
   - Airport of departure
   - Total number of pieces
   - House air way bill number, if any

e) International hazard warning signs
   These are used to indicate fragile, poisonous, no hooks, keep dry, keep cool at °C, combustible etc.. The labels are available from airports for air shipments.
   Additional compulsory information may need to appear, i.e. any warnings required by law, because of the nature of the goods or simply required by caution for proper handling.

   It should be kept in mind that the physical handling in warehouse sheds is often done by unskilled or illiterate workers unable to read the European alphabet. Indications are therefore preferable as symbols such as broken glass for fragile items, or arrows for a package to be kept upright.
QUALITY INSPECTION SERVICE

General

When purchases are made from a number of supply sources, it may be necessary to ascertain that the goods meet the required specifications, arrive in good condition and perform to expectations.

For this reason, quality inspection service is often ordered from specialized companies complementing supply contracts for goods.

Available services include:

a) Endorsement of supplier's capability

For large-scale contracts an additional appraisal of supplier's capability can be undertaken in order to assess in depth, the suppliers ability to supply goods to the required standard, their capacity to supply, and the effectiveness of the quality control systems used by them.

b) Protection of purchased goods/equipment

In order to minimize the risk of the goods or equipment proving inadequate when received, or quality not up to the mark, the following services can be ordered prior to delivery:

* Verification of conformity to standard specifications
* Check for quantity and packaging
* Provision of an inspection report, including a final inspection certificate.

Terms of reference governing the mandate of inspecting agencies

Terms governing the pre-dispatch inspection of goods consignments can be of a varied nature, simply because of the vast range of goods needing to be dealt with in the procurement operations of the UN system and affiliated organizations.

As a general rule, the following aspects are contained in the services offered by Inspecting Agencies:

* Assessing the capability of remote and often unknown manufacturers before a contract is awarded
* Advising on competitive tender adjudication
* Assessing samples
* Making critical stage manufacturing checks and witnessing final tests
* Approving protection and packing for shipment
* Helping to maintain quality of supply from one supplier to another
* Issuing verification that the correct goods are dispatched

These services can make some important contributions toward the successful implementation of relief projects by:

* Minimizing the risk of delays and rectification costs due to damaged or incorrect equipment arriving at site
* Maximizing quality and reliability standards inherent in the specification

Given the wide range of supplies that are handled by the UN and affiliated organizations, it is doubtful that any one inspection organization would be capable of offering their services for all the items involved.
There are, however, a large number of individually specialized agencies that cover the entire range of required services. Typically, the requirements of inspection needs faced by the UN and affiliated organizations will tend to be concentrated in the aspects relating to pre-dispatch quality checks, quality assurance audits, in-process and commissioning surveillance and also packing and shipping verification.

The Inspecting Agency selected for a particular assignment will need clear instructions as to the scope of the service required. Most of the companies offering services in this field are happy to guide potential clients as to the extent of scrutiny, which is desirable or necessary in each particular instance. This would naturally depend on several factors such as the commodity being procured, the source of supply, past experience of the purchasing organization with the particular supplier etc..

The agreement with the Inspecting Agency would normally be in the form of a contract specifying the exact nature and scope of the quality checks at various stages during the contracted supply of the goods being purchased.

Charges for the services of the Inspecting Agencies can either be as “Lump sum for services rendered” or alternatively, as a percentage on the dispatch value of the goods under inspection.

Guidelines for selection of Inspecting Agencies

From the list of the companies offering quality inspection services, it can be seen that these are situated in widely-dispersed locations, and in fact, tend to be specialized in the particular fields related to the pre-dominant industrial and commercial activities of their regions.

The factors influencing the choice of company for a specific assignment of Quality Inspection include:

* The background and experience profile offered by the company in the particular field relating to the commodity to be shipped.

* The location of the Inspecting Agency with respect to the location of the supplier in question. This will have a bearing on the familiarity that the Inspecting Company would have with the local environment, and could influence the effectiveness of the service at that location.

* The strength of the company’s professional manpower.

* The flexibility of response, and the degree of expert back-up available to field inspectors.

* The access to communications within the company, in case of a remotely-located head office. This should be available for emergency consultations needed by field staff, which in turn affects the supply or shipment of the material in question.
SHIPPING

General considerations

The annual volume of equipment and supplies procured by the various agencies of the United Nations system adds up to some US $3.5 billion a year. A considerable proportion of these goods are shipped from the place of procurement to their final destination.

Transport is the essential link between supplier and receiver. Even the best supplies are of no avail if they are not received when they are needed, where they are needed and in good condition. This necessitates a close collaboration between purchasing and shipping, since the journey involved, whether surface or air, may be an important factor; and because the cheapest price, FCA (or FOB) excluding shipment, may not be the cheapest landed cost.

Methods of dispatch

Some important aspects which need to be considered when selecting a method of transport are:

- Speed
- Reliability
- Convenience
- Flexibility
- Customer communication

Various methods are available for transportation of goods between countries:

a) Ocean freight

- Conventional service

Cargo is transported by a "carrier" between a named port of shipment and a designated place of destination. The carrier issues a bill of lading (B/L) covering the consignment which is loaded into one of the holds of the carrying vessel (exceptionally on deck if the nature of the goods so requires).

- Container services

Cargo is transported in a 20 foot or 40 foot container. The use of containers is expanding constantly due to the considerable cost advantages available from the savings in loading/unloading time and for the shipper, also the reduced risk of loss, pilferage and damage, through a safer carriage. Easily stocked goods can be delivered with lighter packing, thus not only allowing savings here, but also on transportation costs because less weight/bulk means lower charges.

When a shipper does not have enough cargo to load a container to its full capacity, he may often find it an advantage to contact a forwarder running a "consolidated container service", i.e. using one container for several loads originating from various shippers. This is of the greatest interest in the case of shipments to land-locked countries, as the use of containers practically eliminates the risks of loss, pilferage and delays in the port of unloading for trans-shipment over land.

Bills of lading are issued direct by the carriers, in case of a "full container load (FCL)", or by the consolidator, in case of a "less than full container load (LCL)". In the last instance, the document issued is a "house" bill of lading for each individual load, the container itself being covered by a master B/L kept by the consolidator.
- **Chartering**
  
  When a consignment represents several thousand tons or cubic metres, the normal procedure is to charter a vessel or part of a vessel, after contacting possible carriers for quotations. A charter-party can be concluded for a specific load (tonnage), for a journey or for a determined length of time.

b) **Rail or Road**

For overland transportation, cargo can be sent by rail or road, depending on the availability of services and, of course, the type of cargo to dispatch. Bulk cargo such as coal, sand, cement etc., will normally travel by rail or barge wherever possible. Smaller and higher value consignments are more and more dispatched by road, either as full lorry-loads, with the advantage of door-to-door service, or in consolidated containers described before.

c) **Air freight**

The traditional method of air dispatch is to deliver a consignment covered by an individual airway bill to an air carrier (either direct or through a freight forwarder). The airway bill will specify the goods to be carried between two designated airports placed at the disposal of a designated consignee, against payment of the freight charges calculated in accordance with the rates applicable in their current tariff.

In the same manner as for surface transport, air consignments may be carried in consolidated services operated by freight forwarders, between main airports at advantageous rates. In case of large loads, it is possible to charter a full aircraft or arrange for what is called a split-charter if the load will not fill the aircraft to full capacity. Such a contract is placed subsequent to receipt of quotes from carriers, whether traditional airlines, their subsidiaries specializing in chartering or independent carriers.

d) **Post**

Where postal services are reliable, small parcels can often be more cheaply sent by air parcel post or even by surface parcel post, if the time element is not of primary importance. These, however, should always be sent registered or insured. The main consideration is the reliability of the postal service at the destination, in advising consignees of the arrival of parcels, which in most instances, have to be cleared through customs before they can be delivered.

e) **Multimodal Transportation**

This relatively recent method of transportation, is essentially the movement of one unit load by several methods of transportation under one document from origin to destination, without breaking-up the unit load.

It is the development of containerized traffic which has made this possible, as containers can travel from end to end without being opened / unloaded / reloaded during the course of the journey.

Companies which can offer multimodal transportation are usually large firms of forwarding agents who specialize in such traffic, as it obviously requires considerable organization for the smooth working of the chain of transport events involved here.

The advantage to those who make use of multimodal transportation is, that they have one document only for the whole operation and that the operator is legally responsible for a satisfactory performance by his own staff and by the agents or branches that he is employing.
SELECTING THE MOST APPROPRIATE METHOD OF DISPATCH

Several factors need to be considered when planning the dispatch of an item, and they may be conflicting. Some important aspects are type of goods, journey involved, the time element, the cost element and safety considerations.

In some cases there is little choice: perishable goods will be sent by air, and large quantities of fertilizer, insecticides or sewer pipes will be sent by surface transport. Again, dangerous goods may not be allowed by airfreight. But in many instances there is a wide flexibility as to the choice of method of transportation.

Origin and destination determine distance and can decide the type of transportation required. Surface shipment may be logical in certain cases while airfreight might be required in others.

In emergencies, the initial top priority is the delivery of supplies within the shortest possible time. Subsequent follow up supplies will however often present a range of possibilities requiring some consideration to arrive at the best choice of transportation.

PARTIES INVOLVED IN THE CHAIN OF TRANSPORTATION

There are several parties involved in the process of transportation of supplies from the point of origin to the designated destination. These include the following:

a) Carriers

Inland carriers are those who take charge of the consignment at the supplier's premises, carry and deliver it to the specified warehouse, berth, wharf or airport of departure. At destinations, inland carriers may be required to transport consignments from the place of arrival to their final destination.

Overseas carriers are either steamship or airline companies. A shipment may require transportation by one or several carriers if trans-shipments are involved.

b) Forwarding Agents

Known also as freight forwarders, freight brokers, transit agents, and who also may act as clearing agents or customs brokers. In most cases buyers and sellers rely on the services of specialized firms for shipment and processing of customs formalities for their cargo. The role of the forwarding agent is to monitor shipping from the moment cargo becomes available. At destination, forwarders may be appointed to retrieve cargo, arrange for its clearance through customs, and for its delivery or on-forwarding.

c) Dock Authorities

Consignments will be kept in the jurisdiction of port/airport authorities pending shipment or pending clearance and retrieval at destination.

d) Customs Authorities

Cargo imported or exported from one country into another needs customs clearance. The functions of the customs authorities include controls to prevent illegal transactions. Documents need to be processed through the competent customs offices.

e) Insurers

By means of separate insurance policies or under contractual arrangements, insurance companies will hold all cargo covered against the hazards of transportation from origin to destination.

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Shipping documents

Certain basic documents are required for the carriage of cargo. Other documents are also needed by consignees and buyers to complete any transaction.

a) Ocean freight

The bill of lading (B/L), which is the document covering the carriage of goods by sea, is the authentic receipt delivered by a carrier, confirming that the goods therein specified have been loaded or taken in charge for loading on a designated vessel for carriage to a specified port. The original B/L is the title of property to the goods.

The B/L can be of the following types:

- **Relating to parties**
  - B/L to a named person or consignee - that person alone will be able to collect the goods at destination against presentation of the original B/L.
  - B/L to bearer - the holder is considered as the legal owner of the goods.
  - B/L to order - that is to the order of the shipper, who must endorse it first. Such a B/L can be endorsed by several persons successively, to transfer the title to the goods to successive parties.

- **Relating to journey**
  - Direct B/L - from port to port, without transhipment.
  - Through B/L - means that a transhipment is taking place along the journey. This can be either in a first port of unloading for transfer into another vessel serving the final destination, or in a port for overland on-forwarding, or again, from an inland origin for carriage to a port where shipment will take place.

In a through B/L, the cost of transhipment, the first and/or second freights are paid by the carrier and normally billed as a lump sum. Transhipment, however, is always effected at the risk of the owner of the goods.

These various features of B/Ls designating beneficiaries and routing, can combine their elements, and there can be, for instance, a direct B/L to order, or a through B/L to bearer.

- **Forwarder B/L**

In the case of multimodal transportation, one document only is issued and this is what is called a "house" B/L or also a FIATA B/L, if the document is prepared on forms emitted by FIATA (International Federation of Freight Forwarders Association). This document is in fact a through B/L, with the difference that it is not emitted by an ocean carrier but by a forwarding agent under his own name.

b) Rail - Road

Goods transported by rail between countries are covered by international "rail consignment notes". These documents are not negotiable, the cargo being placed at the disposal of the designated consignee, upon proof of identity. For road transportation, waybills are normally issued. For loads less than a full truck, consolidation is the rule.
c) Air freight

The document covering the carriage of goods by airfreight is called an airway bill (AWB).

The AWB to air transportation is what the B/L is to ocean freight, with however, a fundamental difference: the AWB is not a negotiable document; it cannot be endorsed and is not a title of property to a cargo as such. There is no "original" AWB to be given to the consignee to enter into possession of the goods. The consignment is placed at the disposal of the stipulated consignee against proof of identity, a signed receipt, and payment of charges if any.

When airfreight consignments are sent by a joint-cargo service, the consolidator will issue an ordinary AWB to his agent at destination, covering the entire consignment, but issue a separate "house air waybill" (HAWB), for each individual lot. The agent will place the individual lots at the disposal of the various consignees designated on the house air waybills. As with Bs/L, all detailed information required to identify the consignee and the goods must appear on the AWB.

d) Post

A postal declaration giving the name and address of the consignee must be filled. A receipt is given by the postal authorities for all registered/insured parcels.

e) Supporting documentation

In addition to the basic transport documents, buyers and receivers may require some other forms:

- Invoices and packing lists, essential to clear through customs and to tally the supplies received
- Forwarder’s receipt, to process suppliers’ invoices for payment;
- Certificate of origin, may be required by the customs, in the country of destination
- Legalized invoices, may be required by the customs, in the country of destination
- Consular invoices, may be required by the customs, in the country of destination
- Declaration on dangerous or restricted cargo required by carriers before they will accept such items for transportation
- Insurance certificates, as applicable
- Veterinary certificates and
- Certificates of analysis or of conformity in accordance with special conditions, which may be part of contracts.

In some special cases, additional certifications or mentions may need to appear on invoices or shipping documents. When this is required, forwarding agents will normally be able to deal directly themselves.
INCOTERMS

To avoid conflicts and difficulties, buyers and suppliers must have a common understanding of the terms under which they trade. The mention of "INCOTERMS 2000" in a contract determines the obligations of both parties, and contributes to eliminate causes of disagreement. In some countries INCOTERMS have to be used by law, in others, they are recommended and could be judged to be legally binding in any dispute. There are 13 different terms, but in practice, commonly used terms in the UN system are as follows:

| Any mode of transport including multimodal | EXW  | Ex Works (... named place) |
|                                          | FCA  | Free Carrier (... named place) |
|                                          | CPT  | Carriage Paid To (... named place) |
|                                          | CIP  | Carriage and Insurance Paid To (... named place of destination) |
|                                          | DAF  | Delivered at Frontier (...named place) |
|                                          | DDU  | Delivered Duty Unpaid (...named place of destination) |
|                                          | DDP  | Delivered duty Paid |
|                                          | FCA  | Free Carrier (... named place) |

| Maritime Transportation                   | FAS  | Free Alongside Ship (... named port of shipment) |
|                                          | FOB  | Free On Board (... named port of shipment) |
|                                          | CFR  | Cost and Freight (... named port of destination) |
|                                          | CIF  | Cost, Insurance and Freight (... named port of destination) |
|                                          | DES  | Delivered Ex Ship (...named port of destination) |
|                                          | DEQ  | Delivery Ex quay (...named port of destination) |

Table 1. Commonly used INCOTERMS in the UN System

The detailed definitions of the above-listed terms may be referenced in INCOTERMS 2000, published by the International Chamber of Commerce in Paris.

The minimum responsibility for suppliers is "ex-works" (EXW), where the supplier has few obligations other than to make the goods available at the warehouse/factory gate.

The buyer, who wishes the supplier to bear the entire responsibility of delivery to the country of importation including risk involved in bringing the goods, should opt for the term DDU (Delivery Duty Unpaid). This excludes duties, taxes and and other official charges payable upon importation, from which the UN is exempt.

On the whole, INCOTERMS tend towards minimum liability on the part of the supplier. It is for the buyer to ensure that the supplier’s liabilities not in the rules are imported into the contract if he so desires.

When purchasing from a country which has strict exchange control regulations, it is always preferable to buy on a CPT/CFR basis, the main reason being that, in case of CIF or CIP, the settlement of potential claims against the insurance company in the country of the supplier is rather lengthy, as it normally requires the approval of exchange control authorities.

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INSURANCE

General

It is normal practice to insure goods in transit. Briefly, the following reasons compel traders to contract transport insurance:

* Protection against financial losses resulting from damages, pilferage and theft, breakage, non receipt of entire or part of a consignment and damage suffered by goods whilst in transit.

* Protection against financial claims that can be made against the owner of goods on board a vessel in case of a "declared general average" (the goods themselves being undamaged).

It may be of interest to explain here the exact significance of the terms "particular average" and "general average":

- Particular average means damages sustained by goods only or by the ship only
- General average means the loss (jettison) and the expenditure, voluntarily incurred, to prevent the entire loss of a vessel and her cargo on board.

How to insure

a) Through suppliers

In case of contracts placed CIF or "freight and insurance extra at cost". The only advantage of this method is, that it relieves the buyer of the task of making the insurance arrangement. The disadvantages are many and often less coverage is obtained at much higher premium this way.

b) Self- insurance

This is when the buyer decides against insuring outside and chooses to bear the risks of transportation. This is quite a common practice for consignments of small value where the administrative work involved with any commercial insurance is not warranted.

c) Floating policy with an Insurance Company

This method is adopted by many commercial firms with a regular flow of shipments. A floating (or open) policy is the result of negotiation between parties. The larger the amount of business for the insurers, the better the terms they are prepared to offer. The consignees have the advantage in this case of dealing with the same insurance agents under the same terms and with a standardized method of reporting claims.

Insurance documents

Apart from the insurance policy itself, insurance documents are issued to cover consignments in transit. These documents include:

a) Insurance certificates

These are a furtherance of the policy issued to cover consignments in transit, to describe them, the journeys, the amounts covered, agents to contact at destination and other details relevant to cases.

Insurance certificates are signed by the underwriters and the original certificate is normally required in the set of documents to be presented to a bank for a transaction covered by a letter of credit. When not required for banking purposes, and to cut down on administrative work, certificates can be replaced by much simpler notices of insurance where only the agent to contact at destination need be added. This can be arranged by agreement between the holder of a floating policy and the underwriters.
b) Survey reports

This is the document established by the insurance company's agents at destination, when consignments are received in bad order. Since survey reports are costly, they should be requested only when it is expected that the loss or damage will exceed the figure considered reasonable by the underwriters. The survey report will be the basis of settlement of an insurance claim and it can be accompanied by an estimate of repairs approved by the surveyor when applicable.

The fees levied by the surveyor for preparing his report are payable by the party who requested his services, but are reimbursable by the insurance company.

Insurance claims

Processing an insurance claim involves administrative work, correspondence and accounting. It is not worth putting this into motion to recover small amounts, and claims involving compensations under say, $25 or $50, for instance, can well be dropped. A minimum level should be determined by negotiation. There is a difference between processing an insurance claim and the provision of replacements. A small and inexpensive spare part may be essential and urgently needed, but its procurement should not be the subject of an insurance claim.

An agreement should be reached with the insurer as to the amount under which no survey will be required, a report signed by a designated official being deemed sufficient by the underwriters to take a claim into consideration. This arrangement however does not relieve the consignee of sending letters of claim to the responsible party.

The following documents are required to process claims:

* Survey report or Senior Officer's report, according to the extent of damages.
* Estimates and/or invoices for the cost of repairs or for local purchase of replacement parts, whenever possible, approved by the surveyor to facilitate settlement.
* Copy of the invoice for the original shipment.
* Copy of claim letters to the responsible party and their answer.
* Short-landing certificates or certificate of loss when entire cargo is missing.
* Copies of invoices for replacement or spare parts which had to be procured and sent.

Note: A successful insurance claim will not compensate for the inconvenience caused to the end-users by arrival of supplies in bad order therefore, it is advisable to consider safety before cost.

The use of container services, full load or consolidated services, is recommended whenever possible, as this offers the best protection.

Clear shipping instructions are necessary to secure the best possible handling.

Supplies, even by post parcel must always be sent with a timely notification and supporting documents being issued to the end-user.
FORWARDING ARRANGEMENTS

General

In most instances, UN purchasing and shipping can be described as a triangular operation. There is a buyer, a supplier, and a receiver. On many occasions, the three parties are in different countries, if not on different continents. Directing the movement of supplies, i.e. shipping, can be done in different ways.

Dispatch arrangements by the buyer

For surface shipments, this can be achieved only if the buyer is located in a port city, where the numerous contacts for booking consignments, arranging delivery and processing documents can be made by the buyer himself. It requires a well established shipping department and is justified only in case of a large flow of cargo to be sent from that particular port.

For airfreight traffic, direct contact with carriers without intervention of freight forwarders, can be more easily arranged. Here again, a proper shipping office, a delivery service to and from the airport, direct access to the customs for clearances in and out, as well as agreement with carriers for payment of air freight charges are required. And of course, stocks of airway bills from the various airlines are needed.

Dispatch arrangements by suppliers on behalf of the buyer

This is the basis of contracts placed CFR/CPT, CIF/CIP, or following instructions on orders such as "freight and shipping charges (most often including insurance) at additional cost". Orders placed on CFR/CPT, or CIF/CIP, terms mean that suppliers have quoted a price which included the value of the goods and all shipping cost up to port/airport of arrival (CFR/CPT) or the value of the goods, all shipping cost and insurance up to port/airport of arrival (CIF/CIF). Suppliers are therefore, responsible for the shipping arrangements, either directly themselves or through their own forwarders most of the time. This should be in accordance with shipping instructions they may have received from the buyer, or according to their own best judgement if they have no specific instructions.

Dispatch arrangement made through forwarding agents

Forwarding agents are the nearly unavoidable intermediaries whose work is to ship goods on behalf of their many principals. When a contract is "ex-works" or FOB, the choice of the forwarder lies with the buyer.

There is a difference whether a forwarding agent is selected by the supplier or buyer. A forwarding agent works for and is responsible to his principals, i.e. to those from whom he receives a mandate and who pay him for his services.

A forwarding agent appointed by a buyer is in fact the buyer's representative on the spot with the specific mandate to look after interests of his principals, the buyer, and not after the supplier's interest. This can be very important should an incident occur at the time of delivery. Forwarders appointed by buyers can also perform other functions such as:

* Keeping in touch with suppliers and sending them reminders when orders are falling behind their delivery schedule.
* Consolidating orders for joint dispatch, thus reducing overall cost of transportation and facilitating receipt of orders at destination by making one instead of several shipments.
TRANSPORTATION COSTS

General

The cost of transportation represents a significant proportion of the total cost and time involved in getting a given item of emergency relief to its intended destination. In this context, it is important to be able to identify the options available in any given situation, so that the "most optimal" solution to a specific need can be met quickly and conveniently.

When purchases are made from a number of supply sources and require to be delivered to some common point of dispatch for forwarding to one destination, it would usually involve transhipment of sections of the eventual whole consignment. The transshipped sections may use different modes of transportation to reach the common point of consolidation of the whole shipment.

Some cost comparisons

It is important to remember that the cheapest mode of transport does not necessarily give the lowest landed cost at site. In fact, in some instances it is seen that air freight can work out to be the cheapest form of transportation overall. This can sometimes be the case when supplies need to be delivered to inland locations from sea ports and can require additional handling for maybe two or more transfers between different modes of transportation to the eventual end-users.

As a general rule however, air freight will be more expensive than other options; often, the cost of air freight is found to be almost double that of sea freight. However air freight can still be preferable where there is significant risk of damage to delicate or fragile cargo, or where the time element is of over-riding importance.
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