

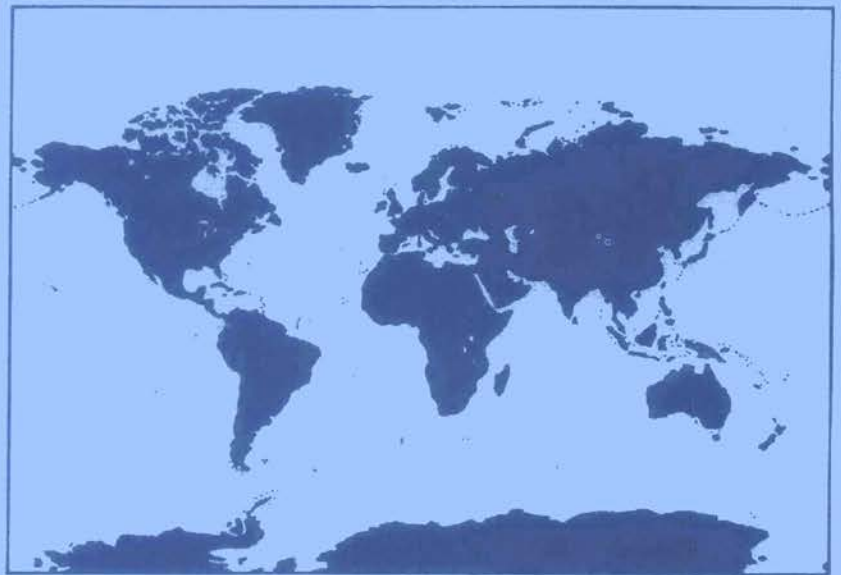


UNITED NATIONS ENVIRONMENT PROGRAMME

REGIONAL
SEAS

directories and bibliographies

catalogue of oil spill response equipment and products



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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome 1988

NOTE

This document is not an official publication but a compilation of information about equipment and products that can be utilized in combating oil spills. It in no way endorses any of the equipment and products listed. The document has been compiled on the basis of the information provided by the manufacturers in response to a questionnaire and, therefore, cannot be regarded as listing all the manufacturers. The catalogue has been compiled by the Regional Oil Combating Centre for the Mediterranean Sea under project FP/ME/5102-76-06.

The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of UNEP concerning the legal status of any States, Territory, city or area, or its authorities, or concerning the delimitation of its frontiers or boundaries.

For bibliographic purposes this document should be cited as follows:

IMO/UNEP. 1988. Catalogue of oil spill response equipment and products. UNEP Regional Seas Directories and Bibliographies. FAO, ROME. 86 p.

PREFACE

The Regional Seas Programme was initiated by UNEP in 1974. Since then the Governing Council of UNEP has repeatedly endorsed a regional approach to the control of marine pollution and the management of marine and coastal resources and has requested the development of regional action plans.

The Regional Seas Programme at present includes ten regions* and has over 120 coastal States participating in it. Each regional action plan is formulated according to the needs of the region as perceived by the Governments concerned, and is designed to link assessment of the quality of the marine environment and of the causes of its deterioration with activities for the management and development of the marine and coastal environment. The action plans promote the parallel development of regional legal agreements and of action-oriented programme activities**.

This publication is a contribution to the UNEP sponsored regional Action Plan for the protection of the Mediterranean. It has been prepared by the Regional Oil Combating Centre for the Mediterranean, operated by the International Maritime Organization (IMO) for the Mediterranean Action Plan. The secretariats of IMO and UNEP apologize in advance for possible errors and omissions in the publication and do not claim that the directory includes all the relevant manufacturers of oil spill equipment and products. All comments on the present document as well as suggestions for its expansion should be addressed to the:

Director
Regional Oil Combating Centre
for the Mediterranean (ROCC)
Manoel Island
Malta.

* Mediterranean Region, Kuwait Action Plan Region, West and Central African Region, Wider Caribbean Region, East Asian Seas Region, South-East Pacific Region, South Pacific Region, Red Sea and Gulf of Aden Region, East African Region and South Asian Seas Region.

** UNEP: Achievements and planned development of UNEP's Regional Seas Programme and comparable programmes sponsored by other bodies. UNEP Regional Seas Reports and Studies No. 1. UNEP, 1982.

INTRODUCTION

Various catalogues of equipment and products designed for combating oil spills are prepared and published more or less regularly by various organizations or institutions involved in oil pollution control. Some of these are only lists of manufacturers indicating their range of products while others include specifications of each item listed. Most of these publications favour products made in or available in the country where the catalogue is issued, which is quite logical and understandable. The problem arises when such a catalogue is used by people in another country: for them it is difficult to obtain an objective picture of the real state of the art in spill control technology world-wide from such publications.

Mediterranean countries with the exception of France and Italy, are almost exclusively buyers of equipment and products and do not have their own technologies in this field. It was on the initiative of these very countries that the Regional Oil Combating Centre for the Mediterranean Sea tried to prepare an "objective" and comprehensive list of pollution control material available on the market, regardless of its country of origin.

The first such document ROCC prepared in December 1981 ("Inventory of Commercialised Products and Equipment for Oil Pollution Combating") and disseminated it during 1982 to its Focal Points (Operational and Governmental) in all Mediterranean coastal States. This Inventory was aimed at helping national Authorities in the Mediterranean countries to obtain a better picture of what was at that time offered by manufacturers of equipment and products from various countries inside and outside the region. The document was generally accepted as a useful tool in the preparation of contingency plans and planning specific response operations and accordingly Operational Focal Points recommended (at their meeting in June 1983) the publication of an updated version.

The collection of information for the document which is in front of you, started in 1984 but due to delays in replies by some of the manufacturers and the inclusion of some new products, all the data could only be compiled in 1985. At that time the Centre finally obtained its electronic equipment and it was decided to "computerize" all the information. Hence a final version of the catalogue was eventually ready by the end of 1986.

In the preparatory phase, the Centre disseminated questionnaires to almost 400 manufacturers world-wide and approximately one-third of these replied. The Catalogue is based on these replies which reflect the situation in the field of oil pollution combating technology in the period 1984-86. Having all the relevant data stored and processed, the Centre now intends to regularly update the document and to disseminate it periodically to its Focal Points.

And now, a few words about the contents of the Catalogue.

This document is conceived as a supplementary source of information to the "Guide for Oil Pollution Combating in the Mediterranean" published by ROCC some time ago. Both documents are intended for use by various national Authorities in the Mediterranean coastal States (although nothing prevents them from being used elsewhere) and are complementing each other. The Guide gives basic information for decision taking (either at the stage of contingency planning or in cases of emergency) while the Catalogue provides

information on equipment and chemical products specially designed for accidental oil pollution control and combating. Although spill response operations inevitably involve the use of various non-specific equipment (hand tools, earth moving equipment, agricultural equipment, vehicles, aircraft, surface vessels, etc.) and materials (straw, sand, sawdust, etc.), the job can be done best with the proper tools, i.e. specifically designed equipment and purposely formulated chemicals. Accordingly only these have been included in the Catalogue.

The document is divided into two parts: the first one dealing with products and equipment and the second, providing information on manufacturers and/or distributors.

Pollution control material listed in the first part of the Catalogue has been classed into 14 Sections:

1. Aircraft
2. Oil spill surveillance / Detection devices
3. Booms
4. Recovery devices
5. Specialized antipollution vessels
6. Other vessels
7. Pumps
8. Tanks / Storage units
9. Spraying Equipment
10. Beach cleaning equipment
11. Other equipment
12. Sorbents
13. Dispersants
14. Other (spill control) products

Each Section starts with a brief introductory text, followed by the list of equipment or products included in that Section. Each item listed is described in words and by some significant numerical values. The last column in each list indicates the manufacturer/distributor by a number. This number links the two parts of the Catalogue. It corresponds to the number given to the manufacturers listed in the second part of the Catalogue: e.g. if a certain boom is manufactured by manufacturer No. 33, all relevant data on this manufacturer (address, telephone and telex numbers) can be found under No. 33 in the second part of the document. Besides the list of addresses, telephone and telex numbers of the manufacturers, the second part of the Catalogue also includes the list of all material produced by each manufacturer and the list of all manufacturers/distributors offering a certain type of equipment or chemical product.

For most of the manufacturers and distributors, as well as for the equipment and products which they offer, the Centre has at its disposal, complementary information which could not be included in the Catalogue without making it impractically bulky. Should any user of this Catalogue need some additional information, the Centre will gladly provide it. Alternatively, manufacturers or distributors can be contacted directly, particularly if this additional information concerns prices since these are not available at ROCC.

Finally ROCC will be grateful for any comments concerning data included in this document since some inaccuracies might have unintentionally slipped in during its preparation.

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PART I
EQUIPMENT AND PRODUCTS

1. A I R C R A F T

The use of various types of aircraft (fixed wing or helicopters) becomes more and more common in conducting oil spill response operations. Aircraft can be used for surveillance of oil spills, for transportation of response teams and/or equipment to the spill site, for spraying dispersants or other oil spill treatment products, etc. Almost any type or size of plane or helicopter can be used or modified for one of the above mentioned purposes, however it is not the intention of this Catalogue to list them all.

Only the aircraft purposely built or equipped to carry out duties connected with fighting oil pollution are included in this Section. Besides the purposes for which the aircraft is designed and the equipment it carries, we have indicated basic dimensions, flying range in both kilometres and hours, maximum speed and engine(s) power.

A I R C R A F T

NO.	MODEL	DESCRIPTION	DIMENSIONS (m)			RANGE		MAX SPEED (km/h)	ENGINES (HP)	MANUFACTURER
			L.O.A.	WING SPAN	HEIGHT	(km)	(hours)			
1	P 68 - OBSERVER	twin engine surveillance aircraft equipped with SLAR, thermal IR scanner and microwave radiometer.	9.35	12.00	3.40	2000	8	322	2 x 200	PARTENAVIA (81)
2	DHC - 6/SR 300 TWIN OTTER	multi-purpose aircraft, search, reconnaissance of oil, dispersants' spraying, transportation, equipment includes SLAR, IR scanner, MARM.	NA	19.85	NA	1440	5	300	650	DE HAVILLAND OF CANADA (81)

2. OIL SPILL SURVEILLANCE / DETECTION DEVICES

This section lists various instruments used for detection of spilled oil. These include equipment which can be carried by aircraft and which enable remote sensing of oil spills, floating equipment for detection of oil and instruments for on-site measurement of oil content in water.

Detectors for permanent installation and measurement of oil content in water, such as those used on board ships or in petroleum industry, have not been listed since their use in spill response operations is negligible.

Each of the items listed is described by its functions, features and limitations, in addition to dimensions and weight which can prove to be of major importance especially for airborne equipment.

OIL SPILL SURVEILLANCE / DETECTION DEVICES

NO.	MODEL	DESCRIPTION	FEATURES	LIMITATIONS	DIMENSIONS (mm)			WEIGHT (kg)	MANUFAC.
					LENGTH	WIDTH	HEIGHT		
1	NORDAN SLAR	airborne, side looking radar, surveys, detection, mapping and locating oil spills, permanent recording.	long range, weather penetrating, high resolution, day/night, easy mounting/handling, accuracy, immediate response.	NA	3600 + 400	400 + 500	200 + 1000	30	(81)
2	NORDAN MIRM	airborne, microwave radiometer, determines oil thickness, estimates spill volume, locates spill, permanent recording.	long range, weather penetrating, high resolution, day/night, easy mounting/handling, accuracy, immediate response.	NA	1800 + 400	900 + 500	800 + 600	100	(81)
3	NORDAN IR SCANNER (FLIR)	airborne, thermal IR scanner, surveys, detection, mapping and locating oil spills, determines oil thickness, permanent recording.	high resolution, day/night, easy mounting/handling, accuracy, immediate response.	NA	NA	NA	NA	NA	(81)
4	IR 18	airborne (can be mounted on ships' masts), thermal IR scanner, surveys, detection, location, mapping oil spills, estimates spill thickness and volume, permanent recording.	long range, high resolution, day/night, accuracy, immediate response, remote control.	thin films not detected, rain and high humidity.	NA	NA	NA	35	15 (44)
5	AGA THERMOVISION 782	airborne, thermal IR scanner, oil spills detection, surveys, mapping, locating, permanent recording.	long range, weather penetrating, high resolution, day/night, accuracy, immediate response, easy mounting/handling.	NA	190 + 322	80 + 253	125 + 129	6.1	4
6	AA 2000	airborne, IR/UV scanner, surveys, oil spills detection, mapping, estimating spill volume, locating spills, determines oil thickness, permanent recording.	high resolution, day/night, easy mounting/handling, immediate response.	responds to natural slick like areas, UV needs good lighting.	380 + 340	380 + 480	380 + 180	17 + 66	34
7	T32 S11	airborne, low light level TV camera, survey, permanent recording.	long range, high resolution, day/night, easy mounting/handling, accuracy, immediate response.	needs minimum quarter-moon lights.	120	130	330	5.5	(81)
8	OW 2 EX	floating alarm unit based on conductivity test, can be used with permanent oil booms, separators etc, 220 V current supply required, determines oil thickness, warning.	wide range, easy mounting/handling, day/night.	NA	320	140	110	4.5	82
9	OWG 15	floating oil warning device based on conductivity test, for fixed installation in separators etc, 220 V current supply required, determines oil thickness, warning.	wide range, day/night, easy mounting/handling.	NA	175	400	400	15.4	82
10	DCMA 220	portable, self-contained oil content monitor (0-20ppm), non-dispersive infrared analyzer determines oil concentration in water, requires AC electric supply.	high resolution, easy mounting/handling, accuracy, immediate response.	NA	290	220	375	10	59

3. B O O M S

Booms have proved to be one of the most important tools in controlling accidental oil spillages. This is due to the fact that oil, when spilled on the sea (water) surface, does not remain confined to the place of spillage. Gravity causes its spreading and winds and currents result in its displacement. Both these actions have adverse effects on any attempt made to remove spilled oil from the sea surface, which is the final aim of all spill control activities.

Any obstruction in the course of the oil will normally influence its motion, but only coastline will definitely terminate this process. Since in most cases, the uncontrolled arrival of oil on a coastline is the least desirable result of an oil spill, achieving a certain control upon oil movement and spreading has been one of the prime goals of oil spill control technology.

Although some results in terms of oil spill containment can be attained using improvised barriers (e.g. logs, sleepers/railroad ties/, beams, poles, air inflated fire hoses, earth or sand dams etc.), only purposely built floating barriers (usually called floating booms or only booms) are capable of providing a reasonably high degree of spilled oil movement control.

Booms are defined as devices (floating barriers) specially designed for the control of oil movement on the sea (water) surface.

Booms can be used:

- . to contain,
- . to concentrate,
- . to direct oil slicks.

The main objectives for using booms are:

- . to concentrate spilled oil in order to facilitate its recovery;
- . to protect certain parts of a coastline from contamination with spilled or refloated oil.

It has to be emphasized that booms should always be used in conjunction with some kind of recovery device(s) since none of their afore mentioned functions can be achieved if oil is not successively removed from the area in which it has been confined.

Commercialized booms are available in various shapes and sizes but besides this, in each design, four basic elements can be distinguished:

1. Flotation element (float) provides for the buoyancy of the whole system (boom), but often functions as an additional freeboard to reduce splasher. Either solid material (expanded plastic foams e.g. polyethylene, polyurethane, polystyrene or natural flotation materials e.g. cork, wood) or gas (air, carbon dioxide) can be used as flotation material.
2. Skirt (oil retention element) acts as a barrier for the spread of oil underneath the water surface. Its depth affects the efficiency of the boom, but also influences a great deal the total load exerted on the whole system. Skirts of most booms are made of plastic or synthetic rubber coated fabrics, but non-reinforced plastic materials, nets or metal sheets are also used in certain designs.

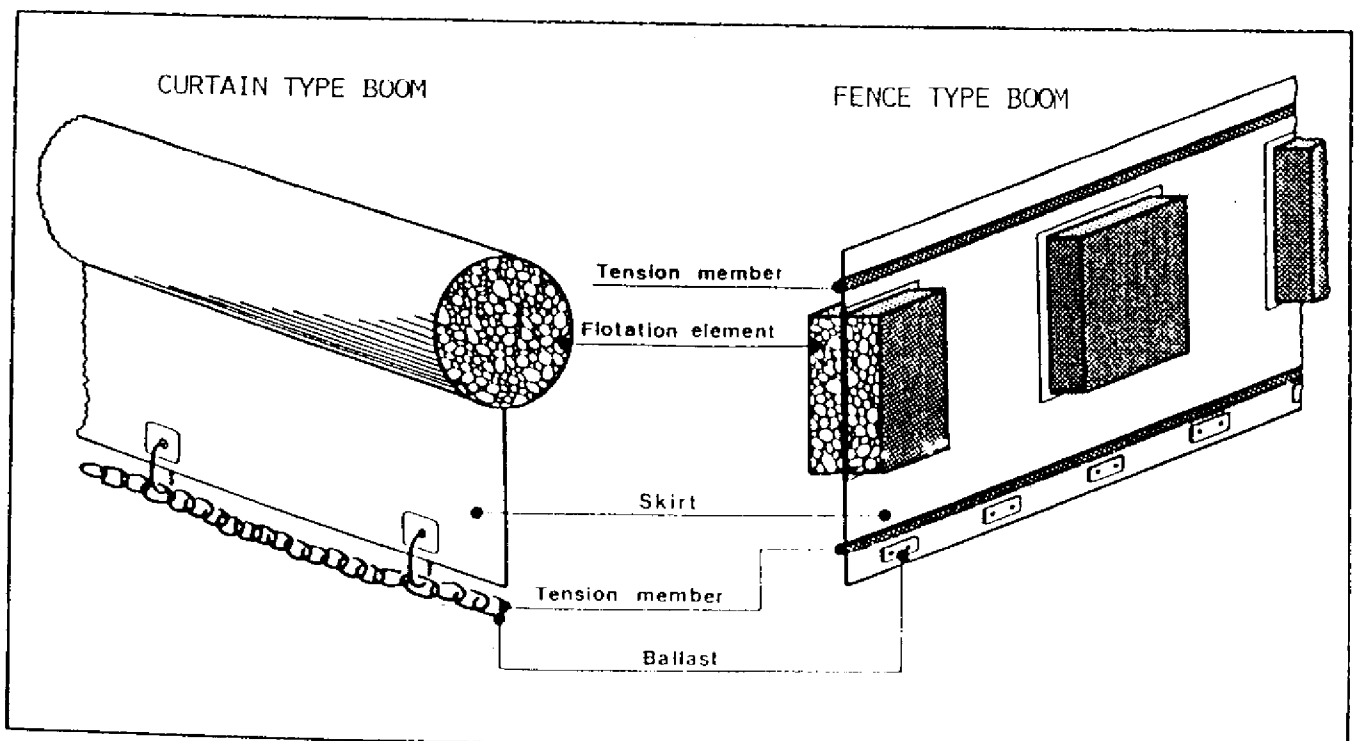
3. **Ballast**, which is attached to the bottom of the skirt tends to keep the boom in position perpendicular to the water surface. In most cases it is either chain (special or galvanized steel, lead) or specially designed metal weights (lead, galvanized steel). A specific design incorporating water filled tube which acts as skirt/ballast also exists.
4. The function of a **longitudinal tension member** is to provide enough tensile strength of the system, bearing most of the load created by winds, waves and currents. It can either be incorporated in the boom (nylon rope, webbing, wire cable) or attached to the boom as a separate tension member (stainless steel cable, rope). In some designs the ballast chain also acts as a tension member. If the material out of which the whole boom is made, has sufficient tensile strength for envisaged working conditions (sea state, winds, currents), no additional longitudinal tension members are added.

Most booms will also include:

- . connectors/couplings
- . anchoring points

Booms can be classified in two categories as regards their basic design:

1. **FENCE** booms have a vertical screen extending above and below the water surface thus acting at the same time both as freeboard and skirt. The flotation element is either bonded to the "fence" or integrated in it to provide for the buoyancy of the boom. Their cross section is usually (but not always) flatter when compared to curtain type booms. Fence booms are kept in position perpendicular to the water surface by weights attached to the bottom of the screen.
2. **CURTAIN** booms are constructed out of a longitudinal flotation element, acting as a freeboard, with subsurface curtain (skirt) suspended from it. Ballast is normally attached to the base of the skirt to keep it in a vertical position. The tension member can either be integrated (built-in) in the boom or attached to it. In some designs ballast chain also acts as a tension member.



Booms listed in the following pages have been described in accordance with the above text (which is an excerpt from the "GUIDE FOR OIL POLLUTION COMBATING IN THE MEDITERRANEAN", ROCC, May 1986).

Description includes boom type (fence or curtain), types of flotation element (air or solid), ballast (chain, wire, weight blocks, water etc.) and tension element (chain, cable, wire, fabric, etc). "0" in this column means that there is no specifically defined ballast and/or tension element i.e. that these are incorporated in the material out of which the boom is made.

The next columns give dimensions of each boom, length of each independent section, weight per length, strength, material and colour.

Although SI units have been used in this Catalogue wherever possible, boom strength is given in kilograms (instead of daN) since most of the manufacturers and users alike seem to prefer this unit (or lb in UK and USA). However figures in this column should be taken cautiously since methods of measuring strength of a certain boom are usually not known and hence figures are not necessarily comparable in all cases. Some manufacturers used other units (e.g. N/cm, kg/cm, daN/5cm) which could not be converted into kilograms and these have been left in their original form.

In the column "Material and Colour" some abbreviations have been used. These are PE (polyethylene), PU (polyurethane) and PVC (polyvinyl chloride).

Two specific types of barriers have been listed separately at the end of the Section: (1) FIRE RESISTANT BOOMS which are not used in ordinary spill response operations and (2) PNEUMATIC (bubble) BARRIERS designed for fixed installation.

Finally, all booms are listed in relation to their size i.e. overall height, regardless of other characteristics, starting from the smallest ones and ending with the largest ones.

B O O M S (1)

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTOR)
			total height	draft	free board					
1	MINIPAK 5	curtain, air, wire, wire	0.22	0.14	0.08	4	0.3	NA	PVC - yellow	60
2	4 x 6 BOOM	curtain, solid, chain, chain	0.25	0.15	0.10	15	1.3	2150	synthetic fabric + PVC - yellow	27
3	MK E-4	curtain, solid, weight blocks, fabric	0.25	0.16	0.095	30	1.9	3550	polyester - yellow	106
4	SUPER SWAMP BOOM	curtain, solid, chain, 0	0.25	0.15	0.10	30	1.1	1350	vinyl or PU coated polyester - yellow	9 (85)
5	TYPE 1	curtain, solid, weight blocks, 0	0.25	0.10	0.15	NA	NA	NA	PE + neoprene - black	62
6	VERSATECH INSHORE BOOM 12	fence, solid, chain, chain	0.29	0.16	0.13	15	1.8	2250	PVC coated nylon - orange or yellow	121
7	STANDARD HOYLE BOOM	fence, solid, iron bar, 0	0.30	0.21	0.09	15	3.8	8000	PVC coated polyester yellow	60 (53)
8	MK 10-12H	fence, solid, weight blocks, fabric	0.31	0.18	0.13	30	4.6	5500	KEVLAR fabric - yellow & black	106
9	MK 12-12H	fence, solid, weight blocks, fabric	0.31	0.18	0.13	30	4.5	5450	KEVLAR + polyester fabric - yellow & grey	106
10	TYPE 2	curtain, solid, weight blocks, 0	0.32	0.12	0.20	NA	NA	NA	PE + neoprene - black	62
11	VERSATECH RIVER BOOM 6/6	curtain, solid, chain, wire	0.32	0.18	0.14	15	3.1	6350	PVC coated nylon - orange or yellow	121
12	VERSATECH ECONOMO BOOM 4/7	curtain, solid, chain, chain	0.33	0.23	0.10	30	1.3 to 2.6	1270 to 2250	PVC coated nylon - orange or yellow	121
13	MK 10-14H	fence, solid, weight blocks, fabric	0.36	0.23	0.13	30	5.0	6350	KEVLAR fabric - yellow & black	106
14	MK 12-14H	fence, solid, weight blocks, fabric	0.36	0.23	0.13	30	5.0	6350	KEVLAR + polyester fabric - grey & yellow	106
15	VERSATECH RIVER BOOM 7/7	curtain, solid, chain, wire	0.36	0.20	0.16	15	3.9	6350	PVC coated nylon - orange or yellow	121
16	VIKOMA P/U BOOM THAMES	curtain, air, wire, wire	0.37	0.19	0.18	10	0.9	10200	PU coated nylon - orange (others avail.)	122
17	VIKOMA P/U BOOM THAMES	curtain, solid, wire, wire	0.37	0.19	0.18	10	NA	10200	PU coated nylon - orange (others avail.)	122
18	VERSATECH PERMANENT HARBOUR BOOM 15	fence, solid, 0, 0	0.38	0.23	0.15	15	9.2	7700	PVC coated polyester - black	121
19	AK1 OIL PREVENTION BOOM	fence, solid or air, chain or weight blocks, chain or belt	0.40 - 2.20	0.25 - 1.20	0.15 - 1.00	25 or 50	2.8 to 16.0	1500 to 25000	PVC coated synthetic fabric - orange	112

B O O M S (2)

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTOR)
			total height	draft	free board					
20	DIFENCE™	fence, pads, 0, 0	0.40	0.20	0.20	30	6.3	322 (kg/cm)	synthetic fabric + PU - orange	56
21	TYPE A HOYLE BOOM	curtain, solid, wire, wire	0.40	0.25	0.15	10	2.1	6000	PVC coated polyester - yellow	60 (53)
22	MK 10-16H	fence, solid, weight blocks, fabric	0.41	0.28	0.13	30	5.0	7250	KEVLAR fabric - yellow & black	106
23	MK 12-16H	fence, solid, weight blocks, fabric	0.41	0.28	0.13	30	5.0	7250	KEVLAR + polyester fabric - grey & yellow	106
24	MINIMAX	curtain, solid, chain, cable	0.43	0.28	0.15	30	1.8	3000	vinyl or PU coated polyester - yellow	9 (85)
25	VERSATECH INSHORE BOOM 18	fence, solid, chain, chain	0.43	0.28	0.15	15	2.1	2250	PVC coated nylon - orange or yellow	121
26	TYPE 3	curtain, solid, weight blocks, 0	0.44	0.20	0.24	NA	NA	NA	PE + neoprene - black	62
27	VERSATECH GENERAL PURPOSE BOOM 7/11	curtain, solid, chain, chain	0.44	0.29	0.15	15	2.8	2250	PVC coated nylon - orange or yellow	121
28	VERSATECH NAVPAK BOOM 7/11	curtain, solid and air, chain, chain	0.44	0.29	0.15	15	2.5	2250	PVC coated nylon - orange or yellow	121
29	VERSATECH ZOOM BOOM 7/11	curtain, air, chain, chain	0.44	0.29	0.15	30	1.9	2250	PVC coated nylon - orange	121
30	ITEECRAW TYPE 450	fence, solid, weight blocks, NA	0.45	0.25	0.20	10/20	1.6	300 (daN/cm)	PVC coated polyester - orange	82
31	OPD '100'	curtain, air, chain, chain	0.45	0.25	0.20	10	3.0	7000	synthetic rubber - red	7
32	SEALDROOM 18" HP	fence, solid, weight blocks, 0	0.45	0.30	0.15	NA	2.9	5000	nylon and paracril - yellow	118 (85)
33	SEALDROOM 18" MINI	fence, solid, weight blocks, 0	0.45	0.30	0.15	NA	2.2	5000	nylon and paracril - yellow	118 (85)
34	VERSATECH PERMANENT HARBOUR BOOM 18	fence, solid, 0, 0	0.45	0.25	0.20	15	9.9	9500	PVC coated polyester - black	121
35	WSE - TEFS W7769 (1)	curtain, solid, chain, 0	0.45	0.34	0.11	30	8.0	4200	PVC coated nylon - yellow	2 (128)
36	1 - 5	curtain, solid, chain, chain	0.46	0.31	0.15	30	2.7	1360	PVC coated nylon - yellow	1
37	FENCE BOOM	fence, solid, weight blocks, 0	0.46	0.31	0.15	30	1.6	6750	synthetic fabric + PVC - yellow	27
38	LITEFLEX A	curtain, solid, chain, chain	0.46	0.33	0.13	25/23/30	3.7	1000	PVC - yellow, orange	11
39	MK 12-18H	fence, solid, weight blocks, fabric	0.46	0.33	0.13	30	6.3	8150	KEVLAR and polyester fabric - grey & yellow	106

B O O M S (3)

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTOR)
			total height	draft	free board					
40	MK 10-10H	fence, solid, weight blocks, fabric	0.46	0.33	0.13	30	6.3	8150	KEVLAR fabric - yellow & black	106
41	PERFORMANCE BOOM	curtain, solid, chain, chain	0.46	0.31	0.15	30	2.4	2150	synthetic fabric + PVC - yellow	27 (84)
42	PERMAFENCE 10"	fence, solid, chain, chain	0.46	0.23	0.23	12	2.5	NA	PVC or PU - yellow & black	9 (85)
43	RIVER BOOM	curtain, solid, chain, wire rope	0.46	0.31	0.15	30	2.8	4450	synthetic fabric + PVC - yellow	27 (84)
44	SIMPLEX	curtain, solid, chain, cable	0.46	0.31	0.15	30	2.5	2200	vinyl or PU coated polyester - yellow	9 (85)
45	MK E-6	curtain, solid, weight blocks, fabric	0.48	0.32	0.16	30	2.6	3900	polyester - yellow	106
46	OPTIMAX	curtain, solid, chain, cable	0.48	0.30	0.18	30	3.0	7000	vinyl or PU coated polyester - yellow	9 (85)
47	VERSATECH ECONO BOOM 6/13	curtain, solid, chain, chain	0.48	0.33	0.15	30	1.3 to 2.6	1270 to 2250	PVC coated nylon - orange or yellow	121
48	BEACH GUARDIAN BOOM	curtain, air, water ballast, D	0.49 (0.36)	0.24	0.25	10	3.4	8000	PU coated nylon - orange	122
49	VERSATECH INSHORE BOOM 24	fence, solid, chain, chain	0.50	0.30	0.20	15	2.4	2250	PVC coated nylon - orange or yellow	121
50	2 - 5	curtain, solid, chain, cable	0.51	0.31	0.20	30	3.3	4530	PVC coated nylon - yellow	1
51	HARBORFLEX B	fence, solid, D, D	0.51	0.31	0.20	15/23/30	11.0	6500	PVC + PE - black	11
52	E B	curtain, air and pads, chain, chain	0.53	0.38	0.15	15	4.5	2250	PU coated nylon - black	126
53	VERSATECH RIVER BOOM 9/11	curtain, solid, chain, wire	0.53	0.32	0.21	15	4.6	6350	PVC coated nylon - orange or yellow	121
54	YIKOMA P/U BOOM PORT GUARDIAN	curtain, solid, chain, chain	0.57	0.32	0.25	10	NA	10200	PU coated nylon - orange (others avail.)	122
55	YIKOMA P/U BOOM PORT GUARDIAN	curtain, air, chain, chain	0.57	0.32	0.25	10	3.4	10200	PU coated nylon - orange (others avail.)	122
56	BALEAR LAC 410	fence, air and pads, chain, strap	0.58	0.28 - 0.30	0.20	50	3.8	5000	synthetic fabric + PVC (upon request: PU, rubber, etc) - orange	68
57	GAMSPILL	curtain, air, chain, chain	0.60	0.37	0.23	25	4.5	7000	synthetic fabric + PVC - orange	54
58	M 60	curtain, air, chain, chain	0.60	0.30	0.18	30	7.0	4000 (N/cm)	hypalon - blue	40

BOOMS (4)

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTOR)
			total height	draft	Free board					
59	MORDAN HARBOUR BOOM	curtain, air, chain, chain	0.60	0.35	0.25	10	6.5	10000	rubber (neoprene) - black	81
60	OILFENCE™	fence, pads, 0, 0	0.60	0.30	0.30	30	7.5	322 (kg/cm)	synthetic fabric + PU - orange	56
61	TYPE 600	curtain, solid, chain, chain	0.60	0.40	0.20	12	2.2	3000 (N/5cm)	PVC or PU coated polyester - yellow or black	62
62	TYPE B HOYLE BOOM	fence, solid, iron bar, 0	0.60	0.45	0.15	12	7.3	16000	PVC coated polyester - yellow	60 (53)
63	VERSATECH GENERAL PURPOSE BOOM 9/15	curtain, solid, chain, chain	0.60	0.41	0.19	15	3.8	2250	PVC coated nylon - orange or yellow	121
64	VERSATECH NAVPAK BOOM 9/15	curtain, solid and air, chain, chain	0.60	0.40	0.20	15	3.4	2250	PVC coated nylon - orange or yellow	121
65	VERSATECH PERMANENT HARBOUR BOOM 24	fence, solid, 0, 0	0.60	0.40	0.20	15	12.3	12500	PVC coated polyester - black	121
66	1 - L	curtain, solid, chain, chain	0.61	0.46	0.15	30	2.7	1360	PVC coated nylon - yellow	1
67	3 - XS	curtain, solid, cable, cable	0.61	0.30	0.31	15	4.0	15850	PVC coated nylon - yellow	1
68	HARBOUR OIL CONTAINMENT BARRIER	fence, solid, weight blocks, polyester rope	0.61	0.34	0.27	15	6.7	1800	elastomer coated nylon - orange	83
69	MK E-8	curtain, solid, weight blocks, fabric	0.61	0.44	0.19	30	3.4	9000	polyester - yellow	106
70	MK 7-24	fence, solid, weight blocks, fabric	0.61	0.41	0.20	30	1.9	11000	KEVLAR fabric - yellow & black	106
71	PETRO BARRIER 60cm	curtain, solid, weight blocks, polyester chord	0.61	0.33	0.28	30	6.95	12000	PVC + polyester chord - black & yellow	33 (128)
72	RO-BOOM 610-RIVER	curtain, air, chain, chain	0.61	0.30	0.20	13/25/50/100	4.0	5000	synthetic rubber - black & yellow	98 (87)
73	SEAGUARDIAN	curtain, air, wire, wire	0.61	0.35	0.25	25/50/100/continuous	2.0	17800	PU coated nylon - orange	60 (53)
74	PERNAFENCE 24"	fence, solid, chain, chain	0.62	0.31	0.31	12	3.3	NA	PVC or PU - yellow & black	9 (85)
75	MK 8-24	fence, solid, weight blocks, fabric	0.65	0.45	0.20	30	4.8	21000	PU coated polyester - yellow & red	106
76	1 B	curtain, air and pads, chain, chain	0.65	0.51	0.15	15	10.4	4530	PU coated nylon - black	126
77	2 - L	curtain, solid, chain, cable	0.66	0.46	0.20	30	3.4	4530	PVC coated nylon - yellow	1

R O O M S (5)

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTOR)
			total height	draft	free board					
78	S	curtain, air and pads, chain, chain	0.66	0.51	0.15	15	6.0	2250	PU coated nylon - black	126
79	VERSATECH ECONO BOOM 6/21	curtain, solid, chain, chain	0.68	0.53	0.15	30	1.3 to 2.6	1270 to 2250	PVC coated nylon - orange or yellow	121
80	PN A1	curtain, air, weight blocks, 0	0.69	0.44	0.25	10	2.7	NA	neoprene coated nylon - black	75
81	BALEAR BAP 312	fence, air and pads, chain, strap	0.70	0.35	0.25	50	5.0	7000	synthetic fabric + PVC (upon request: PU, rubber, etc) - orange	68
82	ITEECRAW TYPE DRINKING WATER	fence, solid, weight blocks, NA	0.70	0.40	0.30	10/20	2.0	300 (daN/5cm)	PVC coated polyester - orange	82
83	ITEECRAW TYPE RIVER	fence, solid, weight blocks, NA	0.70	0.40	0.30	10/20	2.0	300 (daN/5cm)	PVC coated polyester - orange	82
84	TYPE 100	fence, solid, chain, chain	0.70	0.40	0.30	30	2.0	300 (kg/5cm)	PVC coated polyester - yellow	62
85	TYPE 4	curtain, solid, weight blocks, 0	0.71	0.33	0.38	NA	NA	NA	PE + neoprene - black	62
86	GUARDIAN FFC	curtain, air, cable, wire	0.72	0.41	0.31	25	2.0	56 (kg/cm)	PVC - yellow	60 (53)
87	SENTINEL	curtain, solid, cable, cable	0.72	0.41	0.31	15	2.3	8600	PVC - yellow	60 (53)
88	REELBOOM UNIT	curtain, air, chain, chain	0.73	0.40	0.33	50/100/continuous	2.5	23000	synthetic fabric/ rubber/PVC/PE - black, yellow, orange	19
89	SEASENTINEL	curtain, air, wire, wire	0.73	0.40	0.33	25/50/100/continuous	2.5	23500	PU coated nylon - orange	60 (53)
90	65/625	fence, solid, weight blocks, 0	0.75	0.40	0.25	25	5.8	12000	PVC + expanded PVC - yellow & red	31
91	65/640	fence, solid, weight blocks, 0	0.75	0.40	0.25	25	4.1	12000	PVC + expanded PVC - yellow & red	31
92	TROILBOOM BANTAM 750	fence, solid, weight blocks, load relieving line	0.75	0.47	0.28	12	5.2	5500	PVC/rubber coated polyamide - orange	116
93	VERSATECH GENERAL PURPOSE BOOM 12/18	curtain, solid, chain, chain	0.75	0.51	0.24	15	4.6	2250	PVC coated nylon - orange or yellow	121
94	VERSATECH MAVPAK BOOM 12/18	curtain, solid and air, chain, chain	0.75	0.50	0.25	15	3.9	2250	PVC coated nylon - orange or yellow	121
95	VERSATECH PERMANENT HARBOUR BOOM 30	fence, solid, 0, 0	0.75	0.45	0.30	15	13.2	17200	PVC coated polyester - black	121

BOOMS (6)

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTER)
			total height	draft	free board					
96	VERSATECH ZOOM BOOM 12/18	curtain, air, chain, chain	0.75	0.48	0.27	30	3.0	2250	PVC coated nylon - orange	121
97	3 - 5	curtain, solid, cable, cable	0.76	0.45	0.31	15	4.1	15850	PVC coated nylon - yellow	1
98	LITEFLEX B	curtain, solid, chain, chain	0.76	0.53	0.23	15/23/30	4.0	1000	PVC - yellow, orange	11
99	MAXIMAX	curtain, solid, chain, cable	0.76	0.46	0.30	30	3.7	6800	vinyl or PU coated polyester - yellow or orange	9 (85)
100	PERMAFLEX	curtain, solid, chain, chain	0.76	0.43	0.33	15/23/30	6.1	1000	PVC coated nylon + PE - yellow, orange, blue, red, green	11
101	MASKO OIL FENCE (E4 TYPE)	curtain, solid, chain, rope	0.80	0.43	0.27	20	2.4 - 4.2	4600	synthetic fabric - yellow	(80)
102	OPD '400'	curtain, air, cable, cable	0.80	0.47	0.33	50/100	4.0	16000	synthetic rubber - red	7
103	R 2	fence, solid, weight blocks, 0	0.80	0.50	0.30	20	3.0	NA	neoprene coated nylon - black & orange	75
104	R 11	fence, solid, weight blocks, 0	0.80	0.50	0.30	20	2.0	NA	neoprene coated nylon - black & orange	75
105	R 12	fence, solid, weight blocks, 0	0.80	0.50	0.30	20	4.0		neoprene coated nylon - black & orange	75
106	VIKOMA P/U BOOM SOLENT	curtain, air, chain, chain	0.82	0.46	0.36	10	NA	10200	PU coated nylon - orange (others avail.)	122
107	VIKOMA P/U BOOM SOLENT	curtain, solid, chain, chain	0.82	0.46	0.36	10	NA	10200	PU coated nylon - orange (others avail.)	122
108	E 16	curtain, air and pads, chain, chain	0.84	0.51	0.33	15	6.0	2250	PU coated nylon - black	126
109	OIL FENCE™	fence, pads, 0, 0	0.84	0.42	0.42	30	10.2	322 (kg/cm)	synthetic fabric + PU - orange	56
110	T 16	curtain, air and pads, chain, chain	0.84	0.51	0.33	15	14.8	4530	PU coated nylon - black	126
111	TRELLBOOM SEA	curtain, air, chain, 0	0.85	0.50	0.35	13	10.5	7000	polyester chord + chloroprene rubber - black	116
112	WSE - JES M1769 (2)	curtain, solid, chain, 0	0.85	0.66	0.19	30	9.0	4200	PVC coated nylon - yellow	2 (128)
113	COASTAL BOOM	curtain, air, water, ballast, 0	0.86	0.43	0.43	250/300	3.3	NA	neoprene - black	122
114	MK 7-36	fence, solid, weight blocks, fabric	0.86	0.56	0.20	30	6.7	16300	KEVLAR fabric - yellow & black	106

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTOR)
			total height	draft	free board					
115	MORDAN SEA BOOM	curtain, air, chain, chain	0.86	0.51	0.35	10	9.0	10000	rubber (neoprene) - black	81
116	PH A2	curtain, air, weight blocks, 0	0.86	0.56	0.30	10/12	5.3	NA	neoprene coated nylon - black	75
117	OCEANGUARDIAN	curtain, air, wire, wire	0.87	0.45	0.42	25/50/100/continuous	3.7	34200	PU coated nylon - orange	60 (53)
118	VERSATECH GENERAL PURPOSE BOOM 18/18	curtain, solid, chain, chain	0.89	0.51	0.38	15	8.5	4050	PVC coated nylon - orange or yellow	121
119	VERSATECH INSHORE BOOM 36	fence, solid, chain, chain	0.89	0.59	0.30	15	2.8	2250	PVC coated nylon - orange or yellow	121
120	POLLUGUARD TRS/B 35/55/...	curtain, air, chain, chain	0.90	0.55	0.35	15	10.0 to 18.8	10000 to 90000	PVC or neoprene rubber coated polyamid - black, orange or grey	117
121	SEALDROOM 36" STANDARD	fence, solid, weight blocks, 0	0.90	0.60	0.30	12	4.4	9000	nylon and paracril - yellow	118 (85)
122	SEALDROOM 36" OUTER HARBOR	fence, solid, weight blocks, 0	0.90	0.60	0.30	NA	5.2	9000	nylon and paracril - yellow	118 (85)
123	SEALDROOM 36" TMD-PLY	fence, solid, weight blocks, 0	0.90	0.60	0.30	NA	8.6	22000	nylon and paracril - yellow	118 (85)
124	TYPE 900	curtain, solid, chain, chain	0.90	0.60	0.30	12	4.5	5000 (N/50m)	PVC or PU coated polyester - yellow or black	62
125	VERSATECH NAVPAK BOOM 13/23	curtain, solid and air, chain, chain	0.90	0.62	0.28	15	4.2	2250	PVC coated nylon - orange or yellow	121
126	VERSATECH NAVPAK BOOM 18/18	curtain, solid and air, chain, chain	0.90	0.53	0.37	15	7.0	2250	PVC coated nylon - orange or yellow	121
127	VERSATECH ZOOM BOOM 18/18	curtain, air, chain, chain	0.90	0.49	0.41	30	5.8	4050	PVC coated nylon - orange	121
128	WSE - TEES W1769 (3)	curtain, solid, chain, 0	0.90	0.68	0.22	30	10.0	4200	PVC coated nylon - yellow	2 (128)
129	SUPERMAX	curtain, solid, cable, cable	0.91	0.61	0.30	15	4.3	16000	vinyl or PU coated polyester - yellow	9 (85)
130	VERSATECH PERMANENT HARBOUR BOOM 36	fence, solid, 0, 0	0.91	0.61	0.30	15	14.0	19000	PVC coated polyester - black	121
131	3 - L	curtain, solid, cable, cable	0.92	0.61	0.31	15	4.2	15850	PVC coated nylon - yellow	1
132	HARBOR BOOM	curtain, solid, chain, chain	0.92	0.61	0.31	15	3.9	13500	synthetic fabric + PVC - yellow	27 (84)
133	PERMAFENCE 36"	fence, solid, chain, chain	0.92	0.61	0.31	12	4.9	NA	PVC or PU - yellow & black	9 (85)

BOOMS (8)

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTOR)
			total height	draft	free board					
134	PETRO BARRIER 90cm	curtain, solid, weight blocks, polyester chord	0.92	0.61	0.31	30	10.4	16000	PVC + polyester chord - black & yellow	33 (128)
135	LITEFLEX C	curtain, solid, chain, chain	0.93	0.65	0.28	15/23/30	4.4	1000	PVC - yellow, orange	11
136	OFFSHORE 85/1030	fence, solid, weight blocks, 0	0.95	0.50	0.35	25	19.4	18000	PVC + urethane - yellow & red	31
137	VIKOMA P/U BOOM BOTANY BAY	curtain, air, chain, chain	0.95	0.50	0.45	10	NA	10200	PVC coated nylon - orange (others avail.)	122
138	VIKOMA P/U BOOM SOLENT	curtain, air, chain, chain	0.97	0.61	0.36	10	NA	10200	PVC coated nylon - orange (others avail.)	122
139	VIKOMA P/U BOOM SOLENT	curtain, solid, chain, chain	0.97	0.61	0.36	10	5.8	10200	PVC coated nylon - orange (others avail.)	122
140	BALEAR BAP 322	fence, air and pads, chain, strap	1.00	0.53	0.37	50	8.0	17000	synthetic fabric + PVC (upon request: PU, rubber, etc) - orange	68
141	BALEAR BAP 323	fence, air and pads, chain, strap	1.00	0.53	0.37	50	8.0	17000	synthetic fabric + PVC (upon request: PU, rubber, etc) - orange	68
142	INSHORE	net fence, solid, weight blocks, rope	1.00	0.50	0.50	50	5.2	6260	nylon - white & yellow	65
143	MOAS HL - 30	fence and net, air, weight blocks, tension rope	1.00*	0.50	0.25	50	7.0	8800	PVC - orange	17
144	SHELTERED SITES	curtain, air, chain, chain	1.00	0.60	0.40	50	5.0	NA	NA - orange	41
145	HARBORFLEX A	fence, solid, 0, 0	1.01	0.61	0.40	15/23/30	12.0	13000	PVC + PE - black	11
146	TROILBOOM UNIVERSAL 1050	fence, solid, weight blocks, load relieving line	1.05	0.65	0.40	12	5.5	11500	PVC/rubber coated polyamide - orange	116
147	HI SEA GUARD	fence, flotation pads, weight blocks, 0	1.10	0.70	0.40	10	14.0	25000	synthetic fabric + PVC - dark green	54
148	RD-BOOM 1100-HARBOUR	curtain, air, chain, chain	1.10	0.56	0.36	40/100/160	8.0	10000	synthetic rubber - black & yellow	98 (87)
149	FAST BOOM LAYER OFFSHORE BOOM	curtain, air, water ballast, 0	1.11	0.43	0.68	350/400	NA	NA	neoprene - black	122
150	VIKOMA P/U BOOM BOTANY BAY	curtain, air, chain, chain	1.11	0.66	0.45	10	NA	10200	PU coated nylon - orange (others avail.)	122
151	HEAVY DUTY OFFSHORE BOOM	curtain, air, water ballast, 0	1.12	0.43	0.69	500/600	4.4 or 4.5	25000	neoprene - black	122

B O O M S (9)

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTOR)
			total height	draft	free board					
152	SEAPACK 80	curtain, air, water ballast, 0	1.18	0.43	0.68	450	5.0	NA	polychloroprene coated nylon - black	122
153	VERSATECH ZOOM BOOM 24/24	curtain, air, chain, chain	1.19	0.66	0.53	30	7.7	6350	PVC coated nylon - orange	121
154	BALEAR BAP 334	fence, air and pads, chain, strap	1.20	0.65	0.40	50	8.5	17000 or 25000	synthetic fabric + PVC (upon request: PU, rubber, etc) - orange	68
155	BALEAR BAP 336	fence, air and pads, chain, strap	1.20	0.65	0.40	50	8.5	17000 or 25000	synthetic fabric + PVC (upon request: PU, rubber, etc) - orange	68
156	M 120	curtain, air, chain, chain	1.20	0.60	0.32	30	13.0	4000 (N/cm)	hypalon - blue	40
157	OFFSHORE 1500	curtain, self inflatable, chain, chain	1.20	0.77	0.43	25	9.0	13500	synthetic fabric + PVC - orange	54
158	MK 7-48	fence, solid, weight blocks, fabric	1.22	1.02	0.20	30	7.1	22000	KEVLAR fabric - yellow & black	106
159	MK 8-48H	fence, solid, weight blocks, fabric	1.22	1.02	0.20	30	12.5	39200	PU coated polyester - red & yellow	106
160	OFFSHORE OIL CONTAINMENT BARRIER	fence, air/solid, weight blocks/water, polyester rope	1.22	0.69	0.53	187	25.0	21800	elastomer coated nylon - orange or black	83
161	OILFENCE TM	fence, pads, 0, 0	1.22	0.61	0.61	30	14.9	322 (kg/cm)	synthetic fabric + PU - orange	56
162	PERMAFENCE 48"	fence, solid, chain, chain	1.22	0.84	0.38	12	6.5	NA	PVC or PU - yellow & black	9 (85)
163	POLLUGUARD TRS/B 55/15/...	curtain, air, chain, chain	1.30	0.75	0.55	15	10.0 to 18.0	10000 to 90000	PVC or neoprene rubber coated polyamid - black, orange or grey	117
164	OCEANSENTINEL	curtain, air, wire, wire	1.35	0.71	0.64	50/100/150/continuous	6.3	57000	PU coated nylon - orange	60 (53)
165	BC 60	curtain, air, chain, chain	1.40	0.80	0.60	25	13.0	NA	NA - orange	41
166	OFFSHORE 600	curtain, self inflatable, chain, chain	1.40	0.84	0.56	25	10.0	20000	synthetic fabric + PVC - orange	54
167	VIKOMA P/U BOOM SHETLAND	curtain, air, chain, chain	1.40	0.75	0.65	10	NA	10200	PU coated nylon - orange (others avail.)	122
168	NORDAN OCEAN BOOM	curtain, air, chain, chain	1.46	0.90	0.56	8	15.6	24600	rubber (neoprene) - black	81
169	OCEANIC BOOM	curtain, air, chain, chain	1.47	0.91	0.56	10	9.0	20700	neoprene - black	122

B O O M S (10)

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTOR)
			total height	draft	free board					
170	BALEAR BAP 332	fence, air and pads, chain, strap	1.50	0.75	0.54	50	11.5	32000	synthetic fabric + PVC (upon request: PU, rubber, etc) - orange	68
171	BALEAR BAP 333	fence, air and pads, chain, strap	1.50	0.75	0.54	50	11.5	32000	synthetic fabric + PVC (upon request: PU, rubber, etc) - orange	68
172	RO-BOOM 1500-BAY	curtain, air, chain, chain	1.50	0.75	0.50	50/100/200	13.0	20000	synthetic rubber - black & yellow	98 (87)
173	TROLLBOOM GIANT 1500	fence, solid, weight blocks, load relieving line	1.50	1.00	0.50	14	7.7	20000	PVC/rubber coated polyamide - orange	116
174	TROLLBOOM GIANT SWEEPING UNIT	fence, solid, weight blocks, load relieving line	1.50	1.00	0.50	58	7.7	20000	PVC/rubber coated polyamide - orange	116
175	MOAS HL - 45	fence and net, air, weight blocks, tension rope	1.55*	0.75	0.40	50	10.0	10000	PVC - orange	17
176	POLLUGUARD TRS/B 70/95/...	curtain, air, chain, chain	1.65	0.95	0.70	15	10.0 to 18.0	10000 to 90000	PVC or neoprene rubber coated polyamide - black, orange or grey	117
177	BALEAR BAP 337	fence, air and pads, chain, strap	1.70	0.90	0.60	25	12.0	32000	synthetic fabric + PVC (upon request: PU, rubber, etc) - orange	68
178	BALEAR BAP 338	fence, air and pads, chain, strap	1.70	0.90	0.60	25	12.0	32000	synthetic fabric + PVC (upon request: PU, rubber, etc) - orange	68
179	BHM 80	curtain, air, chain, chain + metal frames	1.70	0.90	0.80	25	15.0	NA	NA - orange	41
180	BF 40	curtain, air, chain, chain	1.80	1.00	0.80	25	8.0	NA	NA - orange	41
181	OFFSHORE BOOM	curtain, solid, chain, chain	1.80	1.20	1.60	15	NA	NA	synthetic fabric + PVC - yellow	27 (84)
182	TRELLBOOM OCEAN	curtain, air, chain, o	1.80	1.20	0.60	10	20.5	10000	polyester chord + chloroprene rubber - black	116
183	OFFSHORE	net fence, solid, weight blocks, rope	2.00	1.00	1.00	50	9.6	6260	nylon - white & yellow	65
184	RO-BOOM 2000 - HIGH SEA	curtain, air, chain, chain	2.00	1.10	0.60	50/100/200	17.5	20000	synthetic rubber - black & yellow	98 (87)
185	MOAS KL - 80	fence and net, air, weight blocks, tension rope	2.05*	1.05	0.75	100	21.0	20000	PVC - orange	17
186	MOAS KL - 60	fence and net, air, weight blocks, tension rope	2.10*	1.05	0.53	50/100	14.0	34300	PVC - orange	17

BOOMS (11)

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTER)
			total height	draft	free board					
187	NOAS KL - 8 D	fence and net, air, weight blocks, tension rope	3.35*	1.10	0.85	500	17.8	25000	PVC - orange	17
188	NOAS X - F 11	fence and net, air, weight blocks, tension rope	4.10*	1.00	0.90	50	32.3	60000	PVC - orange	17
189	OILLEADBARRIER	curtain, air, water, ropes	NA	0.25 - 2.00	0.25 2.00	5 to 150	NA	NA	PU coated polyester - various colours	95
190	DELTA	NA	0.70	0.40	0.30	10	6.0	NA	NA	22
191	DEVIPOL	NA	1.50	0.70	0.80	12.5	9.0	NA	NA	22

* with net

FIRE RESISTANT BOOMS

NO.	MODEL	DESCRIPTION: type, flotation element, ballast, tension element.	DIMENSIONS (m)			SECTION LENGTH (m)	WEIGHT (kg/m)	STRENGTH (kg)	MATERIAL AND COLOUR	MANUFACTURER (DISTRIBUTER)
			total height	draft	free board					
1	FIRE GUARD	fence, solid (aluminium float), O, cable.	0.33	0.17	0.16	5	6	5000	aluminium and asbestos - red and aluminium	11
2	FIRE GUARD HD	fence, solid (aluminium float), O, cable.	0.45	0.23	0.22	5	12	7500	aluminium and asbestos - red and aluminium	54
3	FIRE TAIN FIRE BOOM	fence, solid, O, wire rope.	0.61	0.36	0.25	2.7	7.4	1800	galvanized sheet steel - natural grey	121
4	SANDVIK STEEL BARRIER	fence, solid, O, O.	0.80	0.53	0.27	2	12	NA	stainless steel - steel colour	99
5	BAPINOX	fence, solid, O, O.	1.00	0.60	0.40	12	10	NA	stainless steel - steel colour	79
6	FIREFLEX	fence, solid, weight blocks, O.	- custom designed -			3	NA	NA	galvanized sheet steel - steel colour	11

PNEUMATIC (BUBBLE) BARRIERS

NO.	MODEL	DESCRIPTION	MANUFACTURER
1	OPD BUBBLE BARRIER	bubble barrier for fixed installation in harbours, oil terminals etc; effective in waves up to 1m; maximum water depth 20m.	7
2	ATLAS COPCO PNEUMATIC BARRIER	bubble barrier for fixed installation in harbours, oil terminals etc; effective in winds up to 15m/sec. and currents up to 0.5 knots.	14
3	HYDROTECHNIK PNEUMATIC OIL BARRIER	bubble barrier for fixed installation in harbours, oil terminals etc; portable type also available.	62

4. RECOVERY DEVICES

Elimination of oil from the sea (water) body on which it has been spilled is the principal purpose of oil spill control activities.

Several methods have been proposed (and put into practice) to tackle the problem. While physical and chemical removal of oil are at present considered as two fundamental methods, certain physico-chemical and biological ones require further development before becoming applicable in real, large scale spill situations.

Physical removal of oil is generally considered as having certain advantages over chemical removal, e.g. no additional substances are introduced into the marine environment, less hydrocarbons (oil) are irreversibly lost and recovered oil can normally be reused.

The following two basically different approaches can be distinguished in physical removal of oil:

1. Using non specific means, manual (buckets, shovels, etc...), or mechanical (pumps, vacuum trucks, etc...).
2. Using purposely built equipment.

The equipment listed in this Section of the Catalogue consists of purposely built equipment for oil recovery from the water (sea) surface. Three groups of devices are listed, namely: skimmers, skimming barriers and trawl nets.

SKIMMERS

The common name used for various oil recovery units is oil skimmer or simply skimmer. Accordingly (oil) skimmer is defined as any mechanical device specifically designed for the removal of oil (or oil/water mixture) from the water (sea) surface without altering considerably its physical and/or chemical characteristics.

Commercially available skimmers exhibit a wide variety of working principles applied in their construction. Accordingly it is very difficult to categorize various existing or proposed designs. Only the principle used for oil pick up from the water surface offers a possibility to distinguish between main groups of skimmers. Two categories (each one with a number of sub-categories) can be recognized:

1. Mechanical skimmers
2. Oleophilic skimmers

As regards the autonomy (of movement) of skimmers, again two categories appear:

1. Self-propelled units
2. Non self-propelled units

Most of the skimmers fall under the second category which means that they have to be deployed from either a vessel or a shore, but a number of self-propelled units are also available in which the recovery device forms an integral part of a vessel. However, these are included in Section 5 "SPECIALIZED ANTI POLLUTION VESSELS".

Mechanical skimmers are devices based on fluid flow properties of oils and oil/water mixtures, as well as on difference in density between pollutant and water. The different working principles applied to make use of the above mentioned physical properties further determine four main subcategories of mechanical skimmers:

1. Direct suction skimmers - skimming head or nozzle floating or held on the water surface directly sucks the surface layer of pollutant.
2. Weir skimmers - weir positioned slightly under the water surface enables the gravity flow of oil into the well of the skimmer from where it is pumped to storage.
3. Vortex (centrifugal) skimmers - whirlpool (vortex) created by either movement of the skimmer or by an impeller concentrates oil at the centre of the vortex, from where the oil is successively pumped.
4. Conveyor belt skimmers - an inclined (non-oleophilic) conveyor belt transports oil to the collection area (well). Oil is usually forced beneath the water surface (submerged) and towards the recovery well, where it rises back to the surface due to its lower density. Skimmers of this type are sometimes also called **submersion type** skimmers. Some other conveyor belt type skimmers transport the oil directly upwards from the sea surface to the collection well.

Oil recovery principal of the second main category of skimmers is based on the characteristics of certain materials which have greater affinity for oil than for water. Such materials are known as oleophilic and consequently skimmers which make use of this characteristic are called **oleophilic** skimmers. Stainless steel, aluminium and some plastic materials (e.g. polypropylene, polyurethane) are commonly used in the construction of this type of recovery devices. In accordance with the shape of moving surface to which the oil adheres, four subcategories can be recognized:

1. Drum type skimmers - oil adheres to the rotating horizontally positioned and partly submerged drum coated with some kind of oleophilic material. Rotation of the drum carries the oil towards the scrappers which remove it from the drum surface and deposit it into a container from where it is pumped to storage facilities.
2. Disc skimmers - a large family of disc skimmers includes different devices consisting of a variable number of rotating discs made of an oleophilic material. Similarly to drum skimmers, oil which sticks to disc surfaces is wiped by scrappers which direct it into a well (sump, container) from where it is successively pumped out.
3. Oleophilic belt skimmers - oil adheres to the partly submerged belt made out of an oleophilic material and is carried by the belt movement to the upper part of it, where it is removed either by a scrapper (wiper blade) or a squeeze roller.
4. Oleophilic rope skimmers - utilise a floating oleophilic rope which is either revolving between two pulleys (one drive pulley and another "tail" pulley) or trailed on the water surface by a vessel. The first type is continuously passing through a set of squeeze rollers which removes adhered oil while the second one is periodically wrung by a similar device after being saturated with oil. The oil collected in the well (sump) is subsequently pumped to a storage facility.

Skimmers included in the Catalogue are described in accordance with the above classification, indicating also the need for external pump and/or power supply where applicable. Oil recovery rate has been given in accordance with manufacturers' specifications, as well as pump capacity, usually matching the capacity of skimmer or higher. Dimensions, draft and weight are also included.

Skimmers are listed in the following order: mechanical (suction, weir, centrifugal, belt, others), oleophilic (drum, disc, belt, rope) each subsection starting with smallest recovery rate units and ending with largest ones.

SKIMMING BARRIERS

There is a group of recovery units which cannot be included strictly in any of the above mentioned categories, since they are a combination of boom and skimmer, using boom to concentrate oil and some kind of skimming device to remove it from the water surface.

Skimming barriers, as this type of recovery units are normally called, comprise a section of boom with an integrated skimming device or a separate skimmer (usually of direct suction or weir type) associated with the boom. Other indispensable parts of such a unit include a pumping system for the transfer of collected oil and a storage facility.

Skimming barriers are intended for use in open seas or in polluted zones big enough to allow larger size vessels to navigate, since these are usually deployed from tugs, supply vessels, small coastal tankers, dredgers etc.

Columns in the subsection on "SKIMMING BARRIERS" give the same specifications as for "SKIMMERS".

TRAWL NETS

It has been discovered that very viscous oils or water-in-oil emulsions, tar balls and oil saturated sorbents can be efficiently collected and removed from water (sea) surface by using modified surface trawl nets. These units are deployed from same type of vessels as skimming barriers. The design usually comprises a large net bag attached either to a certain frame or to a section of the boom to keep it at the sea surface. When full, the bag is either lifted by a crane and emptied on board or towed away for emptying on shore.

Description indicating main features of each item, dimensions and weight are given in subsection "TRAWL NETS".

RECOVERY DEVICES - SKIMMERS (1)

NO.	MODEL	DESCRIPTION	OIL RECOVERY RATE	PUMP CAPACITY	DIMENSIONS (m)			DRAFT (m)	WEIGHT (kg)	MANUFAC.
					LENGTH	WIDTH	HEIGHT			
1	FLEXIBLE MANTA RAY	mechanical, suction, floating, external pump or vacuum unit required (see SLICKSKIM).	6	NA	dia 1.52	-	0.02	0.01	26	106 (53)
2	RIGID MANTA RAY	mechanical, suction, floating, external pump or vacuum unit required (see SLICKSKIM).	8.6	NA	dia 1.22	-	0.02	0.01	13	106 (53)
3	SLICKSKIM MODEL 60	mechanical, suction, floating skimming head (see MANTA RAY), trailer mounted pump, gasoline drive.	11.4	13.6	1.21	0.76	0.58	0.07	92	106
4	35/150/D	mechanical, suction, boat mounted or operating from shore in conjunction with boom, diesel drive.	34	1360	3.90	1.83	2.20	-	2800	51
5	SLICKSKIM MODEL 160	mechanical, suction, floating skimming head (see MANTA RAY), trailer mounted pump, diesel, petrol or electric drive.	34	36.3	2.31	1.37	1.80	0.07	566	106
6	SOCK	mechanical, suction/weir, floating, boat mounted, external pump and power pack.	65	65	17	9.20	3.10	1.50	14500	115
7	500-D TRANS-VAC	mechanical, suction, operating from shore with floating skimming head, vacuum pump, built-in diesel power pack.	108	113	3.60	2.10	2.10	NA	3175	106
8	MODEL 500 EX G 3 OIL REMOVAL UNIT	mechanical, weir/suction, floating, built-in pumps for water and oil.	1.5	1.5	1.59	dia 1.83	1.18	0.65	420	69
9	SKIM CHEMISSER 20 LS	mechanical, weir, floating, built-in pump and motor (gasoline, pneumatic etc.).	2.4	NA	dia 0.76	-	0.47	NA	40	80
10	SKIM CHEMISSER 25 LS	mechanical, weir, floating, built-in pump and motor (gasoline, pneumatic etc.).	3.6	NA	dia 0.98	-	0.53	NA	55	80
11	SKIM CHEMISSER 40 LS	mechanical, weir, floating, built-in pump and motor (gasoline, pneumatic etc.).	6	NA	dia 0.98	-	0.56	NA	55	80
12	SIGMA	mechanical, weir, floating, no pump.	6	-	0.47	0.47	0.22	0.18	8	78
13	ALPHA	mechanical, weir, floating, no pump.	6	-	0.51	0.51	0.29	0.18	9	78
14	OELA III (DRAGONFLY)	mechanical, weir, floating, external pump, power pack.	12	18	1.30	1.30	0.30	0.40	56	7 (67)
15	SLURP SKIMMER (ALUMINIUM)	mechanical, weir, floating, external pump.	13.7	16.3	0.94	0.62	0.27	0.12	16	106
16	SLURP SKIMMER (STAINLESS STEEL)	mechanical, weir, floating, external pump.	13.7	10	0.94	0.62	0.38	0.25	26	106
17	COMBI SKIMMER STANDARD	mechanical, weir, floating, external pump.	16	5 - 90	0.94	0.63	0.41	0.35	26	82
18	OELA IV (FIREFLY)	mechanical, weir, floating, external pump, power pack.	18	18	1.50	1.50	0.30	0.40	65	7 (54, 67)
19	ESCA STATIC SKIMMER	mechanical, weir, floating, no pump.	18	-	1.50	1.20	0.50	0.50	80	107
20	DESTROIL DS 150	mechanical, weir, floating, hydraulic driven screw pump built in, external diesel driven power pack.	20	20	1.94	1.67	0.74	0.37	135	39

RECOVERY DEVICES - SKIMMERS (2)

NO.	MODEL	DESCRIPTION	OIL RECOVERY RATE	PUMP CAPACITY	DIMENSIONS (m)			DRAFT (m)	WEIGHT (kg)	MANUFAC.
					LENGTH	WIDTH	HEIGHT			
21	CYCLONET S 100	mechanical, weir/hydrocyclone, floating, operating from boat or shore, two external pumps required (for oil and water).	25	25	2.00	2.00	2.00	1.00	80	8
22	MEMUFAR N 050	mechanical, weir, floating, operating from boat or shore, no power required, external pump.	30	30	-	dia 1.05	0.45	0.45	25	8
23	FS 400 ASK-51 T	mechanical, weir/suction, floating, built-in pump and electric, pneumatic or gasoline drive.	30	60	dia 1.80	-	0.80	0.35	80 - 90	2 (128)
24	FS 400 ASK-39 T	mechanical, weir/suction, floating, built-in pump and electric, pneumatic or gasoline drive.	30	60	dia 1.20	-	0.80	0.35	55 - 65	2 (128)
25	MORDAN WEIR SKIMMER	mechanical, weir/Archimedes screw pump, floating, hydraulic drive.	40	45	NA	NA	NA	NA	100	81
26	GT-185	mechanical, weir/Archimedes screw pump built in, floating, hydraulic drive.	45	45	2.30	1.90	0.98	0.45	150	90
27	DESTROIL DS 210	mechanical, weir, floating, hydraulic driven screw pump built in, external diesel driven power pack.	50	70	2.50	1.77	1.00	0.43	235	39
28	ESCA SKIMMER BARGE	mechanical, weir, floating, 17m ³ storage capacity, no pump, 1 skimmer head, transfer pump optional.	60 - 90	-	8.50	2.50	1.80	1.40	8000	107
29	PEDCO MINI	mechanical, weir, floating, external pump.	76	NA	1.07	1.02	0.76	NA	39	121
30	DESTROIL DS 310	mechanical, weir, floating, hydraulic driven screw pump built in, external diesel driven power pack.	80 - 100	125	3.15	3.00	1.32	0.59	430	39
31	HIGH CAPACITY SKIMMER TYPE "KIEL"	mechanical, weir/suction, floating, external pump/vacuum unit.	100	400	1.42	1.91	0.30	NA	50 - 79	82
32	ESCA HIGH SEA SKIMMER	mechanical, weir, floating, no pump.	100 - 500	-	NA	NA	NA	NA	NA	107
33	PEDCO 4	mechanical, weir, floating, external pump.	191	NA	1.68	1.96	0.76	NA	55	121
34	SEA-CLEANER	mechanical, weir, floating, built-in pump, diesel or electric drive.	500	NA	dia 4.80	-	4.80	4.00	NA	45
35	HYDROVAC OFFSHORE SWEEPER ARM MODEL L-J 13	mechanical, weir/sweeping arm, floating, built-in pump, hydraulic drive.	500	500	13.00	3.50	2.10	1.70	3200	63
36	OELA II	mechanical, weir, floating, external pump, power pack.	NA	NA	dia 0.31	-	0.32	NA	8	67
37	MORDAN MULTISKIMMER	mechanical, weir/Archimedes screw pump, operating from shore, crane/trailer mounted, hydraulic drive.	NA	NA	NA	NA	NA	NA	1600	81
38	COMBI SKIMMER SPECIAL	mechanical, weir, floating, external pump.	NA	NA	0.53	0.63	0.41	0.35	16	82
39	DOUGLAS 4000 FIBERGLAS SKIM-PAK	mechanical, weir, floating, external pump.	NA	NA	0.60	0.60	0.20	0.10	11	(121)

RECOVERY DEVICES - SKIMMERS (3)

NO.	MODEL	DESCRIPTION	OIL RECOVERY RATE	PUMP CAPACITY	DIMENSIONS (m)			DRAFT (m)	WEIGHT (kg)	MANUFAC.
					LENGTH	WIDTH	HEIGHT			
40	DOUGLAS 18000 FIBERGLAS SKIM-PAK	mechanical, weir, floating, external pump.	NA	NA	1.10	0.70	0.40	0.20	18	(121)
41	SEA HAWK	mechanical, weir, floating, external pump.	NA	NA	dia 1.20	-	2.40	2.00	43	121
42	FASFLD	mechanical, weir, floating, external pump.	NA	NA	NA	NA	NA	NA	NA	122
43	BAKFLD	mechanical, weir, floating, external pump, designed to be incorporated in boom barrier.	NA	12	0.97	0.83	0.76	NA	34	122
44	MODEL 1000 EX G 3 OIL REMOVAL UNIT	mechanical, vortex/suction, floating, built-in pumps for water and oil.	5	5	2.65	dia 3.00	1.80	0.75	600	69
45	VIM 5 VORTEX	mechanical, vortex, floating, external pump, pneumatic drive.	5	6.5	1.70	1.70	1.00	0.60	40	79
46	VLI 5 VORTEX	mechanical, vortex, floating, external pump, pneumatic drive.	5	6.5	2.02	2.02	1.32	0.67	100	79
47	MODEL 1500 EX d 1 G 4 OIL REMOVAL UNIT	mechanical, vortex/suction, floating, built-in pumps for water and oil.	10	10	4.10	dia 4.60	2.50	1.30	1800	69
48	VLA 5	mechanical, vortex.	12	18	1.20	1.20	0.80	0.60	65	7
49	CYCLONET 050	mechanical, hydrocyclone, boat mounted, dynamic external pump.	25	25	1.50	dia 0.50	1 - 2	0.40	60 (300)	8
50	VIM 25 VORTEX	mechanical, vortex, floating, external pump, pneumatic drive.	25	32	2.50	2.50	1.45	1.00	100	79
51	VLI 25 VORTEX	mechanical, vortex, floating, external pump, pneumatic drive.	25	32	3.10	3.10	1.50	0.85	200	79
52	WALLOSEP W 1	mechanical, weir/vortex, floating, external pump, hydraulic drive.	40	45	1.41	1.33	0.87	0.56	100	77 (53)
53	CYCLONET 070	mechanical, hydrocyclone, boat mounted, dynamic external pump.	60	60	2.10	dia 0.70	1.40	1.00	200 (800)	8
54	WALLOSEP W 3	mechanical, weir/vortex, floating, external pump, hydraulic drive.	100	var.	2.71	2.29	1.07	NA	400	77 (53)
55	VIM 150 VORTEX	mechanical, vortex, floating, external pump, hydraulic drive, self propelled control and pumping skid.	150	150	7.80	7.20	3.50	2.50	5000	79
56	CYCLONET 100	mechanical, hydrocyclone, boat mounted, dynamic, external pump and hydraulic power station.	180	180	3.00	1.50	3.00	1.80	2000	8
57	CYCLONET 120	mechanical, hydrocyclone, boat mounted, dynamic, external pump and hydraulic power station.	180	180	3.00	1.80	3.00	2.20	4000	8
58	CYCLONET 150	mechanical, hydrocyclone, boat mounted, dynamic, external pump and hydraulic power station.	360	360	4.50	2.25	4.00	2.50	9000	8
59	CYCLONET 200	mechanical, hydrocyclone, boat mounted, dynamic, external pump and hydraulic power station.	720	800	6.00	3.00	6.00	3.60	18000	8

RECOVERY DEVICES - SKIMMERS (4)

NO.	MODEL	DESCRIPTION	OIL RECOVERY RATE	PUMP CAPACITY	DIMENSIONS (m)			DRAFT (m)	WEIGHT (kg)	MANUFAC.
					LENGTH	WIDTH	HEIGHT			
60	HALOSEP W 2	mechanical, weir/vortex, floating, external pump, hydraulic drive.	NA	45	2.00	2.00	1.90	0.75 (1.00)	400	77 (53)
61	HALOSEP W 4	mechanical, weir/vortex, floating, external pump, hydraulic drive.	NA	90 (120)	2.71	2.29	2.65	1.10 (1.20)	700	77 (53)
62	SERIES 5000 HEAVY OIL RECOVERY UNIT	mechanical, chain link conveyor belt, boat mounted or operating from shore, built-in or external pump, electric, hydraulic, pneumatic or diesel drive.	30	34	3.69	1.83	1.52	-	2250	86
63	NOLTE CONVEYER SKIMMER TYPE 2000	mechanical, conveyor belt, floating, external pump, electric drive.	50	NA	5.40	2.34	1.86	0.30	960	82
64	SVS 2 x 800	mechanical/oleophilic, belt, boat mounted, external pump, hydraulic drive.	50	NA	7.90	1.80	0.80	1.00	2000	99
65	EGMOLAP	mechanical, belt/weir, boat mounted or operating from shore, built-in pump optional, hydraulic drive.	100	60	2.80	1.00	2.30	-	450	47
66	B - 11	mechanical, paddlewheel, hydraulic drive.	13	19	1.32	1.42	0.81	0.10	79	10
67	D - 11	mechanical, paddlewheel, hydraulic drive.	90	19	2.44	3.05	1.22	0.46	1495	10
68	TAMBOUR INTERVENTION	oleophilic, drum, floating, hydraulic drive, external pump, external diesel or electric power pack.	2	2.5	2.00	1.50	1.00	0.30	200	22
69	SKIM II	oleophilic, drum/disc, floating, built-in pump, hydraulic drive.	25	60	1.40	1.30	0.60	0.34	150	47
70	STOPOL 120	oleophilic, drum, floating hydraulic drive, built-in pump, external diesel power pack.	40	40	4.00	2.50	1.10	0.70	1000	22
71	STOPOL 200	oleophilic, drum, floating, hydraulic drive, built-in pump, external diesel power pack.	60	60	4.30	3.30	1.10	0.70	1500	22
72	SKIM I	oleophilic/mechanical, drum/weir, floating, built-in pump, hydraulic drive.	60	60	1.40	1.30	0.60	0.34	140	47
73	MORRIS MI 2 C	oleophilic, disc, floating, built-in pump, diesel, gas, pneumatic, electric or hydraulic drive.	0.5	1.1	0.90	0.70	0.20	0.10	22	(121)
74	MORRIS MI 2 E	oleophilic, disc, floating, built-in pump, electric drive.	0.5	1.1	dia 0.70	-	0.30	0.10	18	(121)
75	KEBAB 600 MK II	oleophilic, disc, floating, external pump, electric, pneumatic or hydraulic drive.	1	NA	0.79	0.55	0.37	0.12	26	122
76	CENTRI-CLERE FLOATING DISC SKIMMER	oleophilic, disc, floating, electric drive, built-in pump.	2.2	NA	3.70	3.00	1.20	0.30	900	23
77	MORRIS MI 30	oleophilic, disc, floating, built-in pump, hydraulic drive.	4.8	23	dia 1.30	-	0.50	0.20	82	(121)
78	KOMARA 9 K	oleophilic, disc, floating, external pump, designed to be incorporated in boom barrier.	9	12	1.60	0.83	0.80	0.42	60	122

RECOVERY DEVICES - SKIMMERS (5)

NO.	MODEL	DESCRIPTION	OIL RECOVERY RATE	PUMP CAPACITY	DIMENSIONS (m)			DRAFT (m)	WEIGHT (kg)	MANUFAC.
					LENGTH	WIDTH	HEIGHT			
79	KOMARA 12 K MK II	oleophilic, disc, floating, external pump, hydraulic drive.	12	12	dia 1.25	-	0.44	0.24	62	122
80	FLOATING KEBAB	oleophilic, disc, floating, built-in pump, for industrial installations, electro hydraulic drive.	14 (for 1 disc module)	14	2.65	2.47	1.00	0.30	500	122
81	FIXED KEBAB	oleophilic, disc, fixed, for industrial installations, no pump, electro hydraulic drive.	14 (for 1 disc module)	-	1.52	0.78	0.88	NA	NA	122
82	SIRI DISC SKIMMER	oleophilic, disc, floating, hydraulic drive, external pump.	30	30	dia 1.42	-	0.61	0.15	80	11
83	KOMARA 30 K	oleophilic, disc, floating, external pump, hydraulic drive.	30	30	dia 1.38	-	0.57	0.18	70	122
84	SEASKIMMER 50	oleophilic, disc, floating, built-in pump, hydraulic drive.	50	NA	2.26	2.26	1.40	0.42	100	122
85	SEASKIMMER 100	oleophilic, disc, floating, built-in pump, hydraulic drive.	100	NA	dia 3.40	-	2.70	2.40	1000	122
86	FRAMP ACM 400	oleophilic/mechanical, disc/weir, floating/boat mounted crane, built-in pump, hydraulic drive.	300	500	7.00	2.50	3.40	0.75	8000	52
87	KOMARA 6 K	oleophilic, disc, floating, external pump, designed to be incorporated in boom barrier, hydraulic drive.	NA	12	1.35	0.46	0.48	NA	34	122
88	SEA WOLF	oleophilic, disc, floating, operating from shore or vessel, no pump required, hydraulic drive.	NA (1 ton/cycle)	-	2.72	2.36	1.88	1.20	600	122
89	AERODYNE SINGLE BELT OIL SKIMMER	oleophilic, metal belt, operating from shore, electric drive, no pump.	0.12	-	0.71	0.33	0.55	-	227	3
90	SANDVIK BELT SKIMMER 200	oleophilic, belt, operating from shore, no pump, electric drive.	0.2	-	0.80	0.50	0.50 - 6.00	0.10	60 - 100	99
91	AERODYNE MULTIPLE BELT OIL SKIMMER	oleophilic, metal belts, operating from shore, electric drive, no pump.	0.24 - 0.61	-	0.97 - 1.78	NA	NA	-	NA	3
92	SANDVIK BELT SKIMMER 400	oleophilic, belt, operating from shore, no pump, electric drive.	0.5	-	0.60	0.60	2.50 - 5.50	0.10	200 - 400	99
93	CENTRI-CLERE BELT TYPE SKIMMER	oleophilic, belt, operating from shore, electric drive, no pump.	0.6	-	2.40	var.	2.40	0.30	900	23
94	MARCO CLASS XI VOSS	oleophilic, belt, boat mounted, to be used with skimming barrier, built-in pump, hydraulic drive.	NA	40	5.83	2.44	1.88	0.60	1380	(128)
95	MOPMATIC WRINGER TYPE SK 100	oleophilic, rope/mop, operating from shore, external pump, electric drive.	0.33	NA	0.66	0.37	1.64	-	65	82
96	MARK I - 4 EE	oleophilic, rope/mop, operating from shore, external pump, electric drive.	0.8	NA	0.31	0.79	0.39	-	34	85, 87
97	MOPPET	oleophilic, rope/mop, operating from shore, no pump.	1	-	0.46	0.54	0.54	-	52	85, 87

RECOVERY DEVICES - SKIMMERS (6)

NO.	MODEL	DESCRIPTION	OIL RECOVERY RATE	PUMP CAPACITY	DIMENSIONS (m)			DRAFT (m)	WEIGHT (kg)	MANUFAC.
					LENGTH	WIDTH	HEIGHT			
98	2-14 PULLER-WRINGER	oleophilic, rope/mop, operating from shore, electric, gasoline or pneumatic drive, external pump.	1.6	1.6 - 9.6	0.55	0.37	0.60	-	91	1
99	TM PULLER-WRINGER	oleophilic, rope/mop, operating from shore, electric or pneumatic drive, no pump.	1.6	-	1.01	0.30	0.70	-	122	1
100	T-24 OIL SKIMMER	oleophilic, rope/mop, operating from shore, electric drive, built-in pump.	1.6	3.2	1.01	0.81	1.27	-	225	1
101	MARK I-4 E	oleophilic, rope/mop, operating from shore, external pump, electric drive.	1.6	NA	1.04	0.48	0.51	-	86	85, 87
102	MARK I-4 D	oleophilic, rope/mop, operating from shore, external pump, diesel drive.	1.6	NA	1.04	0.55	0.81	-	106	85, 87
103	ROPE MOP MODEL 4	oleophilic, rope/mop, operating from shore, electric or diesel drive, no pump.	2	-	0.75	0.75	1.00	-	100	11
104	MOP WRINGER 41	oleophilic, rope/mop, operating from shore, electric or gas drive, no pump.	2.4	-	0.58	0.46	0.55	-	75	27
105	MARK II - 4 VE	oleophilic, rope/mop, operating from shore, external pump, electric drive.	3.2	NA	1.14	0.64	0.81	-	177	85, 87
106	MARK II - 4 D	oleophilic, rope/mop, operating from shore, external pump, diesel drive.	3.2	NA	1.14	0.64	0.81	-	204	85, 87
107	MODEL K-25 and KS-25 OIL SKIMMER	oleophilic, rope/mop, boat mounted or operating from shore, electric, diesel, gasoline, natural gas or pneumatic drive, w/o or built-in pump.	4.8	NA	0.91 - 1.52	0.69 - 0.81	0.58 - 1.07	-	113 - 363	1
108	MODEL 26 PULLER-WRINGER	oleophilic, rope/mop, operating from shore, electric or diesel drive, built-in pump.	4.8	NA	NA	NA	NA	-	NA	1
109	DESMI MOPMATIC 5000	oleophilic, rope/mop, operating from shore, built-in pump, diesel or electric drive.	5	15	1.23	0.65	1.13	-	225	39
110	SERIES 2000 INSHORE POLLUTION CONTROL SYSTEM	oleophilic, rope/mop, operating from shore, built-in pump, diesel or electric drive.	6	11	1.54 (2.62)	0.72 (1.27)	0.87 (1.22)	-	396	86
111	MOP WRINGER 62	oleophilic, rope/mop, operating from shore, diesel, gas or electric drive, pump optional.	8	-	1.53	1.07	1.22	-	500	27
112	MARK II - 6 E	oleophilic, rope/mop, operating from shore, external pump, electric drive.	8	NA	1.22	0.79	0.99	-	NA	85, 87
113	MARK II - 6 D	oleophilic, rope/mop, operating from shore, external pump, diesel drive.	8	NA	1.22	0.79	0.99	-	NA	85, 87
114	MARK II - 9 VE	oleophilic, rope/mop, operating from shore, built-in pump optional, electric drive.	12	NA	1.83	1.12	1.30	-	794	85, 87
115	MARK II - 9 D	oleophilic, rope/mop, operating from shore, built-in pump optional, diesel drive.	12	NA	1.83	1.12	1.30	-	725	85, 87
116	MOPMATIC WRINGER TYPE 1003	oleophilic, rope/mop, operating from shore, external pump, electric drive.	14	NA	1.03	0.50	0.56	-	122	82

RECOVERY DEVICES - SKIMMERS (7)

NO.	MODEL	DESCRIPTION	OIL RECOVERY RATE	PUMP CAPACITY	DIMENSIONS (m)			DRAFT (m)	WEIGHT (kg)	MANUFAC.
					LENGTH	WIDTH	HEIGHT			
117	MODEL 29 PULLER-WRINGER	oleophilic, rope/mop, operating from shore, electric or diesel drive, built-in pump.	16.0	17.2 - 38.4	2.33	1.16	1.32	-	725 - 1270	1
118	MOP WRINGER 92	oleophilic, rope/mop, operating from shore, trailer-mounted, diesel, gas or electric drive, pump optional.	24	-	2.29	1.07	1.53	-	863	27 (84)
119	ROPE MOP MODEL 9	oleophilic, rope/mop, operating from shore, electric or diesel drive, built-in pump.	28	35	2.29	1.07	1.52	-	910	11
120	MARK IV - 16 DP	oleophilic, rope/mop, operating from shore, built-in pump and power pack, hydraulic drive.	32	NA	3.05	2.27	2.15	-	3600	85, 87
121	MW 212	oleophilic, rope/mop, operating from shore, built-in pump and power pack.	60	60	2.60	1.50	1.80	-	1500 - 2200	27 (84)
122	FORCE 7	oleophilic, rope/mop, vessel mounted, built-in pump and power pack, hydraulic drive.	60	60	4.50	2.43	2.59	- (vessel)	7000	86
123	HYDRO-MOP REGULA 2	oleophilic, rope/mop, operating from shore, built-in pump, drive optional.	NA	NA	NA	NA	NA	NA	NA	62

RECOVERY DEVICES - SKIMMING BARRIERS

NO.	MODEL	DESCRIPTION	OIL RECOVERY RATE	PUMP CAPACITY	DIMENSIONS (m)			DRAFT (m)	WEIGHT (kg)	MANUFAC.
					LENGTH	WIDTH	HEIGHT			
1	SIRENE 20	skimming barrier, weir, floating, boat mounted, external pumping unit.	20 - 500	20 - 500	36	-	0.45	1.35	1085	117
2	SPRINGSWEEP	skimming barrier with suction skimming head, boat mounted, external vacuum pump, diesel driven power pack.	40	NA	NA	-	1.50	0.75	6000	19
3	2 WEIR BOOM	skimming barrier, four tubes construction, boat mounted, pumps incorporated, hydraulic drive.	60	2 x 60	(150)	-	1.22	0.54	NA	122
4	OFFSHORE SKIMMING BARRIER	skimming barrier, weir, three pumps mounted on a float, hydraulic drive.	125	170	11 (187)	2.14	1.22	0.69	262 (4675)	83
5	VESSEL OF OPPORTUNITY SKIMMING SYSTEM (VOSS)	skimming barrier, weir, boat mounted or floating pumps, hydraulic drive.	125	170	20	2.14	1.21	0.69	520	83
6	5 WEIR BOOM	skimming barrier, four tubes construction, boat mounted, pumps incorporated, hydraulic drive.	150	5 x 62	85 (300)	-	1.22	0.54	NA	122
7	10 WEIR BOOM	skimming barrier, four tubes construction, boat mounted, pumps incorporated, hydraulic drive.	312	10 x 62	120 (300)	-	1.22	0.54	NA	122
8	SOOPRES	skimming barrier, weir, boat mounted, no pumps except vessel's pumps for oil transfer.	NA	NA	NA	NA	NA	NA	NA	109
9	RO-SWEEP	skimming barrier, boat mounted, winder for storage, external pump.	NA	NA	26 38 50	-	2.00	1.10	NA	98
10	SPILLSKIM	skimming barrier, boat mounted, pocket boom, external recovery device (vacuum or screw), pump; tar ball sweeping unit available.	NA	NA	25	12 (opening)	1.00	0.41	200	(51)

RECOVERY DEVICES - TRAWL NETS

NO.	MODEL	DESCRIPTION	DIMENSIONS (m)			WEIGHT (kg)	MANUFAC.
			LENGTH	WIDTH	HEIGHT		
1	SEIMIP	floating trawlnet for oily material recovery (agglomerated oils, weathered crude, tar balls, heavy fuel oils etc); operational in sea state 6 - 7; removable end.	25	20 (opening)	-	350	30
2	RO-TRAWL	2 sections of RO-BOOM 2000 converted with netting in skirt to avoid turbulence and oil trawl bag of 129 m ³ capacity with remote release and snap lock.	2 x 33	4.00 (opening)	2.00 (opening)	750	98 (87)
3	NORWEGIAN OIL TRAWL (NOT) PL 110	Large floating trawl-net for recovery of heavy oils and emulsions in open sea; operational in waves up to 3.5m and winds up to 25 knots; can be towed by two vessels or one vessel equipped with paravane; to be used with a skimmer.	45	26 (opening)	5.10	3950	17
4	NORWEGIAN OIL TRAWL (NOT) PL 150	floating trawl-net for recovery of heavy oils and emulsions in open sea; operational in waves up to 2.5m and winds up to 20 knots; to be used with a skimmer.	NA	NA	3.60	3500	17
5	NORWEGIAN OIL TRAWL (NOT) SF 60	floating trawl-net for recovery of heavy oils and emulsions in coastal areas; operational in waves up to 2.5m and winds up to 20 knots; to be used with a skimmer.	31	31.4 (opening)	NA	2000	17

5. SPECIALIZED ANTIPOLLUTION VESSELS

Vessels listed in this Section of the Catalogue have been designed specifically for oil spill response operations. Most of these have a certain recovery device built in the vessel itself, hence they can often be found in literature under the name of self-propelled skimmers. Other functions for which these vessels are designed and equipped include boom deployment, dispersant spraying, application of floating sorbents and storage of recovered oil. Since spill combating operations are not a regular, daily routine, most of the specialized vessels are constructed in such a way so as to carry out various other duties. These very often include collection of floating solid debris and fire-fighting. Certain types can be used as versatile work boats in harbour areas and these are usually equipped with hydraulic cranes and various pumps. Less common functions of purposely built antipollution vessels include weed harvesting and water aeration.

The majority of specialized vessels require a very limited crew (2-5 persons). Smaller units are usually road and air transportable and these are mainly operational in sheltered waters, harbour areas, etc.

However, the list also includes bigger units which are intended for use off shore.

"Description" in the list gives the main characteristics and design features of each vessel. Other columns indicate dimensions and draft (draught) of vessels in metres, maximum and operational speeds in knots, dry weight and tank capacity where applicable.

The weight of the vessel has been included bearing in mind the possibility of transportation by road or air. "Tank capacity" refers to capacity of storage tanks for collected oil or alternatively dispersants and it can be used for estimating operational autonomy of each vessel. In our opinion capacity of storage tanks is much more likely to be the limiting factor for vessels' autonomy than fuel tanks capacity.

All the vessels are listed in increasing order of their overall length regardless of other characteristics.

SPECIALIZED ANTIPOLLUTION VESSELS (I)

NO.	MODEL	DESCRIPTION	DIMENSIONS (m)			MAX DRAFT (m)	SPEED (knots)		WEIGHT (kg)	TANK CAPACITY (m ³)	MANUFAC.
			OVERALL LENGTH	BREADTH	HEIGHT		MAX	OPERAT.			
1	SKIM BOAT	small boat for oil recovery, boom deployment, dispersant spraying, two outboard engines; built-in pump and small tank, road and sea transportable.	5.00	2.80	NA	NA	7	2	700	0.1	80
2	MOLTE CONVEYOR SKIMMER TYPE 2000	self propelled barge, conveyor belt submersion type skimmer, built-in tanks, debris collection.	5.4	2.3	1.9	0.30	NA	NA	960	NA	82
3	POLLUSPRAY TRS 570 UM	inflatable boat with dispersant spraying equipment and outboard engine(s).	5.7	2.2	NA	NA	NA	NA	750	1.2 for disp.	117
4	CYCLONET 050 INFLATABLE PROFESSIONAL BOAT	inflatable boat, hydrocyclone skimmer, outboard engine.	6.0	2.5	NA	0.50	10	0.5 - 3	2000	0	8
5	PORTLAND 20	semi-catamaran, self-adjusting weir skimmer, debris collection, built-in pumps and tanks.	6.1	2.4	NA	0.76	NA	0 - 4	2720	2.5	129
6	POLLUSPRAY TRS 630 UM	inflatable boat with dispersant spraying equipment and outboard engine(s).	6.3	2.5	NA	NA	NA	NA	800	1.2 for disp.	117
7	HARBOUR SCAVENGER	steel craft fitted with disc skimmer and debris collection system, built-in tanks and pumps.	7.0	3.6	1.8	0.90	7	1 - 2	1800	2	122
8	SFO OIL RETRIEVAL VESSEL MK 1	catamaran, Archimedes screw type skimmer/separator, built-in pumps and tanks.	7.00	3.10	NA	0.50	7	1.5	3100	2	(134)
9	71 M WORKBOAT	boat for dispersant spraying and boom deployment, bow ramp.	7.1	2.3	0.6	0.20	20	3	950	0	106
10	MARK 3 F	semi-catamaran, oleophilic belt skimmer, bow ramp, built-in pump and tank.	7.3	2.4	2.2	1.00	5	NA	4000	1.9	121
11	PORTLAND 24	semi-catamaran, self-adjusting weir skimmer, debris collection, built-in pump and tanks.	7.3	2.1	NA	1.07	NA	NA	3860	3.8	129
12	PORTLAND 24 AMPHIBIAN	semi-catamaran, self-adjusting weir skimmer, debris collection, built-in pump and tanks, fixed wheels.	NA	NA	NA	1.07	NA	NA	3860	3.8	129
13	8 M FOLDING WORK PLATFORM	trimaran type boat (three hulls with a flat platform), modular construction, dispersant spraying and boom deployment.	7.9	4.2	1.7	0.41	20	3	2500	0	106
14	SCOOP	fast boat to be used with skimming barrier, built-in pump, separator and tank, dispersant spraying equipment optional.	9.1	2.4	2.9	0.80	25	1	1800	1.3	83
15	OSED MODEL 33	skimming vessel, inclined plane skimmer, separator, built-in tanks, propulsion optional, road and air transportable.	10.0	3.2	NA	0.86	10	1.8	NA	7.6	73
16	SCARABEO	self propelled barge, suction skimmer, debris collection, built-in separators, tanks and pumps; hydraulic crane, dispersant spraying and fire fighting eq.	10.4	4.5	4.0	1.75	6	1.5	NA	16	75
17	EGMOPOL 1041 OAH(S)	self propelled barge with EGMOLAP conveyor belt skimmer, built-in pump optional, oil tanks, solid debris container.	10.6	4.1	3.2	0.55	6	2	9000	15	47

SPECIALIZED ANTIPOLLUTION VESSELS (2)

NO.	MODEL	DESCRIPTION	DIMENSIONS (m)			MAX DRAFT (m)	SPEED (knots)		WEIGHT (kg)	TANK CAPACITY (m ³)	MANUFAC.
			OVERALL LENGTH	BREADTH	HEIGHT		MAX	OPERAT.			
18	PELICAN	self propelled suction type skimmer, built-in separator, debris collection, debris container, oil tank, dispersant spraying and fire fighting equipment.	10.8	2.5	3.8	0.80	8	3	8200	3	46
19	MARCO CLASS 1-0	semi-catamaran, built-in "FILTERBELT" oleophilic belt type skimmer, built-in pump and tanks, dispersant spraying equipment.	10.9	3.1	2.7	0.76	20	2	5200	5	132 (128)
20	MARCO CLASS V	semi-catamaran, built-in "FILTERBELT" oleophilic belt type skimmer, built-in pump and tanks, dispersant spraying equipment.	10.9	3.7	2.7	1.27	12 (towed)	3	8250	6.4	132 (128)
21	FAST BOOM LAYER (FBL)	high speed boat for boom deployment, multipurpose drop-in modules available, dispersant spraying equipment.	11.4	3.9	NA	0.50	30	NA	NA	NA	122
22	OIL MOP ZRV DYNAMIC SKIMMER	catamaran, rope/mop skimmer, built-in pumps and tanks, fire fighting equipment optional.	11.6	3.7	NA	0.60	10	6	NA	7.6	85
23	SILURE S 12 SKIM-BOAT	catamaran, conveyor belt skimmer, debris collection, hydraulic crane, debris containers, oil tanks.	12.0	4.0	3.2	1.60	3.2	NA	NA	16 (+ 5)	8
24	BELT SKIMMER MK I	catamaran, ZRV oleophilic belt skimmer, oil tanks, off-loading pumps, dispersant spraying equipment, hydraulic crane.	12.0	3.9	1.5	0.60	7	0 - 3	NA	9	11
25	SEA TRUCK 12 TANGUY	flat bottom work boat equipped with weir skimmer, booms and dispersant spraying equipment, bow ramp, fire fighting equipment optional.	12.2	3.8	2.6	0.70	20	NA	2600 (hull only)	0	131
26	OPEC/SPRAY CATAMARAN	catamaran type vessel equipped with skimmer, booms, dispersant spraying and fire fighting equipment, built-in pumps and tanks, crane.	12.3	5.0	1.8	1.09	10	2 - 4	NA	20	86
27	MARK 6 D	semi-catamaran, oleophilic belt ZRV skimmer, bow ramp, built-in pump and tanks, hydraulic crane optional.	12.8	4.3	6.3	1.01	7	NA	18000	9.5	121
28	PORTLAND 44	semi-catamaran, self-adjusting weir skimmer, debris collection, built-in pump and tanks.	13.4	5.5	NA	1.82	NA	0 - 3	32000	37.8	129
29	MORDAH TRAINER	multipurpose vessel, belt skimmer, booms, dispersant spraying equipment, built-in pumps and tanks, fire fighting equipment, crane.	13.9	7.0	3.0	2.25	9.5	1 - 8	NA	10	81
30	MARLIMPIA	catamaran, ZRV rope/mop skimmer, heated tanks, off-loading pumps, hydraulic crane, dispersant spraying and fire fighting equipment.	14.6	5.9	NA	NA	12	4	NA	22	1
31	SANDVIK PIRAMMA 155	catamaran, mechanical conveyor belt for debris and heavy oil and oleophilic belt for light oil, built-in pumps and tanks, dispersant spraying and fire fighting equipment.	15.5	4.9	5.4	1.10	5	1	15000	20 + 12	99
32	MARK 9 DEBRIS REMOVAL SKIMMER	dual purpose vessel, oleophilic belt skimmer, built-in pumps and tanks, hydraulic crane, fire fighting equipment.	16.0	6.4	NA	NA	8	NA	NA	16.2	121

SPECIALIZED ANTIPOLLUTION VESSELS (3)

NO.	MODEL	DESCRIPTION	DIMENSIONS (m)			MAX DRAFT (m)	SPEED (knots)		WEIGHT (kg)	TANK CAPACITY (m ³)	MANUFAC.
			OVERALL LENGTH	BREADTH	HEIGHT		MAX	OPERAT.			
33	APMB	catamaran, rope/mop skimmer, built-in pumps and tanks, crane.	16.5	4.3	4.5	1.20	10	0 - 5	NA	14	87
34	SFD MK 2 "OIL HUNTER"	catamaran, Archimedes screw type skimmer/separator, built-in pumps and tanks.	16.50	7.50	6.70	1.20	10	2.5	NA	NA	(134)
35	EKO-BARGE I	self propelled barge, suction skimmer, debris collection, built-in separators, tanks and pumps, hydraulic crane, dispersant spraying and fire fighting eq.	16.9	4.8	NA	1.85	9.8	3.8	NA	28	75
36	STLURE S 17 SKIM-BOAT	catamaran, conveyor belt skimmer, debris collection, hydraulic crane, debris containers, oil tanks.	17.0	5.0	3.8	2.00	8.1	NA	NA	30 (+ 15)	8
37	OSED MODEL 66	skimming vessel, inclined plane skimmer, separator, built-in tanks, propulsion optional, road and air transportable.	20.0	7.3	NA	1.73	10	2.8	NA	60.6	73
38	ARCAT	catamaran, ZRY rope/mop skimmer, heated tanks, off-loading pumps, hydraulic crane, dispersant spraying and fire fighting equipment.	19.8	6.8	NA	1.70	9	NA	NA	32	1
39	SEACLEAR POLLUTION RESPONSE VESSEL (SPR)	fully equipped spill control vessel, skimmers, booms, built-in pumps, tanks and separators, dispersant spraying equipment, hydraulic crane.	20.0 (21.4)	5.8	NA	2.32	8.5	NA	NA	35	122
40	MORPOL FIGHTER	multipurpose oil pollution control vessel, skimmer, booms, dispersant spraying equipment, built-in pumps and tanks, crane.	21.2	7.0	3.1	1.40	23	1 - 18	NA	60	81
41	CLV-215	catamaran, rope/mop skimmer, debris conveyor, built-in tanks and pumps, dispersant spraying and fire fighting equipment, crane.	21.5	5.3	NA	2.00	7.5	2 - 7.5	NA	27.5	84
42	DYNAMIC OIL COMBAT VESSEL TYPE 2 SHH	self propelled barge with 2 sweeper arms, built-in tanks and pumps, 2 cranes.	22.0	6.6	2.0	1.40	6.5	1.5	NA	80	63
43	SERVICE VESSEL SKIMMER	high speed offshore vessel with built-in oleophilic belt skimmer, built-in pump and tanks.	22.3	6.1	NA	NA	15	NA	NA	17	121
44	LIMPAMAR	catamaran, ZRY rope/mop skimmer, heated tanks, off-loading pumps, crane, dispersant spraying and fire fighting equipment.	27.4	6.1	NA	NA	14	4	NA	NA	1
45	PORTLAND 90	semi-catamaran, self-adjusting weir skimmer, debris collection, built-in pumps and tanks, helicopter deck.	27.4	9.1	NA	NA	NA	NA	NA	159	129
46	EKO-BARGE II	self propelled barge, suction skimmer, debris collection, built-in separators, tanks and pumps, hydraulic crane, dispersant spraying and fire fighting equipment.	29.0	6.4	NA	NA	9.5	NA	NA	NA	75
47	OSED MODEL 110	skimming vessel, inclined plane skimmer, separator, built-in tanks, pushed by tug, own propulsion optional.	33.5	13.0	NA	2.87	10	4.2	NA	280	73
48	OSED MODEL 220	skimming vessel, inclined plane skimmer, separator, built-in tanks, pushed by tug, own propulsion optional.	67.0	25.9	NA	5.74	10	6	NA	2157	73

6. OTHER VESSELS

Virtually, any type of vessel can be used (and is usually used) in spill response operations: trawlers, tug boats, supply vessels, dredgers, fishing boats, coastal tankers etc. These can carry out various tasks including surveillance, sampling, booms deployment and towing, supporting skimmers, spraying dispersants, applying other spill control products, transporting collected oil, providing any kind of logistic support etc. Obviously, the list of all such vessels would be too long and actually useless since it is not very likely that anyone would purchase a tug boat or a dredger only to use it as an auxiliary vessel in cases of oil spills. In an emergency, any suitable vessel should be put in use and the only thing which can be recommended is to include the list of all such vessels in the contingency plan.

However, there is a variety of multi purpose work-boats which offer great versatility - a characteristic very useful when planning spill response operations. This is the reason why the list of these vessels has been included in the Catalogue.

Some of the vessels listed are built purposely for the spill clean-up job while the others have other uses as well. The main characteristics of such vessels are: (a) shallow draft which enables them to work in very shallow coastal waters, (b) light weight making them transportable by road or/and air, (c) relatively high load capacity and large working surface, (d) high maximum speed and (e) good manoeuvrability. Most of these boats can be delivered with different types of engines (diesel or petrol, inboard or outboard) to suit the specific needs of the purchaser.

The list includes a description of the most important features of each vessel, its main dimensions, maximum draft, empty weight, maximum capacity and maximum speed. Referring to the speed "NA" indicates, in most cases, that the speed differs in accordance with the type of propulsion chosen by the customer.

As in Section 5, vessels are listed in increasing order of overall length.

OTHER VESSELS (1)

NO.	MODEL	DESCRIPTION	DIMENSIONS (m)		MAX DRAFT (m)	WEIGHT (kg)	MAX LOAD (kg)	MAX SPEED (kn)	MANUFACTURER
			LENGTH OVERALL	BREADTH					
1	C.S.I. WORKBOAT 16-5	aluminium plates, PU foam, squared bow, provision for outboard engine.	4.9	1.5	NA	295	NA	NA	1
2	SEA LANDER 18/1	landing craft, shallow draft, bow ramp, wheelhouse, hydraulic crane optional.	5.6	2.4	0.25	680 (hull)	900	40 (25)	121
3	MONITOR 570	inflatable boat equipped with fire-fighting system.	5.7	2.2	NA	209 (boat)	1540	NA	117
4	C.S.I. WORKBOAT 20-6	aluminium plates, PU foam, squared bow, provision for outboard engine.	6.1	1.8	NA	431	NA	NA	1
5	SERIES 900-20	fibreglass and PU foam filled workboat, outboard or inboard engine.	6.1	2.4	NA	NA	NA	NA	25
6	MONITOR 630	inflatable boat equipped with fire-fighting system.	6.3	2.6	NA	275 (boat)	2200	NA	117
7	SERIES 900-22	fibreglass and PU foam filled workboat, outboard or inboard engine.	6.7	2.4	NA	NA	NA	NA	25
8	SEA LANDER 22/2	landing craft, shallow draft, bow ramp, wheelhouse, hydraulic crane optional.	6.8	2.4	0.30	726 (hull)	1800	40 (25)	121
9	7 METRE HEAVY DUTY GRP WORKBOAT	multi-purpose workboat, large clear working/storage space, removable transom door, stern platform, choice of propulsion.	6.9	2.9	NA	4500	NA	20	122
10	C.S.I. WORKBOAT 24-7	aluminium plates, PU foam, squared bow, provision for outboard engine.	7.3	2.1	NA	545	NA	NA	1
11	SERIES 900-26	fibreglass and PU foam filled workboat, outboard or inboard engine.	7.9	2.4	NA	NA	NA	NA	25
12	SEA LANDER 26/3	landing craft, shallow draft, bow ramp, wheelhouse, hydraulic crane optional.	8.0	2.4	NA	NA	2720	40 (20)	121
13	TANGUY SEA TRUCK 8 x 3	multi-purpose landing craft, bow ramp, choice of propulsion, wheelhouse and modular cabin elements optional.	8.0	2.9	0.70	1800 (hull)	NA	45	131
14	SEA LANDER 27/4	landing craft, shallow draft, bow ramp, wheelhouse, hydraulic crane optional.	8.3	3.0	0.41	1820 (hull)	3630	40 (20)	121
15	SERIES 1000-28	fibreglass and PU foam filled workboat, wheelhouse, outboard or inboard engines.	8.5	3.0	NA	NA	NA	NA	25
16	NICHESSA	self propelled craft for floating debris collection, two metal arms supporting net for waste removal, containers, hydraulic crane.	9.0	3.5	NA	NA	NA	7	75

OTHER VESSELS (2)

NO.	MODEL	DESCRIPTION	DIMENSIONS (m)		MAX DRAFT (m)	WEIGHT (kg)	MAX LOAD (kg)	MAX SPEED (kn)	MANUFACTURER
			LENGTH OVERALL	BREADTH					
17	SERIES 1000-30	fibreglass and PU foam filled work-boat, wheelhouse, outboard or inboard engines.	9.1	3.0	NA	NA	NA	NA	25
18	SEALANDER 30/4	landing craft, shallow draft, bow ramp, wheelhouse, hydraulic crane optional.	9.2	2.4	NA	NA	3630	40 (20)	121
19	TANGUY SEA TRUCK 10 x 3	multi-purpose landing craft, bow ramp, choice of propulsion, wheelhouse and modular cabin elements optional.	10.0	2.9	0.70	2150 (hull)	NA	45	131
20	SERIES 1000-34	fibreglass and PU foam filled work-boat, wheelhouse, outboard or inboard engines.	10.4	3.0	NA	NA	NA	NA	25
21	SEA LANDER 37/8	landing craft, shallow draft, bow ramp, wheelhouse, hydraulic crane optional.	11.4	3.7	0.43	2700 (hull)	7260	40 (20)	121
22	FAST PATROL VESSEL (FPV) 11 METRE	multi-purpose fast vessel, shallow draft, jet propulsion.	11.4	3.9	0.56	NA	NA	30	122
23	TANGUY SEA TRUCK 12 x 3	multi-purpose landing craft, bow ramp, choice of propulsion, wheelhouse and modular cabin elements optional.	12.2	2.9	0.70	2600 (hull)	NA	45	131
24	TANGUY SEA TRUCK 12 x 3.75	multi-purpose landing craft, bow ramp, choice of propulsion, wheelhouse and modular cabin elements optional.	12.2	3.8	0.70	NA	NA	45	131
25	14 METRE WORK/PILOT BOAT	Fast craft made in steel or marine aluminium, high volume and load carry capacities, propulsion and accommodation layout to choice.	14.0	3.9	0.56	NA	NA	30	122
26	FAST PATROL VESSEL (FPV) 12.5/14 METRE	range of fast multi-purpose vessels, steel hull, large wheelhouse and accommodation, jet propulsion or propeller.	14.0	3.9	0.56	NA	NA	30	122
27	TANGUY SEA TRUCK 15 x 3.75	multi-purpose landing craft, bow ramp, choice of propulsion, wheelhouse and modular cabin elements optional.	15.0	3.8	0.70	NA	NA	45	131
28	GRIFFON HOVERCRAFT	amphibious hovercraft range for transportation of personnel or spill control operations.	6.4 - 15.7	NA	NA	NA	1000 - 4000	30	122

7. PUMPS

The selection of pumps is very often neglected in the preparation of oil spill combating activities and even at the time of contingency planning. Yet a wrongly chosen pump can easily impede the entire response operation. Even the pump which is suitable for its primary function i.e. transfer of pollutant, can create other sorts of problems in successive operations (e.g. powerful centrifugal pump used in conjunction with a large capacity weir skimmer will create large volume of oil-in-water emulsion which will not separate without addition of emulsion breakers). There are pumps on the market which are specifically adapted for various stages of oil pollution combating and some of them are listed in this Section. These include submersible pumps for transfer of oil from disabled ships, various pumps suitable for pumping oil collected by skimmers, vacuum pumps which can be directly used for oil recovery etc.

The column "Description" gives the type of pump and the important characteristics, whilst the column "Power" indicates the type (electric, diesel, etc) of prime mover (motor or engine) and its power requirements in kilowatts. In the column "Max Capacity" the upper figure indicates the maximum capacity of the pump regardless of the viscosity and delivery head and the lower one (in brackets) indicates maximum capacity with the liquid of maximum viscosity which the pump can transfer. Maximum viscosity for each pump is also indicated as well as dimensions and weight.

Pumps are listed in accordance with their maximum capacities, starting from lower capacity units.

PUMPS (1)

NO.	MODEL	DESCRIPTION	POWER	MAX CAPACITY (m ³ /h)	MAX VISCOSITY (cst)	DIMENSIONS (m)			WEIGHT (kg)	MANUFAC.
						LENGTH	WIDTH	HEIGHT		
1	VIKOPUMP	vacuum pump, drum mountable, portable.	electric (AC)	0.6 (NA)	10 000	-	dia 0.64	1.05	83	122
2	103 1001 (103 1003)	autonomous recuperation system, submersible, explosion proof.	electric (AC)	1 (NA)	175	0.60	0.60	0.60	50	(53) (128)
3	L 75	sliding shoe, portable.	pneumatic, electric, diesel or gasoline engine, 1 kW.	1.5 (1)	2 500	0.53	0.38	0.27	45	78
4	L 100	sliding shoe.	pneumatic, electric, diesel or gasoline engine, 1.5 kW.	3 (2)	2 500	0.55	0.40	0.29	NA	78
5	L 125	sliding shoe.	pneumatic, electric, diesel or gasoline engine, 4 kW.	5 (3)	2 500	0.60	0.43	0.36	NA	78
6	L 150	sliding shoe.	pneumatic, electric, diesel or gasoline engine, 4 kW.	10 (6)	2 500	0.69	0.48	0.43	NA	78
7	DELASCO LZ 50	peristaltic, self-priming, corrosion resistant.	AC motor, DC motor, diesel, hydraulic, pneumatic.	15 (7)	15 000	0.57	0.30	0.65	50	38 (82)
8	L 200	sliding shoe.	pneumatic, electric, diesel or gasoline engine, 5 kW.	15 (10)	2 500	0.76	0.53	0.51	NA	78
9	MUMAX 40 A	diaphragm, self-priming, portable.	compressed air.	16 (NA)	NA	0.47	0.36	0.39	36	125
10	DNDP 150	modified positive displacement Archimedeian screw.	hydraulic motor, 20 kW.	20 (2)	1 000 000	1.25	0.30	0.42	63	39
11	L 300	sliding shoe.	pneumatic, electric, diesel or gasoline engine, 5.5 kW	20 (20)	2 500	0.87	0.76	0.67	NA	78
12	INDUX-PUMP TYPE 3 BN	vacuum, wear-resistant, self-priming.	diesel or electric motor, 2 kW.	32 (9)	750	0.59	0.64	0.94	74	82
13	SPATE 75 C	diaphragm, portable, self-priming, trailer mounted.	diesel or electric motor.	32 (12)	NA	0.90	0.60	0.65	102	125
14	TR 3	hydraulic turbine pump for inflammable liquids, portable.	turbine operated by pressurized water from another pump or hydrant.	36 (NA)	NA	NA	NA	NA	35	75
15	RK 20	centrifugal, self-priming motor pump, portable.	two-stroke engine, 8.8 kW.	36 (NA)	NA	0.60	0.50	0.51	50	75
16	MSP 25	centrifugal, submersible, portable.	diesel-hydraulic power pack, 22 kW.	40 (10)	1 000	-	dia 0.20	0.35	20	76
17	GT-185 HEAVY DUTY PUMP	Archimedes screw.	diesel-hydraulic power pack, 10 - 35 kW.	45 (5)	1 000 000	0.97	0.40	0.38	85	90

PUMPS (2)

NO.	MODEL	DESCRIPTION	POWER	MAX CAPACITY (m ³ /h)	MAX VISCOSITY (cst)	DIMENSIONS (m)			WEIGHT (kg)	MANUFAC.
						LENGTH	WIDTH	HEIGHT		
18	POLLUTION PUMP	double-acting diaphragm, self-priming, light weight.	hydraulic.	57 (NA)	10 000	0.81	0.43	0.51	54	83
19	EGMOPOL W 200	double screw, light weight, portable, submersible, reversible, explosion proof.	diesel-hydraulic power pack.	60 (25)	20 000	1.30	0.31	0.24	80	47
20	DNDP 210	modified positive displacement Archimedes screw.	hydraulic motor, 20 - 30 kW.	70 (5)	1 000 000	1.50	0.67	0.42	145	39
21	FRAND TK 4	centrifugal, submersible, explosion proof, light-weight, portable.	diesel-hydraulic or electric-hydraulic power pack, 48 kW.	70 (NA)	NA (low)	-	dia 0.30	0.50	60	52
22	RS 3 V	centrifugal self-priming pump, portable.	built-in single-cylinder four-stroke gasoline engine, 5.5 kW.	72 (NA)	NA	NA	NA	NA	55	75
23	SPATE 4 C	diaphragm, self-priming trailer mounted.	diesel or electric motor.	91 (30)	NA	1.37	1.14	1.17	411	125
24	V V 100	VORTEX type centrifugal pump, mounted in floating trimaran type pontoon.	gasoline driven engine.	120 (NA)	NA	NA	NA	NA	NA	(41)
25	SELTORQUE 80 A	centrifugal, self-priming trailer or skid mounted.	diesel or electric motor.	123 (NA)	NA	1.45	1.12	1.08	442	125
26	DNDP 310	modified positive displacement Archimedes screw.	hydraulic motor, 40 - 50 kW.	125 (10)	1 000 000	NA	NA	NA	270	39
27	AUTOMATIC 75 VMG	centrifugal self-priming motor pump, portable.	four-stroke four-cylinder gasoline engine.	150 (NA)	NA	NA	NA	NA	75	75
28	SELTORQUE 100 C	centrifugal, self-priming trailer or skid mounted.	diesel or electric motor.	160 (NA)	NA	2.65	1.34	1.48	791	125
29	FRAND TK 5	centrifugal, submersible, explosion proof, light weight, portable.	electric-hydraulic or diesel-hydraulic power pack, 74 kW.	180 (NA)	NA (medium to heavy)	-	dia 0.30	0.65	75	52
30	HSP 200 DS	centrifugal, submersible, portable.	diesel-hydraulic power pack, 70 kW.	180 (80)	2 500	-	dia 0.30	0.45	45	76
31	HSP 100	centrifugal/screw, submersible, portable.	diesel-hydraulic power pack, 32 kW.	200 (40)	2 000	-	dia 0.31	0.38	20	76
32	SELTORQUE 150 C	centrifugal, self-priming, trailer or skid mounted.	diesel or electric motor.	281 (NA)	NA	2.89	1.34	1.43	980	125
33	HSP 4	centrifugal, submersible, explosion proof, light weight, portable.	electric-hydraulic, diesel-hydraulic or gasoline-hydraulic power pack, 30 kW.	300 (140)	NA	-	dia 0.30	0.80	40	58
34	HSP 150 LM	centrifugal/screw, submersible, portable.	diesel-hydraulic power pack, 70 kW.	400 (100)	10 000	-	dia 0.49	0.68	70	76
35	FRAND TK 6	centrifugal, submersible, explosion proof, light-weight, portable.	electric-hydraulic or diesel-hydraulic power pack, 103 kW.	500 (NA)	NA (high to extreme)	-	dia 0.52	0.70	85	52
36	FRAND TK 7	centrifugal, submersible, explosion proof, light weight, portable.	electric-hydraulic or diesel-hydraulic power pack, 103 kW.	500 (NA)	NA (low)	-	dia 0.25	0.98	80	52

PUMPS (3)

NO.	MODEL	DESCRIPTION	POWER	MAX CAPACITY (m ³ /h)	MAX VISCOSITY (cSt)	DIMENSIONS (m)			WEIGHT (kg)	MANUFAC.
						LENGTH	WIDTH	HEIGHT		
37	HSP 6	centrifugal, submersible, explosion proof, light weight, portable.	electric-hydraulic, diesel-hydraulic or gasoline-hydraulic power pack, 60 kW.	720 (300)	NA	-	dia 0.50	0.80	100	58 (63)
38	FRAPD TK 8	centrifugal, submersible, explosion proof, light weight, portable.	electric-hydraulic or diesel-hydraulic power pack, 160 kW.	750 (NA)	NA (high)	-	dia 0.30	1.06	130	52
39	WARREN RUPP-DOUDAILLE PUMPS	diaphragm, submersible, explosion proof.	compressed air.	60 (var)	20 000	max 0.92	max 0.40	max 0.75	12 - 111	123 (120)
40	BYRON JACKSON PUMPS	extensive range of horizontal, vertical and submersible centrifugal pumps.	various options (electric, petrol, diesel, etc)	var	var	var	var	var	var	21
41	BLACKMER PUMPS	extensive range of sliding vane, high vacuum, positive displacement pumps.	hydraulic, electric, diesel or gasoline engine.	var	var	var	var	var	var	42
42	OMI SLUDGE PUMPS	tapered-vane centrifugal, submersible.	diesel-hydraulic or electric-hydraulic power pack, 7.5 - 46 kW.	96 (NA) 500 (NA)	NA	NA	NA	NA	20 - 86	85
43	OMI AXIAL FLOW PUMPS	centrifugal, submersible.	diesel-hydraulic or electric-hydraulic power pack, 18 - 24 kW.	680 (NA) 1250 (NA)	NA	NA	NA	NA	NA	85
44	OMI TRASH PUMPS	centrifugal, submersible.	diesel-hydraulic or electric-hydraulic power pack, 5.5 - 112 kW.	110 (NA) 1600 (NA)	NA	NA	NA	NA	20 - 398	85

8. TANKS / STORAGE UNITS

Temporary storage of collected oil or oil/water mixtures is very often a limiting factor in the smooth running of spill response operations. Except for cases when skimmers are deployed from coastal tankers, their recovery rates are usually exceeding capacities of storage tanks available on board other types of vessels. Even specialized antipollution vessels regularly have very limited storage facilities on board. Similar considerations apply to conducting recovery operations from shore: if transport of collected liquid to disposal site is not extremely well organized (and usually it is not) some kind of temporary storage becomes indispensable. In all such cases, flexible or rigid, floating or non-floating tanks can be used. There is a variety of models on the market and manufacturers can usually produce the size required by the customer. When purchasing this type of equipment one should always bear in mind that it is regularly much easier to fill such tanks than to empty them (this particularly refers to storage of heavy or weathered oils and water-in-oil emulsions in completely closed units). Accordingly tanks should be selected to match the specifications of other related equipment (pumps, cranes, etc).

The list of tanks comprises description of each model, capacity (or range of capacities if tanks are custom-made), dimensions, empty weight and material out of which each storage unit is made.

TANKS / STORAGE UNITS

NO.	MODEL	DESCRIPTION	CAPACITY (m ³)	DIMENSIONS (m)			EMPTY WEIGHT (kg)	MATERIAL	MANUFAC.
				LENGTH	WIDTH	HEIGHT			
1	BST SERIES	flexible with metal support, on-shore use, open.	100 200 375	NA	NA	NA	NA	coated synthetic fabric	41
2	HOLBIN ONCE-OFF CONTAINER FOR CHEMICALS	flexible, frame supported tank for use on shore.	1	1.1	1.1	1.2	46	BASF LUPOLEN	82
3	POLLUSTOCK	flexible, open, on-shore use.	10 - 300	5.5 - 28.0	2.5 - 8.5	1.0 - 1.5	93 - 1017	reinforced rubber	117
4	VERSATANK	flexible, steel frame, open, on-shore use.	1 - 18	NA	NA	0.8	NA	PVC coated synthetic fabric + steel frame	121
5	VERSATECH OPEN TOP OIL STORAGE CONTAINER	flexible, open, on-shore use.	6.8	NA	NA	NA	27	PVC coated synthetic fabric	121
6	CF TANKS	flexible, open, air and road transportable.	3 5 10	2.5 3.0 4.5	2.5 3.0 4.5	1.0 1.0 1.0	25 35 60	neoprene coated synthetic fabric	(128)
7	500 (1000) GALLON CAP	flexible, can be used on shore and on board ships, closed, road transportable.	2.25 4.5	2.6 4.7	2.1 2.1	0.8 0.8	34 60	reinforced rubber	14
8	ONCE-OFF HEAVY-DUTY-FILM HOSE	flexible, closed, not transportable when full, for use on shore.	8 - 12	100	dia 0.5	-	44	NA	82
9	PROMAL STORAGE TANKS	flexible, closed, to be used on shore.	1 - 150	2.4 - 16.2	1.4 - 8.5	0.6 - 1.3	25 - 595	elastomer coated synthetic fabric	93
10	PROMAL TRANSPORT TANKS (DYNAMIC)	flexible, closed, air and road transportable.	1 - 12	1.8 - 9.6	1.8 - 2.1	0.7 - 1.1	30 - 140	elastomer coated synthetic fabric	93
11	TRELLCONE	flexible, floating, open, towable, air and road transportable.	10 25 50	8.8 9.2 15.6	2.2 3.6 3.6	0.9 1.2 1.5	130 220 340	PVC coated synthetic fabric	116 (14)
12	SHM SERIES	flexible, floating, open.	500 1250 2500	NA	NA	NA	NA	coated synthetic fabric	41
13	SMT BARGE	flexible with metal structure, floating, towable, open, to be used in calm sea.	NA	NA	NA	NA	NA	coated synthetic fabric	41
14	DICOON	flexible, floating, closed, towable, air and road transportable, can be used on shore.	3 4 10 20	3.0 - 6.5	dia 0.9 - 2.2	-	30 - 200	reinforced rubber	8
15	FLEXITANK	flexible, floating, closed, towable, not transportable.	12.5 25 100 300	12.8 21.3 27.8 40.9	1.5 1.5 2.7 3.8	1.4 3.4 2.5 3.7	62 185 499 1100	reinforced rubber	86
16	DRACONE BARGES	flexible, floating, closed, towable, air and road transportable.	3.9 (4.6) - 935 (1100)	8.6 - 91.5	dia 0.9 - 4.2	-	270 - 6500	reinforced rubber	(94)
17	POLLUTANK	flexible, floating, closed, towable, air transportable, can be used on shore.	5 - 200	6.5 - 21.0	2.5 - 6.5	1.0 - 3.8	85 - 760	reinforced rubber	117
18	VERSATECH OIL STORAGE CONTAINERS	flexible, floating, closed, towable, air transportable.	1 - 10	NA	-	-	19 - 24	PVC coated synthetic fabric	121

9. SPRAYING EQUIPMENT

The first part of this Section lists equipment for spraying dispersants, while the second part comprises equipment for application of other spill control products such as sorbents, gels etc.

Dispersant spraying equipment includes units designed for mounting on aircraft, boats or for use on land. Besides a brief description of each unit, the list comprises an indication of the type of craft or vessel for which the particular piece of equipment is designed, recommended position for equipment intended for use on board ships (boats), and power requirements for pumps. Further columns indicate minimum and maximum spray rates in litres per minute, spray swath in metres and weight of the complete unit. In the "Description" column, the term "spray arm" is used instead of "spray boom" in order to avoid any possible misunderstanding (boom, floating boom, jib boom, etc.).

The subsection listing equipment for application of other products for oil spill treatment includes a brief description of each item, its dimensions and weight.

SPRAYING EQUIPMENT (1)

NO.	MODEL	DESCRIPTION	REQUIRED SUPPORT	POWER	SPRAY RATE (l/min)		SPRAY SMATH (m)	WEIGHT	MANUF.
					MIN	MAX			
1	ADDS PACK B-01-5500	self-contained airborne dispersant spraying system including tank, pumps, power pack and retractable spray arms.	large aircraft (HERCULES)	electric-powered by aircraft	200	1700	100	2045	18
2	SOKAF 3000	remote controlled bucket type unit comprising tank, pump, spray arms, power pack, remote control device.	helicopter (middle or high tonnage)	gasoline engine, 13.2 kW	NA	1300	20	200	66
3	SIMPLEX 6810	remote controlled slung aerial spray system comprising tank, pump, spray arms, engine and remote control device.	helicopter	gasoline engine, 7.5 kW	NA	NA	90	163	105
4	UNIVERSAL WIDESPRAY	boat mountable unit comprising pump, spray arms, spray gun, power pack.	sea going vessel (stern mounted)	electric, hydraulic or diesel engine (built in)	0	225	17 + boat	680	19
5	BOWSPRAY	boat mountable unit comprising pump, spray arm, power pack.	sea going vessel (bow mounted)	electric, hydraulic or diesel engine (built in)	0	90	15	480	19
6	WIDESPRAY	boat mountable unit comprising pump, spray arms, spray gun, power pack.	sea going vessel (stern mounted)	electric, hydraulic or diesel engine (built in)	0	90	17 + boat	490	19
7	SPILLSPRAY	self-contained boat mountable unit comprising pump, spray arms, power pack; tank optional.	sea going vessel (bow mounted)	diesel, electric or hydraulic (built in)	20	293	18	680	51
8	CLEARSPRAY, CLEARSPRAY HP	offshore vessel spray unit comprising pump and spray arms; tank optional.	sea going vessel (bow mounted)	electric (supplied by vessel)	0	50	11	200	51
9	VOLUMARINE 1500 K	offshore vessel spray unit.	sea going vessel (bow mounted)	NA	NA	NA	15 - 30	NA	66
10	SB-60 eh SB-60 DL	skid mounted unit comprising two tanks (5.7m ³ each), pump, power pack, spray arms.	sea going vessel (bow mounted)	electric or diesel engine, 26 - 37 kW.	NA	NA	30	2500	1 (84)
11	SEASPRAY 2	self-contained unit for inshore vessels, comprising pump, spray arms, power pack; tank optional.	boat (bow mounted)	diesel, electric or hydraulic (built in)	15	150	14	600	51
12	SLICKSPRAY 5109	self-supporting unit comprising diesel engine, pump, spray arms; for concentrate dispersants.	boat (bow mounted)	diesel	7.5	39.5	15.5	NA	106
13	VOLUMARINE 500 K	light weight device for inflatable boats.	small boat	NA	NA	500	11	NA	66
14	SB-40 D SB-40 G SB-40 E	skid mounted unit for use in inshore waters comprising pumps, and spray arm.	small boat (bow mounted)	electric, diesel or gasoline engine 4 - 8 kW (built in)	NA	NA	6	NA	1
15	DS 12	skid mounted portable unit for use at sea and onshore comprising diesel engine, pump, spray arm and spray gun.	boat (bow mounted) truck	diesel engine (built in)	40	190	3 - 12	350	27 (84)

SPRAYING EQUIPMENT (2)

NO.	MODEL	DESCRIPTION	REQUIRED SUPPORT	POWER	SPRAY RATE (l/min)		SPRAY SWATH (m)	WEIGHT	MANUF.
					MIN	MAX			
16	BM-40 D BM-40 G	trailer mounted units for use on shore, variable oil dispersant injection pump and fixed capacity water pump.	trailer	diesel or gasoline engine, 5 - 8 kW (built in)	NA	NA	NA	NA	1
17	AMG M 1 ANE M 1	small units equipped with hand lance, standard oil drum mounted for neat dispersants.	standard drum	electric motor or gasoline engine 0.55 - 0.75 kW	NA	NA	NA	NA	1
18	90 G 90 S 90 FG 500 FS	back-pack units manually operated for neat dispersants.	portable	Manual	NA	NA	NA	NA	1
19	VINDSPRAY	various units.	NA	NA	NA	NA	NA	NA	122

OTHER EQUIPMENT FOR APPLICATION OF POLLUTION CONTROL PRODUCTS

NO.	MODEL	DESCRIPTION	DIMENSIONS (m)			WEIGHT (kg)	MANUF.
			LENGTH	WIDTH	HEIGHT		
1	JETSPRAY	device for introduction of liquid chemicals (dispersants) into the water flow via a special nozzle; to be fitted on a drum or tank; pressurized water operated.	NA	NA	NA	NA	19
2	DOSEUR-MELANGEUR EN LIGNE	doser-mixer for mixing liquid products (e.g. dispersants) with water; constant and automatic dosing, adjustable between 2 - 20% of product.	0.37	0.17	0.13	9	44
3	LANCE-EJECTEUR ANTI POLLUTION ø 170	ejector lance for application of loose sorbents (granules, powders etc); pressurized water operated.	NA	NA	NA	5.5	44
4	NOBIS	hydrodynamic injector for loose sorbents and dispersants; pressurized water operated.	NA	NA	NA	2	75
5	NEOS GEL-SPRAY	portable sprayer for NEOS gelling agent; 5 litres tank capacity.	-	dia 0.18	0.60	NA	80
6	DECES	lance for sorbent application; pressurized water operated.	NA	NA	NA	NA	92
7	UMP STATIC MIXER	static mixer for mixing emulsion breaker with "chocolate mousse" (water-in-oil emulsion); allows controlled addition of emulsion breaker; designed to fit intake line of a vacuum truck.	0.50	0.17	0.17	2	119
8	ROBINET COMBINE DIFFUSER 40.12.10	adjustable nozzle, portable.	NA	NA	NA	2.25	44

10. BEACH CLEANING EQUIPMENT

The Section "Beach Cleaning Equipment" includes various devices designed for cleaning of shores polluted by oil. Besides "standard" beach cleaners it lists vacuum units and pressure cleaners. Some of these devices are intended for use on sandy beaches and others are better suited for clean-up of rocky shores. "Standard" beach cleaners are in fact designed for removal of litter and solid tar balls, i.e. regular clean-up of sandy beaches, although these can sometimes be used in emergencies when oil arriving on beaches is heavily weathered and semi-solid. Other units in this category are specifically designed for removal of liquid oil from sandy beaches.

Vacuum units listed in this Section range from small, portable ones intended for clean-up of inaccessible parts of coast to more powerful units for use on accessible beaches.

Finally, water or steam jet cleaners are particularly suited for cleaning of rocks and man-made structures coated by oil.

Each item listed is briefly described, while further columns indicate power requirements, dimensions and weight (particularly important characteristic of beach cleaners). For mobile units, operational speed is indicated wherever applicable.

BEACH CLEANING EQUIPMENT (1)

NO.	MODEL	DESCRIPTION	POWER	DIMENSIONS (m)			WEIGHT (kg)	OPERAT. SPEED (km/h)	MANUFACTURER
				LENGTH	WIDTH	HEIGHT			
1	288 T 288 C	4 wheel drive or track drive self-contained beach cleaner for separating litter and tar balls from sand.	hydraulic, supplied by main engine.	4.50	2.50	2.00	4800	5	82
2	MOBILE SURFACE CLEANER 707	unit consisting of surface cleaner, tractor and trailer; "washes" the surface and separates tar, sand and water; suitable for heavy oil and tar.	four wheel diesel driven tractor.	7.30	1.50	2.10	454 + 907	1.4	26
3	SAND & SOIL CLEANER	tractor towed beach cleaner; for separating trash, litter and tar balls from sand.	hydraulic, supplied by tractor.	NA	NA	NA	NA	6	61
4	277	tractor towed beach cleaner for separating litter and tar balls from sand.	hydraulic, supplied by tractor.	5.25	2.42	1.96	2450	5	82
5	OILY BEACH CLEANER	pushed by front-end loader; oil which adheres to a specially coated drum is scraped-off and removed by a conveyor; collects fresh crude, No. 6 fuel etc.	hydraulic, supplied by front-end loader.	2.00	2.90	1.50	500	6.4	11
6	BEACH MAINTENANCE CLEANER	towed by a pickup truck; oil which adheres to a specially coated drum is scraped-off and deposited; collects fresh crude, No. 6 fuel etc.	-	3.13	2.00	1.32	180	NA	11
7	RP 300	tractor or 4 wheel drive vehicle towed beach cleaner, separates litter and tar balls from sand.	hydraulic, supplied by tractor.	3.10	2.40	1.72	1960	15	86
8	FNP	tractor or 4 wheel drive vehicle towed beach cleaner, separates litter and tar balls from sand.	tractor (via a cardan shaft)	3.00	2.20	1.90	1800	NA	100
9	EQMOLAP E.T.	front-end loader mountable belt type recovery device for removal of oil from the sea line; built-in separator; max viscosity 30 000 cSt.	hydraulic, supplied by front-end loader.	4.00	1.00	NA	350	1 - 3	47
10	VIP-P	portable vacuum tanks (5) attached to a central power pack for cleaning of (rocky) beaches; max viscosity of oil 5 000 cSt.	diesel (built in the power pack)	0.40 (tank) 1.00 (power pack)	0.40 (tank) 0.60 (power pack)	0.70 (tank) 0.70 (power pack)	150	-	22
11	VIP-A	back pack including power supply and collection tank for cleaning inaccessible (rocky) beaches; 15 litres capacity; max viscosity 5 000 cSt.	diesel (built in the back pack).	0.40	0.40	0.70	19	-	22
12	VACULITE	stationary power pack supply (vacuum) unit and two large (4m ³) skid mounted storage tanks; for inaccessible beaches; max viscosity 10 000 cSt.	diesel (built in the power pack).	2.70 (tank) 1.80 (power pack)	1.60 (tank) 1.00 (power pack)	2.00 (tank) 1.00 (power pack)	900	-	22
13	NOR-VAC 1 & 2	portable, self-contained, vacuum beach/rock cleaner comprising power pack, hopper collection unit and various accessories.	diesel engine power pack, 4.45 kW.	0.95 (power pack) -	0.75 (power pack) dia 0.59 (hopper)	0.98 (power pack) 1.15 (hopper)	160 + 52	-	122
14	VIKOVAC	portable, self-contained, vacuum beach/rock cleaner comprising head to fit the top of standard oil drum and various accessories.	diesel engine, 2 kW.	1.30	1.35	1.25	240	-	122

BEACH CLEANING EQUIPMENT (2)

NO.	MODEL	DESCRIPTION	POWER	DIMENSIONS (m)			WEIGHT (kg)	OPERAT. SPEED (km/h)	MANUFACTURER
				LENGTH	WIDTH	HEIGHT			
15	VIKOVAK JET	portable, self-contained vacuum beach/rock cleaner comprising standard oil drum head, accessories and high pressure water system.	diesel engine.	NA	NA	NA	NA	-	122
16	DIESEL PRESSURE WASHER	self-contained high pressure water jet cleaning system, can operate with fresh or salt water, liquid detergent metering system.	diesel engine.	1.21	0.75	0.68	124	-	122
17	HDS 1200 BK HDS 1200 EK	high pressure steam jet cleaner with built-in engine, skid mounted; hot water (80 °C / 50 bar) or steam (140 - 200 °C / 15 - 18 bar) jet.	gasoline, electric or diesel engine, 4 kW (built in).	1.45	0.75	1.11	300	-	6

11. OTHER EQUIPMENT

There is a number of various pieces of equipment designed for use in clean-up operations at sea and on shore which does not belong to any of the categories listed before. All such items are included in this Section. Some of these can be very useful, while others are less indispensable. However, in this Section of the Catalogue, those responsible for planning spill response activities, may find a certain gadget which will greatly improve the operation of the entire clean-up machinery.

Since almost every item differs from the others, these are listed without any particular order. The list only gives a very general description, dimensions and weight of each product.

OTHER EQUIPMENT (1)

NO.	MODEL	DESCRIPTION	DIMENSIONS (m)			WEIGHT (kg)	MANUFAC.
			LENGTH	WIDTH	HEIGHT		
1	ROTRIM	rotary kiln incinerator, road transportable, two models with and without afterburner, operational temperature approximately 1100° C, processes up to 10 t/h of oily sand/debris.	12.19	2.44	3.00	18182	11
2	CLEANFIRE	air-transportable incinerator for oily wastes, 1 t/h capacity, includes incinerator and power pack.	3.00	1.80	1.50	2 x 850	48
3	INCYMAR	oily material incinerator.	NA	NA	NA	NA	127
4	RT - 14 OIL SPILL RESPONSE TRAILER	trailer for transportation of oil pollution control equipment; steel frame, aluminium exterior, hydraulic brakes; can be attached to car, van or any other convenient vehicle.	5.38	2.06	2.64	2200	1
5	MFK 250/E	mobile field kitchen, all terrain, air transportable, incorporated weather shelter, can provide 250 - 500 meals in two hours.	4.17	2.10	2.62	1650	6
6	MESSIE	polyurethane oil barrier production system contained in two 20 feet containers, can produce continuous booms in lengths of 350 - 1000 m at 300 m/h rate.	6.06 (cont.)	2.44 (cont.)	2.56 (cont.)	3000 (cont.)	12
7	OEL MOLTE PU-PLANT	polyurethane foam plant mounted in steel box on four-wheel trailer for production of oil sorbents (flakes, powder, blocks etc.) at the spill site.	2.44	1.42	0.80	NA	82
8	SPILLSTOPPER	laminated elastomer mat designed to seal off gravity flow of liquids into surface-mounted drains, manholes, grates etc.	0.61 0.76 0.91 1.07	0.61 0.76 0.91 1.07	0.01	11 (kg/m ²)	24
9	FROGMAT	device for manufacturing 160m/h of net enmeshed fibrous boom/shoreline protection barrier for large scale protection mudflats, salting and amenity beach areas.	NA	NA	NA	NA	(122)
10	EMERGENCY RESPONSE COMMAND CENTRE	self-contained unit including sound absorbent radio and communications room, telephone system, air conditioning, sanitary facilities, refrigerator, stove, generator; air and road transportable.	12.80 6.86	2.50 2.35	2.71 2.71	NA	25
11	ARGOCAT	6 or 8 wheel multi-terrain all purpose amphibian vehicle, can be equipped with spraying arms and/or guns.	2.29 3.00	1.47	0.89	330 397 443	32
12	AQUA DOME	air supported canopy for controlling (oil) leakages on land or water (surface or submerged); traps gases, liquids and semi solids; made of fireproof, plastic coated fibre.	var	var	var	var	(72)
13	PB 400 E ECHO BLOWER	portable, gasoline powered blower; backpack configuration; used instead of water jets for moving floating oil; maximum air velocity 290 km/h.	0.33	0.45	0.44	10	89
14	HONEY WAGON	vacuum tank trailer; tractor operated; acts as a pump and a settling tank; capacities from 3 - 12 m ³ available; equipped with flexible hoses and skimming head.	6.50	2.00	2.00	1500	91
15	AIR-BAG	inflatable air-bags for obturation of holes, cracks; delivered with straps, metal plates, valves etc.	NA	NA	NA	NA	93
16	INFLATABLE FENDERS	cylindrical, inflatable fenders made of nitrile coated nylon for ships between 360 and 30 000 tons.	var	dia var	-	23 - 390	93
17	RO-CLEAN	boom cleaning machine consisting of two units which can be mounted on a multilift frame; hot water/high pressure cleaners of ancillary unit can be used separately; operates on land or on board ships.	5.20	2.50	2.40	4850	98 (87)

OTHER EQUIPMENT (2)

NO.	MODEL	DESCRIPTION	DIMENSIONS (m)			WEIGHT (kg)	MANUFAC.
			LENGTH	WIDTH	HEIGHT		
18	EMULSION BREAKER METERING PUMP	pump for adding emulsion breaker at the skimmer head with or without built-in flow meter for automatic adjustment of emulsion breaker to oil ratio.	0.58	0.47	0.44	45	122
19	JX - 1 MECHANICAL SQUEEGEE	lever activated mechanical squeegee for wringing hand held oil mops; open top drum mountable.	NA	NA	NA	10	85
20	JX - 2 ROLLER WRINGER	two frame mounted squeegee rollers for wringing hand held oil mops; adjustable spring tensioners; open-top drum mountable.	NA	NA	NA	13.6	85
21	HW - 2 1/2	manual oil mop wringer; open top drum mountable; adjustable spring tensioners.	NA	NA	NA	13.6	1
22	OIL CREP SYSTEM SSC - 20	containerized, mobile decontamination unit for on-the-spot cleaning of oil contaminated sand, soil and gravel (up to 50 mm dia); uses OIL CREP I cleaning agent; maximum capacity 10 m ³ /h.	6.10	2.44	2.44	15000	NA
23	PFC/N - 2000 PFC/E - 2000	"Polishing Filter Coalescer" units remove finely dispersed, undissolved oils from water; pneumatic (N) or electronic (E) controls; maximum capacity 6.8m ³ /h.	1.98	1.37	3.66	4540	1
24	TURBIFLUX LL	range of separators based on settling and coalescence, separate dispersed oils from water, automatic interface; capacities range from 2 to 100 m ³ /h.	-	dia 0.60 - 2.20	1.45 - 3.50	NA	8
25	RMD	range of gravity/coalescer separators; maximum capacity 10 000 m ³ /h.	max 1.80	max 1.50	max 1.91	max 1440	78
26	RO-SETT	settling tank on multilift frame equipped with pneumatic pump, compressor, hoses.	4.70	2.44	2.40	2700 (empty)	98 (87)
27	OIL-WATER SEPARATOR	gravity type separators for use during pollution control operations, light weight; available in GRP or aluminium; capacities between 45 and 100 m ³ /h.	1.40 3.00	1.00 1.50	1.10 2.00	180 910	83
28	NOLTEMAT	settling/filtering separators, stationary or mobile, level control, oil alarm device, screw pump, hoses; stainless steel; volume 3.5 m ³ .	2.00	1.25	1.50	1460	82
29	FLOATING OIL/WATER SEPARATOR	"donut" shaped floating separator with open bottom skirt for water drainage; made out of PE and PVC coated nylon or polyester; volume 0.7 m ³ .	-	dia 1.42	1.55	32	121

12. SORBENTS

Sorbents are materials which fix liquid oil (or another liquid) either by absorption (soaking, incorporating oil) or by adsorption (attracting and holding oil to its surface). Both of these properties are put in use to facilitate removal of oil (or another liquid) floating on the water or stranded on the beach.

The use of sorbents at sea gives rise to technical and logistic problems connected both with the characteristics of the sorbent used and the way of its application: the treatment of a certain volume of oil necessitates the use of at least the equivalent volume of sorbent, which hence has to be supplied, stocked, transported to the zone of accident, applied, recovered after mixing with oil and then disposed of. Amounts of sorbents needed for treatment of big oil spills are so extensive that sorbents are generally considered useful only for treatment of small to medium spills (few tons to few tens of tons) in sheltered areas such as ports, small bays, coves, etc. Sorbents can also be applied during shoreline clean-up operations in those cases in which more common recovery methods either give poor results or are inapplicable.

Sorbents can be of both organic and inorganic origin, natural or man-made (synthetic) products. The majority of these, come in the form of granules or fibres which are either used in "loose" form or are further processed to various shapes (pads, rolls, blankets, booms, etc).

All sorbents have to be oleophilic i.e. they must have a greater affinity for oil than water. Another important characteristic is sorption capacity: the ratio of sorbed oil to the dry weight of sorbent material has to be as high as possible. The products intended for use on floating oil must meet another two specific requirements: first, these have to be hydrophobic i.e. they should not soak water, and second, they must have a lower density than water. These properties enable them to fix only oil (and not water) and to remain afloat when saturated.

Loose sorbents can be applied either manually, by strewing them directly from sacks or other containers, or mechanically, by using ejectors operated by pressurized water or air powered blowers. Sorbents which come in the form of pads, pillows, sheets etc. are deployed manually.

Some sorbents (usually adsorbents) are reusable while others have to be disposed of once saturated with oil.

Loose sorbents, used to fix floating oil, are collected either manually (nets, scoops) or mechanically (skimmers, specially designed trawl nets). Sorbent booms, blankets, pads, mops etc. are recovered only manually.

Products listed in the Section "SORBENTS" are divided in two subcategories: "FLOATING" and "NON FLOATING" products. Characteristics given for each item include a brief description of nature and form of the product, its density, diameter of particles for granulated products and dimensions for the others and sorption capacity (defined as ratio of sorbed oil weight to the dry weight of sorbent) for various types of oil.

SORBENTS (1)
 FLOATING

NO.	NAME	DESCRIPTION	DENSITY (g/cm ³)	AVERAGE DIAMETER OF PARTICLES (mm)	DIMENSIONS (m)			SORPTION CAPACITY (oil weight : sorbent weight)						MANUFAC.
					LENGTH	WIDTH	HEIGHT	LIGHT FUEL	HEAVY FUEL	LIGHT CRUDE	MEDIUM CRUDE	HEAVY CRUDE	w/o EMULSION	
1	ERGON SORBENTS	non-woven polypropylene fabric; pads, rolls, booms, sweeps, pillows, loose.	NA	NA	var	var	var	- up to 25 times the weight of the sorbent - (depending on the viscosity of oil)						(1)
2	CONTAINMENT SYSTEMS CORP. OIL SORBENTS	pads, booms, sweeps, blankets, pillows, particulate.	NA	NA	var	var	var	- up to 25 times the weight of the sorbent - (depending on the viscosity of oil)						27
3	DPEC OIL ABSORBENTS	non-woven synthetic fibre; ropes, pads, blankets, mops.	0.93	-	var	var	var	10:1	15:1	18:1	20:1	25:1	25:1	86
4	3M OIL SORBENTS	non-woven polypropylene microfibres; rolls, sweeps, sheets, pillows, booms, particulate, reusable; adsorbs various hazardous liquids.	NA	-	var	var	var	- up to 25 times the weight of the sorbent - (depending on type of liquids)						113 (85)
5	DRIZIT OIL ABSORBENT- LOOSE	natural fibre; absorbs non-water miscible liquids.	0.01	up to 12	-	-	-	10:1	11:1	11:1	12:1	12:1	5:1	36 (87)
6	P.A.M.	biodegradable, synthetic powder suitable for manual or mechanical application.	0.09	0.5	-	-	-	NA	1:1 (vol)	NA	NA	NA	NA	54
7	NEPOXAB	granules of various epoxy resins; reusable.	0.04	NA	-	-	-	19:1	13:1	NA	NA	NA	NA	(64)
8	EKOPEL 33	granules of thermally expanded volcanic rock; floating.	0.09	NA	-	-	-	- up to 4.5 times the weight of the sorbent -						75
9	EKOPEL 66	granules of thermally expanded volcanic rock; floating.	0.14	NA	-	-	-	- up to 6.6 times the weight of the sorbent -						75
10	FINNSORB 1	granules of heat- treated crushed peat; biodegradable.	0.108	0.75 (50%)	-	-	-	NA	NA	5:1	NA	NA	NA	(112)
11	ZUGDL SORBENT	granulated product made of pine bark; bio- degradable.	0.2	5 - 10	-	-	-	1.2:1	NA	2.4:1	2.5:1	3.5:1	NA	(130)
12	SPC OIL SORBENTS MOP	non-woven polypropylene fibre; reusable.	0.2	-	0.5	0.3	0.2	20:1	15:1	15:1	12:1	10:1	-	110 (84) (128)
13	SORBAIDE	polypropylene fibres, mop for manual application; reusable.	0.9	-	NA	NA	NA	10:1	15:1	15:1	25:1	30:1	30:1	85 87
14	DRIZIT OIL ABSORBENT- MINI CUSHIONS	natural fibre in synthetic bag; absorbs non-water miscible liquids.	0.01	up to 12	0.45	0.18	0.075	10:1	11:1	11:1	12:1	12:1	5:1	36 (87)

SORBENTS (2)

NO.	NAME	DESCRIPTION	DENSITY (g/cm ³)	AVERAGE DIAMETER OF PARTICLES (mm)	DIMENSIONS (m)			SORPTION CAPACITY (oil weight : sorbent weight)						MANUFAC
					LENGTH	WIDTH	HEIGHT	LIGHT FUEL	HEAVY FUEL	LIGHT CRUDE	MEDIUM CRUDE	HEAVY CRUDE	w/o EMULSION	
15	DRIZIT OIL ABSORBENT- CUSHIONS	natural fibre in synthetic bag; absorbs non-water miscible liquids.	0.01	up to 12	0.5	0.5	0.075	10:1	11:1	11:1	12:1	12:1	5:1	36 (87)
16	ABSORBING CLOTH	synthetic cloth made of supporting and absorbing layer.	NA	-	50	1.4	NA	- 5 litres of fluid oil per m ² of cloth -						75
17	TAFMEL OILBLOTTER (BL-65)	non-woven, long fibre, polypropylene mats; reusable.	0.91	-	0.65	0.65	0.004	10:1	13:1	NA	11:1	NA	-	(80)
18	TEIJIN OILSORB (BF-OL01)	non-woven polypropylene fabric mats; reusable.	0.91	-	0.5	0.5	0.004	15:1	26:1	NA	20:1	NA	-	(80)
19	SPC OIL SORBENTS PAD	non-woven polypropylene fibre; reusable.	0.75	-	0.46	0.46	0.01	20:1	15:1	20:1	15:1	10:1	-	110 (84) (128)
20	SPC OIL SORBENTS BLANKET	non-woven polypropylene fibre; reusable.	0.91	-	45	0.9	0.01	20:1	15:1	15:1	12:1	10:1	-	110 (84) (128)
21	SPC OIL SORBENTS SWEEP	non-woven polypropylene fibre; reusable.	0.91	-	30.5	0.5	0.01	20:1	15:1	15:1	12:1	10:1	-	110 (84) (128)
22	SEACLEAN INC PILLOWS	chicken feathers in nylon casing; reusable, biodegradable.	NA	-	0.45	0.45	0.075	6:1	16:1	10:1	14:1	16:1	28:1	101
23	CONVED PETRO MESH	synthetic fibrous product; reusable bio- degradable; for heavy oils.	NA	NA	NA	NA	NA	-	68:1	-	-	-	NA	29 (53) (111)
24	CONVED SORBENT STRIPS	felted vegetable fibre mat reinforced with polypropylene mesh; reusable, biodegradable.	NA	-	0.66	0.08	0.006	22:1	20:1	NA	NA	NA	NA	29 (53) (111)
25	CONVED UTILITY SORBENT PILLOW	specially modified low density polyethylene foam in nylon net; reusable; for removal of oil from effluents.	NA	-	0.46	0.31	0.10	- up to its own weight in free oil -						29 (53) (111)
26	CONVED SORBENT BLANKET	vegetable fibre mat reinforced with poly- propylene mesh; reusable, biodegradable.	NA	-	61	0.89	0.006	20:1	26:1	NA	NA	NA	NA	29 (53) (111)
27	CONVED SORBENT PADS	vegetable fibre mat reinforced with poly- propylene mesh; reusable, biodegradable.	NA	-	0.44	0.44	0.006	- up to 26 times the weight of the sorbent - (depending on the type of oil)						29 (53) (111)
28	CONVED D-SORBENT PADS	specially modified low density polyethylene foam; reusable, adsorbs other liquid chemicals.	NA	-	0.53	0.53	0.006	16:1 20:1	23:1	NA	NA	NA	NA	29 (53) (111)
29	DRIZIT OIL ABSORBENT- MINI BOOMS	natural fibre in synthetic bag; absorbs non-water miscible liquids.	0.01	up to 12	1.5	dia 0.18	-	10:1	11:1	11:1	12:1	12:1	5:1	36 (87)

SORBENTS (3)

NO.	NAME	DESCRIPTION	DENSITY (g/cm ³)	AVERAGE DIAMETER OF PARTICLES (mm)	DIMENSIONS (m)			SORPTION CAPACITY (oil weight : sorbent weight)						MANUFAC
					LENGTH	WIDTH	HEIGHT	LIGHT FUEL	HEAVY FUEL	LIGHT CRUDE	MEDIUM CRUDE	HEAVY CRUDE	w/o EMULSION	
30	ORIZIT OIL ABSORBENT- BOOMS	natural fibre in synthetic bag; adsorbs non-water miscible liquids.	0.01	up to 12	4.0	dia 0.18	-	10:1	11:1	11:1	12:1	12:1	5:1	36 (87)
31	SPC OIL SORBENTS BOOMS	non-woven polypropylene fibre; reusable.	0.91	-	3.05	dia 0.2	-	20:1	15:1	15:1	12:1	10:1	-	110 (84) (128)
32	SEACLEAN INC BOOMS	chicken feathers in nylon casing; reusable, biodegradable.	NA	-	9.14	dia 0.20	-	6:1	16:1	10:1	14:1	16:1	28:1	101
33	AKI-OIL ABSORPTION BOOM	synthetic net hose filled with thermally treated peat moss granules.	NA	0.75 (50%)	5	dia 0.15	-	NA	NA	5:1	NA	NA	NA	(112)
34	AKI-IMU OIL ABSORP- TION BOOM	synthetic net hose filled with synthetic fibre.	NA	-	5	dia 0.15	-	NA	NA	NA	NA	NA	NA	(112)
35	ZUGOL BOOM	granulated pine bark in synthetic net; biodegradable.	0.2	10 - 25	1	dia 0.15	-	1:1	NA	2.2:1	2.3:1	3:1	NA	(130)
36	CONVED HEAVY DUTY SORBENT BOOM	vegetable fibre mat reinforced with poly- propylene mesh in nylon net covering; reusable, biodegradable.	NA	-	3.05	dia 0.20	-	- up to 26 times the weight of the sorbent - (depending on the type of oil)						29 (53) (111)

NON FLOATING

NO.	NAME	DESCRIPTION	DENSITY (g/cm ³)	AVERAGE DIAMETER OF PARTICLES (mm)	DIMENSIONS (m)			SORPTION CAPACITY (oil weight : sorbent weight)						MANUFAC
					LENGTH	WIDTH	HEIGHT	LIGHT FUEL	HEAVY FUEL	LIGHT CRUDE	MEDIUM CRUDE	HEAVY CRUDE	w/o EMULSION	
1	SPILSORB	mineral in granular form; for use on solid surfaces; absorbs all liquids.	NA	6/30 mesh	-	-	-	- up to 110 per cent the weight of the sorbent -						(16)
2	SPIL-ORI	mineral in granular form; for use on solid surfaces; absorbs all liquids.	NA	6/30 mesh	-	-	-	- up to 110 per cent the weight of the sorbent -						(16)
3	KLENSORB	mineral in granular form; for use on solid surfaces; absorbs all liquids.	NA	6/30 mesh	-	-	-	- up to 110 per cent the weight of the sorbent -						(16)
4	TERRAPERL	granulated product for absorption of hydro- carbons and other chemicals on solid surfaces.	0.1	NA	-	-	-	- up to 4 times the weight of the sorbent -						75

SORBENTS (4)

NO.	NAME	DESCRIPTION	DENSITY (g/cm ³)	AVERAGE DIAMETER OF PARTICLES (mm)	DIMENSIONS (m)			SORPTION CAPACITY (oil weight : sorbent weight)						MANUFAC
					LENGTH	WIDTH	HEIGHT	LIGHT FUEL	HEAVY FUEL	LIGHT CRUDE	MEDIUM CRUDE	HEAVY CRUDE	w/o EMULSION	
5	TERRAPERL S	granulated product for absorption of hydrocarbons and other chemicals on solid surfaces.	0.42	NA	-	-	-	NA	NA	NA	NA	NA	NA	75
6	TS 20	thermally treated granulated product of argillaceous origin with fibrous structure; for use on solid surfaces.	0.57	NA	-	-	-	NA	NA	NA	NA	NA	NA	75
7	CONVED SORBENT RUG	non-woven fabric with or without polyfilm backer; for use on solid surfaces.	NA	-	91	1.01	0.003	- up to 7.5 times the weight of sorbent -						29 (53) (111)
8	EKOPERL 99	two component granulated product adsorbing liquid acids.	0.25	NA	-	-	-	NA	NA	NA	NA	NA	NA	75

13. DISPERSANTS

Dispersion of oil spilled on the water surface is one of the natural phenomena and ways of degrading spilled oil. It requires a certain quantity of mixing energy to start and facilitate the process. However, natural dispersion is a slow process and other "weathering" processes will outrun it. It is particularly undesirable if creation of water-in-oil emulsions takes place before oil is eliminated from the water surface since emulsification of this type drastically increases the quantity of oily material which has to be removed and complicates the entire clean-up operation.

In order to accelerate and enhance the process of natural dispersion, which is a desirable way of degrading spilled oil, chemical dispersants, i.e. products which will help the process are applied. These products are mixtures of solvents, wetting agents and surface active agents that reduce interfacial tension between oil and water, making it easier for an oil slick to break into fine droplets which are rapidly distributed throughout the water column. The resulting increase in surface to volume ratio of the oil accelerates the (natural) process of biodegradation.

Products presently available on the market fall into two groups: conventional and concentrate dispersants.

Conventional dispersants have a certain quantity of a surface active agent dissolved in a hydrocarbon solvent and are directly applied to the spill, i.e. they should not be diluted with water prior to use. Hydrocarbon solvents must be free from aromatic or other toxic components. Conventional dispersants are usually of low viscosity. They are useful for treatment of waxy and tarry oils: the hydrocarbon solvent from the dispersant reduces the viscosity of the heavy oil thus facilitating its dispersion. Unfortunately, the same solvent reduces the capacity of the dispersant since a part of surface active component is spent on emulsification and dispersion of the hydrocarbon component in the dispersant. Conventional dispersants are usually applied from surface vessels. The main problem associated with their use is that quantity of dispersant required for treatment of a certain spill is almost equivalent to the quantity of oil and hence a large supply of dispersant has to be transported, handled and stored on board ships. The same logistic problems render conventional dispersants unsuitable for aerial application.

Concentrate(d) dispersants are mixtures of surface active agents, wetting agents and oxygenated (non-hydrocarbon) solvents. "Concentrates" contain more active ingredients and usually have higher density and viscosity. They can be applied either diluted with sea water (usually from surface vessels) or undiluted (from aircraft and sometimes from surface vessels). Products of this type will disperse more oil per unit volume of dispersant than conventional products.

Although in laboratory tests conventional dispersants and diluted "concentrates" would disperse up to 8 times their own volume and neat "concentrates" up to 80 times their own volume of oil, in real spill situations these figures are much lower: for conventional, maximum 1:2 and for "concentrates", maximum 1:15. These reduced figures are largely due to fragmented nature of spills and various practical considerations associated with application of dispersants.

The clear advantage of concentrate dispersants is the smaller (as compared to conventional dispersants) volume of product required for treatment of the same quantity of spilled oil.

Finally, the decision to use dispersants in combating an oil spill, needs to be based on the fact that presently available dispersants are inefficient on oils with viscosity higher than 1000 cSt (maximum 1500) at ambient temperature.

The Section "DISPERSANTS" comprises description of the product (conventional or concentrate) indicating also those which are suitable for aerial spraying (it is presumed that all can be applied from surface vessels), density, viscosity at 20° C, pour and flash point and shelf life in years. The last column indicates countries in which a certain product is accepted or approved for use. The abbreviations used in this column are based on international automobile country code:

AUS - Australia	J - Japan
CDN - Canada	MAL - Malaysia
CI - Ivory Coast	N - Norway
CO - Colombia	NL - Netherlands
D - Federal Republic of Germany	PA - Panama
DK - Denmark	RCH - Chile
EC - Ecuador	RI - Indonesia
ET - Egypt	RP - Philippines
F - France	S - Sweden
GB - United Kingdom	SA - Saudi Arabia
GR - Greece	SGP - Singapore
Gulf - Arabic Gulf	TT - Trinidad and Tobago
HK - Hongkong	USA - United States of America
I - Italy	WAN - Nigeria
IND - India	YV - Venezuela

DISPERSANTS (1)

NO.	NAME	DESCRIPTION	MAXIMUM DILUTION RATE (disp: water)	MAXIMUM APPLICAT. RATE (disp: oil)	DENSITY (g/cm ³)	VISCOSITY at 20° C (cSt)	POUR POINT (°C)	FLASH POINT (°C)	SHELF LIFE (years)	APPROVALS AND ACCEPTANCES	MANUFAC.
1	ALBISOL BPD	conventional, biodegradable; suitable for aerial spraying.	-	1:10	0.82	27	-10	66	5	I.	70
2	AMERDIO OIL SPILL DISPERSANT LT	conventional, biodegradable.	-	1:30	0.81	23	-40	77	NA	GB, USA, CDN, AUS, HK, N, SGP, RP.	(43)
3	ARROW EMULSOL LW	conventional, biodegradable.	-	1:10	0.82	1	-40	74	INDEF.	GB, N, MAN.	13
4	BASOL AD/6	conventional, biodegradable; can be used as degreasant.	-	NA	NA	NA	NA	none	NA	-	57
5	BASOL COASTGUARD 'S'	conventional, biodegradable.	-	NA	NA	NA	NA	none	NA	-	57
6	BP 1100 X	conventional).	-	1:10	0.82	4	-10	71	5	F, GB, MAN, USA.	20
7	COREXIT 7664	conventional, water based; suitable for aerial spraying.	-	1:50	1.00	32	-14	47	INDEF.	USA, RCH, MAN, TT, YV.	49
8	COREXIT 0667	conventional, biodegradable.	-	1:30	0.81	8	-35	78	INDEF.	USA, CDN, RCH, MAN.	49
9	COREXIT 9600	conventional, biodegradable; suitable for aerial spraying.	-	1:50	0.84	31	-35	77	INDEF.	F, I, GR, GB, N.	49
10	EMULSO E - 309	conventional; suitable for aerial spraying.	1:32	1:5	0.86	6	-30	75	2	GB.	114
11	FINASOL OSR 2	conventional; suitable for aerial spraying.	-	NA	0.81	6	-10	65	5	F, I, DK, NL, GB.	50
12	GAMLEN OSR 2000	conventional, biodegradable; suitable for aerial spraying.	-	1:10	0.84	10	-20	99	NA	F, I, GB, MAN.	54
13	HYDROSOL SE - 4	conventional; suitable for aerial spraying.	-	1:50	0.90	12	-15	80	2	F.	108
14	MAGNOTOX	conventional, water based, biodegradable.	1:10	1:10	1.03	NA	-10	none	1	I, USA, GB, SGP, HK.	74
15	NEOS AB 2000	conventional; suitable for aerial spraying.	-	1:4	0.81	4	-10	75	5	J.	80
16	NEOS AB 3000	conventional; suitable for aerial spraying.	-	1:4	0.85	12	-7	80	5	J, GB, HK, RP, SGP, RI.	80
17	OSD 540	conventional, biodegradable.	-	1:10	0.80	1	-20	100	5	GB, Gulf, SGP, HK, SA, MAN, CI.	5
18	ROCHEM OIL SPILL REMOVER LT	conventional, biodegradable; suitable for aerial spraying.	-	1:12	0.81	10	-30	71	INDEF.	I.	96
19	ROCHEM OIL SPILL REMOVER MSA	conventional, biodegradable; suitable for aerial spraying.	1:30	1:12	0.83	10	-30	73	INDEF.	I, GB, HK, SGP, EC, N.	96

DISPERSANTS (2)

NO.	NAME	DESCRIPTION	MAXIMUM DILUTION RATE (disp: water)	MAXIMUM APPLICAT. RATE (disp: oil)	DENSITY (g/cm ³)	VISCOSITY at 20° C (cSt)	POUR POINT (°C)	FLASH POINT (°C)	SHELF LIFE (years)	APPROVALS AND ACCEPTANCES	MANUFAC.
20	SERVO CD 2000	conventional, biodegradable.	-	1:20	0.82	5	-30	72	5	D, GB, N, KT, SGP, MAL, IND, MAN, HK.	103
21	SHELL DISPERSANT LTX	conventional, biodegradable.	-	NA	0.80	3	-30	77	NA	I, GB, S, RCH, J, MAN.	104
22	SLICKG - LT 2	conventional, biodegradable.	-	1:3	0.95	3	NA	NA	10	GB, others.	19
23	AP - 2	concentrate, biodegradable.	1:2.5	NA	NA	NA	NA	72	INDEF.	I.	75
24	ARROW EMULSOL CONCENTRATE	concentrate, biodegradable.	1:9	1:100	0.86	8	-60	82	INDEF.	GB, N.	13
25	ARROW EMULSOL SUPER CONCENTRATE	concentrate, biodegradable; suitable for aerial spraying.	1:9	1:200	1.03	78	-20	63	INDEF.	GB, N.	13
26	BP 1100 MD	concentrate; suitable for aerial spraying.	1:10	1:10	0.87	50	-58	87	5	I, GB, RCH, MAN, N.	20
27	COMCO DISPERSANT K	concentrate, biodegradable; suitable for aerial spraying.	1:12	1:12	1.02	NA	-9	160	INDEF.	USA, MAN.	28
28	COREXIT 9510	concentrate, biodegradable.	var	1:30	0.99	21	-8	none	INDEF.	-	49
29	COREXIT 9527	concentrate, biodegradable; suitable for aerial spraying.	var	1:100	0.97	46	-43	72	INDEF.	USA, GB, COM, RCH, MAN, N, Saudi A., TT, CO, YV, PA.	49
30	COREXIT 9550	concentrate, biodegradable; suitable for aerial spraying.	-	1:100	0.95	87	-40	69	INDEF.	RCH, COM, USA.	49
31	BASIC SLICKGONE LTE	concentrate, biodegradable; suitable for aerial spraying.	1:20	1:30	1.0	35	-15	none	15	F, GR, GB, N, HK, SGP, RCH, MAN.	37
32	BASIC SLICKGONE LTSM	concentrate, biodegradable; suitable for aerial spraying.	1:20	1:50	1.0	30	-15	none	15	GB.	37
33	DISPOLEME* 34 S	concentrate, biodegradable; suitable for aerial spraying.	1:10	1:50	1.03	68	-10	61	5	F, I, GB.	102
34	DISPOLEME* 36 S	concentrate, biodegradable; suitable for aerial spraying.	1:10	1:50	1.02	78	-16	75	5	F, GB, N.	102
35	DK - SOL	concentrate.	1:30	1:5	0.89	24	NA	178	3 - 5	J.	35
36	FINASOL OSR 5	concentrate; suitable for aerial spraying.	1:10	1:20	1.02	66	-20	105	NA	F, I, DK, D, N, HL, S, GB.	50
37	GAMLEN OD 2000	concentrate, biodegradable; suitable for aerial spraying.	1:10	1:33	0.98	36	-20	100	NA	F, I, GB, N.	54
38	HYDROSOL JM - 40	concentrate, biodegradable; suitable for aerial spraying.	1:10	1:50	0.99	60	-15	100	2	F, I, China, Gabon, RI, Cameroon, ET.	108

DISPERSANTS (3)

NO.	NAME	DESCRIPTION	MAXIMUM DILUTION RATE (disp: water)	MAXIMUM APPLICAT. RATE (disp: oil)	DENSITY (g/cm ³)	VISCOSITY at 20° C (cSt)	POUR POINT (°C)	FLASH POINT (°C)	SHELF LIFE (years)	APPROVALS AND ACCEPTANCES	MANUFAC.
39	HYDROSOL DW - 400	concentrate, biodegradable; suitable for aerial spraying.	1:10	1:50	0.99	39	-15	101	2	F.	108
40	HP - 900 - W	concentrate, biodegradable.	1:5	1:11	1.04	NA	-5	99	5	USA.	89
41	HALFLEET 9-010	concentrate, biodegradable.	1:10	1:40	0.9	13	-55	88	2	GB.	133
42	NEOS AB - H	concentrate, biodegradable; suitable for aerial spraying.	-	1:30	0.92	33	-10	96	5	-	80
43	NOKOMIS 3 C	concentrate, biodegradable; suitable for aerial spraying.	1:100	NA	1.23	618	-8	none	INDEF.	D, GB, USA.	128
44	OSD 559	concentrate, biodegradable.	1:10	1:50	0.99	100	-10	100	5	GB, Gulf, SGP, HK, SA, MAN, CI.	5
45	OSD SUPER-CONCENTRATE	concentrate, biodegradable; suitable for aerial spraying.	1:30	var	0.9	100	-10	100	INDEF.	I, GB, Gulf, SGP, HK, SA, MAN, CI.	5
46	PETROLITE W - 2096	concentrate, biodegradable; suitable for aerial spraying.	1:10	1:40	0.98	31	-32	82	2	GB.	88
47	SHELL DISPERSANT CONCENTRATE	concentrate, biodegradable.	1:10	NA	0.93	17	-21	68	NA	F, D, NL, GB.	104
48	SLICKG - LTE	concentrate, biodegradable; suitable for aerial spraying.	1:10	1:20	1.0	35	NA	NA	10	GB, others.	19
49	SLICKG - LTS	concentrate, biodegradable; suitable for aerial spraying.	-	1:20	0.92	55	NA	none	15	GB.	19
50	UNIDEM D 1200	concentrate; suitable for aerial spraying.	1:10	NA	0.86	6	-30	81	INDEF.	GB.	119
51	MELLAID 331	concentrate, biodegradable.	1:10	NA	1.02	66	-20	106	NA	N, GB.	124

14. OTHER (SPILL CONTROL) PRODUCTS

The last Section of the Catalogue lists a variety of products which are used for treatment of oil spilled at sea or stranded on shore. Products included in this Section comprise biological agents, burning agents, chemical barriers, cleaning agents, emulsion breakers and gelling agents.

Biological agents - Spilled oil is normally partially biodegraded by hydrocarbon-consuming micro-organisms existing in the sea water. Biological agents are either lyophilized such micro-organisms (primarily bacteria) or alternatively nutrients (e.g. phosphorus, nitrogen) which increase the growth rate of already present micro-organisms. Although results obtained by using biological agents indicate a significant increase in the natural biodegradation rate, the process is still too slow to be considered as a really useful response method in emergencies.

Burning agents are products intended to ignite and/or sustain combustion of spilled oil.

Controlled burning of spilled oil on the sea surface has often been proposed as a possible method of pollution control but, despite inflammability of most hydrocarbons, this method proved to be impracticable. Two main reasons are cooling effect of water beneath (usually thin) layer of oil and lack of oxygen. Even if achieved, burning is never complete, resulting in severe air pollution and leaving considerable amounts of unburnt heavy components.

Chemical barriers or surface tension modifiers are products which inhibit spreading of oil on the sea surface by modifying the surface tension properties of oil. Their use is however limited by the facts that they are not effective for more than a few hours after application and that their efficiency is strongly affected by wave movement.

Surface tension modifiers can also be used on shore (by spraying them on beaches prior to the arrival of oil) to prevent coating of pebbles, gravel or stones with oil.

Cleaning agents are products used for removal of persistent oil coatings from rocks, stones, concrete surfaces etc. Another subcategory of these products can be used for degreasing metal surfaces, parts of machinery, effective paint-coated surfaces etc. The most effective ones contain certain petroleum fractions which dissolve solidified coatings of oil which stick to a hard surface.

The use of cleaning agents becomes a necessity in shore clean-up after approximately a month of weathering of oil on rocks. Although some beach cleaning agents emulsify detached oil, they should not be considered as dispersants since these emulsions are short-lived and the process is only partial.

Emulsion breakers or demulsifiers are chemicals intended for breaking up either oil-in-water or water-in-oil emulsions. The first group can be useful in "polishing" separator effluents containing small amounts of oil mixed with large quantities of water. The other type of emulsion breakers is added to heavy water-in-oil emulsions ("chocolate mousse") in order to break them up thus reducing significantly their viscosity and making them pumpable. Since thorough mixing is essential for achieving optimum results, emulsion breakers are dosed either directly into the pump or into the emulsion suction line via a static mixer.

Gelling agents are usually two component polymer products which, when mixed into the spill, incorporate oil in their molecular structure, immobilizing and solidifying it. Spreading of solidified oil is thus inhibited and the resulting material is easier to handle than liquid oil. Their high cost, the large volumes required and the problems associated with their application, restrict the use of gelling agents to small spillages in confined areas.

The list of products indicates the type of product, its physical condition under normal conditions, a brief description, viscosity in centistokes at 20° C, density, pour point and flash point. Approximate application rate and expected shelf life have also been included in the list.

OTHER (SPILL CONTROL) PRODUCTS (1)

NO.	NAME	TYPE OF PRODUCT	PHYSICAL CONDITION	DESCRIPTION	VISCOSITY at 20°C (cSt)	DENSITY (g/cm ³)	POUR POINT (°C)	FLASH POINT (°C)	APPLICATION RATE, (product:oil)	SHELF LIFE (years)	MANUF
1	INIPOL EAP 22	biological agent	liquid	product for stimulating and accelerating the rate of biodegradation.	250	0.996	11	100	1:20	2	22
2	DBC PLUS	biological agent	solid (powder)	selected bacteria freeze-dried and air-dried in form of free flowing granulated powder; for use on beaches, lagoons etc.)	-	NA	-	-	NA	INDEFINITE (in cool, dry place)	(55)
3	ROLFZYNE	biological agent	liquid	biocatalytic system of pre-formed multi-enzyme concentrate; stimulates and accelerates natural biodegradation; for use at sea or on shore.	NA	NA	NA	NA	NA	INDEFINITE	97
4	SUREFIRE	burning agent	solid	oil spill igniter (dim. 180 x 290 x 108 mm); can be used manually or dropped from aircraft; activated by lighter or battery-powered ignition system.	-	NA	-	-	NA	5	48
5	COREXIT OC-5	chemical barrier	liquid	surface tension modifier for application around an oil slick or on the beach.	30	0.91	-35	82	2 - 5 l/km	INDEFINITE	49
6	OILCOMPRESS	chemical barrier	liquid	surface tension modifier for containing, controlling and collecting oil on water surfaces.	NA	0.985	-4	85	2.3 - 4.7 l/km	10	71
7	NEOS OE-F	chemical barrier	liquid	surface tension modifier for oil collecting.	1	1.023	NA	NA	5 - 10 l/ha	5	80
8	SHELL OIL HERDER	chemical barrier	liquid	surface tension modifier for containment and collecting; can be used at sea and on beaches.	NA	NA	2	NA	NA	INDEFINITE	104
9	RM - 21	cleaning agent	liquid	slightly alkaline; for cleaning of painted surfaces and normal cleaning tasks.	NA	NA	NA	NA	NA	NA	6
10	RM - 31	cleaning agent	liquid	alkaline; for cleaning persistent oil and grease on unpainted surfaces.	NA	NA	NA	NA	NA	NA	6
11	RM - 54	cleaning agent	liquid	alkaline foam cleaner; for cleaning sensitive equipment.	NA	NA	NA	NA	NA	NA	6
12	BASOL AD 7/9	cleaning agent	liquid	mixture of solvents and non-caustic detergents for use in shipping industry.	NA	NA	NA	none	1:5 to 1:30	NA	57
13	BASOL RIGWASH	cleaning agent	liquid	detergent/emulsifier for cleaning oil rigs, pumps, drills, barge decks and other oily and greasy equipment.	NA	NA	NA	NA	NA	NA	57
14	ROCHEM TANKLEEM	cleaning agent	NA	NA	NA	NA	NA	NA	NA	NA	96
15	9-044 (RSC)	cleaning agent	liquid	emulsifiable solvent cleaner for engine room machinery, fuel and cargo tanks etc.	15	0.80	NA	66	var	NA	133

OTHER (SPILL CONTROL) PRODUCTS (2)

NO.	NAME	TYPE OF PRODUCT	PHYSICAL CONDITION	DESCRIPTION	VISCOSITY at 20°C (cSt)	DENSITY (g/cm ³)	POUR POINT (°C)	FLASH POINT (°C)	APPLICATION RATE (product:oil)	SHELF LIFE (years)	MANUF
16	COREXIT OEB-9	emulsion breaker	liquid	product for breaking water-in-oil emulsions.	150	1.04	-38	63	1:400 to 1:2000	INDEFINITE	49
17	NEOS MOUSSE BREAKER NO.2	emulsion breaker	liquid	product for breaking water-in-oil emulsions.	23	0.845	NA	99	1:99	5	80
18	ROCHEM EMULSION BREAKER	emulsion breaker	NA	NA	NA	NA	NA	NA	NA	NA	96
19	SHELL DEMULSIFIER LA 1034	emulsion breaker	liquid	polymeric additive which facilitates collection, handling and pumping of water-in-oil emulsions; prevents emulsion formation.	1147	1.02	-10	180	1:500 to 1:2000	NA	104
20	UNISPERSE # 74	emulsion breaker	liquid	for breaking water-in-oil emulsions.	88	1.015	-32	85	1:1000	INDEFINITE	119 (122)
21	NEOS JELLY ROCK	gelling agent	liquid	amino based product for gelatinizing any kind of fluid oil.	11	0.875	NA	61	1:3	5	80
22	RIGIDOIL	gelling agent	2 liquids	two-component polymer system for treatment of oil spills on water.	NA	NA	NA	NA	1:3 - 4	NA	(122)

PART II
MANUFACTURERS AND DISTRIBUTORS

LIST OF MANUFACTURERS AND DISTRIBUTORS / LISTE DES FABRICANTS ET DISTRIBUTEURS (1)

NO.	NAME NOM	ADDRESS ADRESSE	COUNTRY PAYS	TELEPHONE	TELEX	(*)
1	ABASCO	P.O. Box 16011 8311 Bauman Road Houston, TX 77022	U.S.A. ETATS-UNIS	+1 (713) 692.0027	791238	M
2	ACME PRODUCTS CO.	P.O. Box 51388 Tulsa, OK 74151	U.S.A. ETATS-UNIS	+1 (918) 836.7184	NA	M
3	AERODYNE DEVELOPMENT CORP.	29085 Solon Road Solon, OH 44139	U.S.A. ETATS-UNIS	+1 (216) 248.8212	980557	M
4	AGA INFRARED SYSTEMS AB	Rinkebyvägen 19 / Box 3 S-182 11 Danderyd	SWEDEN SUEDE	+46 (8) 75.33.400	14105 AGENA S	M
5	AGMA PLC	Gemini Works Haltwhistle Northumberland NE49 9JW	ENGLAND ANGLETERRE	+44 (948) 20.598	537516 AGMA G	M
6	ALFRED KARCHER GMBH & CO. REINIGUNGSSYSTEME	Leutenbacher Strasse 30-40 Postfach 160 D-7057 Winnenden	FEDERAL REPUBLIC OF GERMANY REPUBLIQUE FEDERALE D'ALLEMAGNE	+49 (7195) 140	724432 AKMI D	M
7	ALBA CLEAN LTD (O.P.D. Division)	58 Sherwood Road Aston Fields Industrial Estate Bromsgrove, Worcester	ENGLAND ANGLETERRE	+44 (527) 33.220	73337 ALBA G	M, D
8	ALSTOM ATLANTIQUE MEYRTEC	Boite Postale 61X 38041 Grenoble Cedex	FRANCE	+33 (-) 76.98.81.98	MRTEC 320547 F	M
9	AMERICAN MARINE, INC.	P.O. Box 940 401 Shearer Boulevard Cocoa, FL 32922	U.S.A. ETATS-UNIS	+1 (305) 636.5783	NA	M
10	ANTI POLLUTION INTERNATIONAL, INC.	P.O. Box 885 Morgan City, LA 70381-0885	U.S.A. ETATS-UNIS	+1 (504) 384.9517	NA	M, D
11	AQUA-GUARD SALES INC.	5660 Westhaven Road West Vancouver, B.C. V7W 1T8	CANADA	+1 (604) 922.2156	04-352846 AQUA GUARD	M, D
12	AQUAPHYSIK DR DIETZEL	Friedenstrasse 215 D-415 Krefeld 11	FEDERAL REPUBLIC OF GERMANY REPUBLIQUE FEDERALE D'ALLEMAGNE	+49 (2151) 47.08.85	NA	M
13	ARROW CHEMICALS LTD	P.O. Box 3 Stanhope Road Swadlincote, near Burton-on-Trent Staffs DE11 9BE	ENGLAND ANGLETERRE	+44 (283) 22.10.44	341379 AROCEM G	M
14	ATLAS COPCO AQUATEC DEPT	S-105 23 Stockholm	SWEDEN SUEDE	+46 (8) 74.38.000	19940 COPAB S	M
15	BARR & STROUD LTD	Caxton Street Anniesland Glasgow G13 1H2	SCOTLAND ECOSSE	+44 (41) 95.49.601	778114 BS GLM G	M
16	B&O CLAYS & CHEMICALS LTD	17 Western Road Mitcham, Surrey	ENGLAND ANGLETERRE	+44 (1) 64.09.221	945938 ABSORB G	D

(*) Manufacturer (M) or Distributor (D)
Fabricant (M) ou Distributeur (D)

LIST OF MANUFACTURERS AND DISTRIBUTORS / LISTE DES FABRICANTS ET DISTRIBUTEURS (2)

NO.	NAME NOM	ADDRESS ADRESSE	COUNTRY PAYS	TELEPHONE	TELEX	(*)
17	BENNEK A/S	P.O. Box 1992 N-5011 Bergen-Nordnes	NORWAY NORVEGE	+47 (5) 32.41.60	42908 SEA N	M
18	BIEGERT AVIATION INC.	22022 S. Price Road Chandler, AZ 85224	U.S.A. ETATS-UNIS	+1 (602) 895.0441	165775 BIEGERT CHOR	M, D
19	BIGGS WALL FABRICATORS LTD	Hampden House Hitchin Road Arlesey, Bedfordshire SG15 6RT	ENGLAND ANGLETERRE	+44 (462) 73.11.33	826113 BIWACO G	M, D
20	BP DETERGENTS LIMITED	Drumshoreland Road Pumpherston, Livingstone	SCOTLAND ECOSSE	+44 (506) 31.111	72278 BPDETS G	M
21	BYRON JACKSON	3 rue Albert de Vatimesnil 92300 Levallois-Perret	FRANCE	+33 (1) 47.57.31.25	BYJAC 613233 F	M
22	CECA S.A.	11 Avenue Morane Saulnier 78141 Velizy Villacoublay Cedex	FRANCE	+33 (1) 39.46.96.35	697584	M
23	CENTRI-SPRAY CORP.	39001 Schoolcraft Road Livonia, MI 48150	U.S.A. ETATS-UNIS	+1 (313) 464.0100	NA	M
24	CLARK PRODUCTS COMPANY INC.	916 W. 25th Street Norfolk, VA 23517	U.S.A. ETATS-UNIS	+1 (804) 625.5917	NA	M
25	COASTAL ENGINEERING AND RESEARCH COMPANY	P.O. Box 2043 Duxbury, MA 02332	U.S.A. ETATS-UNIS	+1 (617) 934.0214	NA	M, D
26	COMAR INC.	1800 W. Glenville Drive Suite 104 Richardson, TX 75801	U.S.A. ETATS-UNIS	+1 (214) 238.7691	NA	M
27	CONTAINMENT SYSTEMS CORP.	658 So. Industry Road Cocoa, FL 32922	U.S.A. ETATS-UNIS	+1 (305) 632.5640	56-6525	M
28	CONTINENTAL CHEMICAL CO.	270 Clifton Boulevard Clifton, NJ 07015	U.S.A. ETATS-UNIS	+1 (201) 472.5000	133572	M
29	COMMED CORP.	P.O. Box 64237 444 Cedar Street St. Paul, MN 55164	U.S.A. ETATS-UNIS	+1 (612) 221.1144	NA	M
30	COUSIN FRERES S.A. (Département SEINE & LYS)	8 rue Abbé Bonpain 59117 Mervicq-Sud	FRANCE	+33 (-) 20.39.26.45	COFER 810638 F	M
31	COVALCA PLASTICI S.p.A.	Via dei Castelli Romani, 98 0040 Pomezia Roma	ITALY ITALIE	+39 (6) 91.21.351	613407 COVALC I	M
32	CRAYFORD SPECIAL EQUIPMENT CO. LTD.	High Street Westerham, Kent TN16 1RG	ENGLAND ANGLETERRE	+44 (959) 62.470	95170 WPRESS G	M
33	CROWLEY ENVIRONMENTAL SERVICES CORP.	3400 E. Marginal Way South Seattle, WA 98134	U.S.A. ETATS-UNIS	+1 (206) 682.4898	321229 CROWLEY SEA	M, D
34	DAEDALUS ENTERPRISES INC.	P.O. Box 1869 Ann Arbor, MI 48106	U.S.A. ETATS-UNIS	+1 (313) 769.5649	230530	M
35	DAIICHI KASEI SANGYO CO. LTD.	7-1, 3-Chome Kanda-Jinbo-Cho, Chiyoda-ku Tokyo	JAPAN JAPON	+81 (264) 82.21	NA	M

LIST OF MANUFACTURERS AND DISTRIBUTORS / LISTE DES FABRICANTS ET DISTRIBUTEURS (3)

NO.	NAME NOM	ADDRESS ADRESSE	COUNTRY PAYS	TELEPHONE	TELEX	(*)
36	DARCY PRODUCTS LIMITED	Invicta Works, Mill Street East Malling, Maidstone, Kent, ME19 6BP	ENGLAND ANGLETERRE	+44 (732) 84.31.31	95131 DARXZT G	M, D
37	DASIC INTERNATIONAL LTD	Minchester Road Romsey, Hampshire SO5 8YD	ENGLAND ANGLETERRE	+44 (794) 51.24.19	47548 DASIC G	M
38	POMPES DELASCO S.A.	131 rue Saint Denis 75001 Paris	FRANCE	+33 (1) 42.61.85.31	DELASCO 211635 F	M
39	A/S DE SMITHSKE	Tagholm 1 9400 Morresundby	DENMARK DANEMARK	+45 (8) 17.81.11	69620 DESMI DK	M
40	R.O. DEZINSEKCIJA	P. Kobeka 6 Rijeka 51000	YUGOSLAVIA YUGOSLAVIE	+38 (51) 51.25.33	NA	M, D
41	DICKSON-CONSTANT	249 rue du Faubourg de Roubaix Boîte Postale 6 59010 Lille Cedex	FRANCE	+33 (-) 20.06.15.23	DICKSON 820314 F	M
42	DOVER CORPORATION / BLACKMER PUMP DIV.	1809 Century Boulevard S.W. Grands Rapids, MI 49509	U.S.A. ETATS-UNIS	+1 (616) 241.1611	4320148	M
43	DREW AMERIOD FRANCE	66 Boulevard Notre-Dame 13006 Marseille	FRANCE	+33 (-) 91.54.86.00	DREWCAR 410923 F	D
44	ETS A. DUBOIS	29 rue de la Plaine 75020 Paris	FRANCE	+33 (1) 43.73.16.83	ADUBOIS 213830 F	M
45	ECOLINE S.R.L.	Via Santa Giuliana, 3 I-20053 Muggiò (Milano)	ITALY ITALIE	+39 (2) 73.45.51	325515 ECOLIN I	M
46	ECOLMARE S.p.A.	Via delle Rose (Palazzo ITALMARE) 80063 Piano di Sorrento (NA)	ITALY ITALIE	+39 (81) 878.80.61/ 7184	721385 ITMAR I	M
47	S.E.P. EGMO (DEPARTEMENT EGMOPOLO)	Boulevard Marfille 29283 Brest Cedex	FRANCE	+33 (-) 98.44.27.88	EGMO 941369 F	M
48	ENERGETEX ENGINEERING	498 Albert Street Suite 7 Waterloo, Ontario N2L 3V4	CANADA	+1 (519) 743.7191	NA	M
49	ESSOICHEM PERFORMANCE CHEMICALS LTD.	Provincial House Commercial Way Woking, Surrey, GU21 1EN	ENGLAND ANGLETERRE	+44 (4862) 20.522	859646 ESSONK G	M
50	FINA FRANCE	Rue du Général Foy 75008 Paris	FRANCE	+33 (1) 45.22.90.10	FINAP 650468 F	M, D
51	FRANK AYLES & ASSOCIATES LTD.	120 Whitechapel High Street London E1 7PT	ENGLAND ANGLETERRE	+44 (1) 24.71.926 24.71.927	886089 DENBRO G	M, D
52	FRANK MOHN AS	P.O. Box 98 N-5051 Nesttun	NORWAY NORVEGE	+47 (5) 10.06.00	42078 FRAMO N	M
53	FURMANITE ENGINEERING LIMITED	Furman House, Shap Road Kendal, Cumbria LA9 6RU	ENGLAND ANGLETERRE	+44 (539) 29.009	65262 FURMTE G	D
54	GAMLEN EUROPE S.A.	62-70 rue Yvan Tourgueneff 78380 Bougival	FRANCE	+33 (1) 39.18.92.34	SYBRO 695355 F	M

LIST OF MANUFACTURERS AND DISTRIBUTORS / LISTE DES FABRICANTS ET DISTRIBUTEURS (4)

NO.	NAME NOM	ADDRESS ADRESSE	COUNTRY PAYS	TELEPHONE	TELEX	(*)
55	GELMAN INSTRUMENT S.p.A.	Via Lambro 23/25 20090 Opera (Milano)	ITALY ITALIE	+39 (2) 52.41.041	320267 FLOW I	M
56	GLOBE INTERNATIONAL INC.	1400 Clinton Street Buffalo, NY 14206	U.S.A. ETATS-UNIS	+1 (716) 824.8484	91-6474 GLOBE INT BUF	M
57	GRAMOS CHEMICALS INTERNATIONAL LTD.	Dundas Lane Portsmouth PO3 5MT	ENGLAND ANGLETERRE	+44 (705) 66.74.21	86102 GRAMOS G	M
58	HOLLAND SPECIAL PUMPS B.V.	Whilhe / Minakade 38 3072 AR Rotterdam	THE NETHERLANDS PAYS BAS	+31 (10) 84.77.58	28971 TR NL	M, D
59	HORIBA FRANCE	13 chemin du Levant 01210 Ferney-Voltaire	FRANCE	+33 (-) 50.40.85.38	HORIBA 385054 F	M
60	HOYLE MACHINE LIMITED	Hoyle Buildings, Alfred Road Wallasey, Merseyside L44 7HY	ENGLAND ANGLETERRE	+44 (51) 64.74.807	627623 HOYLE G	M
61	HYDCO HYDRAULICS & MACHINERY LTD.	P.O. Box 214 82000 Kiryat Gat	ISRAEL	+972 (51) 80.057 +972 (51) 50.371	26469 HYDIL IL	M
62	HYDROTECHNIK LUBECK GMBH	Arnimstrasse 59A D-24000 Lübeck 1	FEDERAL REPUBLIC OF GERMANY REPUBLIQUE FEDERALE D'ALLEMAGNE	+49 (451) 65.175	26754 HYDRO D	M
63	HYDROVAC SYSTEMS (HOLLAND) B.V.	P.O. Box 23416 3001KK Rotterdam	THE NETHERLANDS PAYS BAS	+31 (10) 36.38.83	21607	M
64	INSTITUT DES TECHNOLOGIES NOUVELLES	13 bis, impasse St. Eusèbe 69003 Lyon	FRANCE	+33 (-) 78.54.72.98	MAZ 380254 F	D
65	JACKSON (P.O.) LTD.	Worcester Office Complex Newtown Road Worcester WR5 1HG	ENGLAND ANGLETERRE	+44 (905) 61.20.69	338750 JACKUK	M
66	K.A.A.F.	31 rue de l'Hotel de Ville 10320 Bouilly	FRANCE	+33 (-) 25.40.26.16	SOKAF 840813 F	M
67	KAISER AG FAHRZEUGWERK	Vorarlberger Strasse 4 FI-9486 Schaanwald	LIECHTENSTEIN	+41 (75) 32.255	77947	M
68	KLEBER INDUSTRIE, CAOUTCHOUC MANUFACTURE & PLASTIQUES	49 rue Jean Jaurès 95870 Bezons	FRANCE	+33 (1) 30.76.09.28	695042	M
69	KRUPP RÜHRORTER SCHIFFSWERFT GMBH	Postfach 120547 Schlickstr. 15 D-4100 Duisburg 12	FEDERAL REPUBLIC OF GERMANY REPUBLIQUE FEDERALE D'ALLEMAGNE	+49 (203) 80.51	855255 RSWD D	M
70	FRAELLI LAMBERTI S.p.A.	Via Piave 18 21041 Albizzate (Varese)	ITALY ITALIE	+39 (331) 99.35.94	332590 LAMCH I 334318 LAMCH I	M
71	LISTEX CHEMICALS	P. O. Box 1010 1204 Cherokee Trace White Oak, TX 75693	U.S.A. ETATS-UNIS	+1 (214) 297.3244	735006	M
72	LOGAN ENGINEERING & CONTRACTING CO.	5731 St. Augustine Road Jacksonville, FL 32207	U.S.A. ETATS-UNIS	+1 (904) 731.0000	NA	D

LIST OF MANUFACTURERS AND DISTRIBUTORS / LISTE DES FABRICANTS ET DISTRIBUTEURS (5)

NO.	NAME NOM	ADDRESS ADRESSE	COUNTRY PAYS	TELEPHONE	TELEX	(*)
73	L.P.I. CORPORATION	P.O. Box 113 71 Morris Avenue Denville, NJ 07834	U.S.A. ETATS-UNIS	+1 (201) 625.0018	883924 DAVIT	M
74	MAGNUS MARITEC INTERNATIONAL INC., DIVISION OF ECONOMICS LAB. INC.	150 Roosevelt Place Palisades Park, NJ 07650	U.S.A. ETATS-UNIS	+1 (201) 592.0700	13-5377 21-9190	M
75	MANNESMANN ITALIANA	Via Gabriele D'Annunzio 2/104 16121 Genova	ITALY ITALIE	+39 (10) 58.10.43 58.10.44 58.10.45	270042 PUDEL I	M, D
76	MAFLEX B.V.	P.O. Box 31 3218 ZG Heenvliet	THE NETHERLANDS PAYS BAS	+31 (1) 88.11.044	29708 MFLEX	M
77	MATTSSONPRODUKTER	P.O. Box 692 S-45124 Uddevalla	SWEDEN SUEDE	+46 (522) 98.300	42284 MPAB S	M
78	MEGATOR PUMPS & COMPRESSORS LTD	87A Newington Causeway London SE1 6EQ	ENGLAND ANGLETERRE	+44 (1) 40.75.616	886847	M
79	N.A.T. (NOUVELLES APPLICATIONS TECHNOLOGIQUES)	370 Avenue Napoléon Bonaparte 92500 Rueil-Malmaison	FRANCE	+33 (1) 47.32.92.06	NAT 202913 F	M
80	NEOS COMPANY LIMITED	Kanden Building 8th Floor, 2-1, Kano-cho 6-chome, Chuo-Ku, Kobe 650	JAPAN JAPON	+81 (78) 33.19.381	5622293 JKNEOS J	M, D
81	NORPOL ENVIRONMENTAL SERVICES A/S	P.O. Box 120 Torstadbakken 4 N-1364 Hvalstad	NORWAY NORVEGE	+47 (2) 84.57.60	76375 NORPO N 72447 NORDA N	M, D
82	OEL MOLTE, OIL SPILL RECOVERY SERVICE INTERNATIONAL	An der Schleuse 14 D-5870 Hemer	FEDERAL REPUBLIC OF GERMANY REPUBLIQUE FEDERALE D'ALLEMAGNE	+49 (2372) 14.031 14.032 14.033 14.034	827437 MOLTE D	M, D
83	OFFSHORE DEVICES INC.	Building 43 Summit Industrial Park Peabody, MA 01960	U.S.A. ETATS-UNIS	+1 (617) 286.0767	4991299 OFFSHORE	M
84	OIL EQUIPMENT B.V.	P.O. Box 3001 4700 GA Roosendaal	THE NETHERLANDS PAYS BAS	+31 (1608) 21.151	54102 OILEQ NL	M, D
85	OIL MOP INC.	145 Keating Drive P.O. Drawer P Belle Chasse, LA 70037	U.S.A. ETATS-UNIS	+1 (504) 394.6110	587486 OIL MOP BCHA	M, D
86	OIL POLLUTION ENV. CONTROL LTD.	1 Nab Lane Birstall, Batley, West Yorkshire WF17 9NG	ENGLAND ANGLETERRE	+44 (924) 44.27.01	41354 OILEMOP G	M
87	O.N.I. LIMITED	Cannon Bridge Works, Cannon Lane Tonbridge, Kent TN9 1PP	ENGLAND ANGLETERRE	+44 (732) 35.21.25	95345 OMIEUR G	M, D
88	PETROLITE LIMITED	137 Finchley Road London N43 6JE	ENGLAND ANGLETERRE	+44 (1) 58.61.251	264285 PETLTD G	M
89	PETROMEND INC.	P.O. Box 47532 8300 Sovereign Row Dallas, TX 75247	U.S.A. ETATS-UNIS	+1 (214) 630.1330	NA	M

LIST OF MANUFACTURERS AND DISTRIBUTORS / LISTE DES FABRICANTS ET DISTRIBUTEURS (6)

NO.	NAME NOM	ADDRESS ADRESSE	COUNTRY PAYS	TELEPHONE	TELEX	(*)
90	AB PHAROS MARINE	Hällöflu dregatan 24 42158 Västra Frölunda	SWEDEN SUEDE	+46 (31) 29.93.30	2356 PHATRO S	M
91	PICHON ETS	Karreværn, P.O. Box 21 29215 Gulparvas	FRANCE	+33 (-) 98.28.14.84	PICHON 940835 F	M
92	R. PONS	108 rue de la Folie Méricourt 75011 Paris	FRANCE	+33 (1) 43.57.59.89	REPONSE 680919 F	M
93	PRONAL	Boîte Postale 25 139 rue des Arts 59051 Roubaix Cedex 1	FRANCE	+33 (-) 20.24.18.19	PRONAL 132750 F	M
94	PROTECHO S.A.	50 Avenue du Président Wilson 93214 La Plaine St. Denis Cedex	FRANCE	+33 (1) 42.45.22.99	PRODUNL 211638 F	D
95	REIMMELT AG	Hinterdorf 188 5054 Moosterlau	SWITZERLAND SUISSE	+41 (84) 83.17.54	981100 TXK CH	M
96	ROCHEM	24 Avenue de Champel Genève	SWITZERLAND SUISSE	+41 (22) 46.95.00	22390	M
97	THE ROLFITE COMPANY	Broad Street Stamford, CT 06901	U.S.A. ETATS-UNIS	+1 (203) 327.3151	NA	M
98	A/S ROULUNDS FABRIKER	Hestehaven DK-5260 Odense S	DENMARK DANEMARK	+45 (9) 11.55.15	59873 RF DK	M
99	AB SANDVIK PROCESS SYSTEMS	S-811 81 Sandviken	SWEDEN SUEDE	+46 (26) 27.09.50	47165 SANYS S	M
100	SCHMIDT FRANCE MEIGE	Boîte Postale 15 100 rue Sadi-Carnot 38140 Rives-sur-Fure	FRANCE	+33 (-) 76.91.42.00	SMIT FN 320152 F	M
101	SEACLEAN INC.	7000 S.W. 62 Avenue Suite 555 Miami, FL 33143	U.S.A. ETATS-UNIS	+1 (305) 661.1024	153736	M
102	S.E.P.P.I.C.	70 Avenue des Champs Elysées 75008 Paris	FRANCE	+33 (1) 43.59.20.31	SEPHICA 640768 F	M
103	CHEMISCHE FABRIK SERVO B.V.	P.O. Box 1 7490 AA Delden	THE NETHERLANDS PAYS BAS	+31 (5407) 35.35	44347 SERVO NL	M
104	SHELL CHEMICAL INTERNATIONAL TRADING CO.	SHELL Centre London SE1 7PG	ENGLAND ANGLETERRE	+44 (1) 93.43.607	919651 SHEL B G	M
105	SIMPLEX MANUFACTURING COMPANY	13340 N.E. Whitaker Way Portland, OR 97230	U.S.A. ETATS-UNIS	+1 (503) 257.3511	279593 SIM UR	M
106	SLICKBAR INC.	250 Pequot Avenue P.O. Box 139 Southport, CT 06490	U.S.A. ETATS-UNIS	+1 (203) 255.2601	64-3458 DACCO-SHO	M
107	SOCIETE ESCA	Le Panorama Boîte Postale 106 13693 Martiques	FRANCE	+33 (-) 42.07.10.35	NA	M
108	SOCIETE D'HYDROCARBURES DE ST. DENIS	396 rue de la Bienfaisance 75008 Paris	FRANCE	+33 (1) 45.62.61.19	HYDROS 280394 F	M

LIST OF MANUFACTURERS AND DISTRIBUTORS / LISTE DES FABRICANTS ET DISTRIBUTEURS (7)

NO.	NAME NOM	ADDRESS ADRESSE	COUNTRY PAYS	TELEPHONE	TELEX	(*)
109	SODPRES A/S	Blomsternv. 22, Raelingen 2000 Lillestrom	NORWAY NORVEGE	+47 (2) 83.80.80	NA	M, D
110	SORBENT PRODUCTS CO. INC	P.O. Box 174 Maplewood, NJ 07040	U.S.A. ETATS-UNIS	+1 (201) 762.4705	NA	M
111	STEPIER INTERNATIONAL S.R.L.	Piazza della Rinascita, 13 65100 Pescara	ITALY ITALIE	+39 (85) 31.490 33.462 23.589	600260 STDRQ I	D
112	TAMMILHOLMA OY	Muujamiestentie 5C P.O. Box 39 00400 Helsinki	FINLAND FINLANDE	+358 (90) 57.80.55	121530 TAMMO SF	D
113	3 M COMPANY ENVIRONMENTAL SPECIALITIES	Building 220 - 7 W 3 M Center St. Paul, MN 55144	U.S.A. ETATS-UNIS	+1 (800) 328.1667	NA	M
114	TOHO CHEMICAL INDUSTRY CO. LTD.	No. 14-9, 1-Chome Nihonbashi-Kakigiracho Chou-Ku, Tokyo	JAPAN JAPON	+81 (3) 66.82.271	252-2332 TOHO KJ	M
115	TRACOR MARINE INC.	P.O. Box 13107 Port Everglades, FL 33316	U.S.A. ETATS-UNIS	+1 (305) 463.1211	510-955-9864	M, D
116	TRELLEBORG AB	5-23181 TRELLEBORG	SWEDEN SUEDE	+46 (410) 51.000	32948 TRELLE S 33369 TRELLE S	M, D
117	T.R. SELLINGER	105 rue de Lyon 75012 Paris	FRANCE	+33 (1) 43.07.21.55	TERSILL 680917 F	M
118	UNIROYAL INC. ENGINEERING SYSTEMS	Mishawaka, IN 46544	U.S.A. ETATS-UNIS	+1 (219) 255.2181	NA	M
119	UNIVERSAL MATTHEY PRODUCTS	Jeffreys Road, Brimsdown, Enfield, Middlesex EN3 7PN	ENGLAND ANGLETERRE	+44 (1) 80.48.232	23966 UOPLTD G	M
120	VALSAN INTERNATIONAL CORPORATION	254 West 54th Street New York, NY 10019	U.S.A. ETATS-UNIS	+1 (212) 581.9672	424733	D
121	VERSATECH PRODUCTS INC.	60 Riverside Drive North Vancouver, B.C. V7H 1T4	CANADA	+1 (604) 929.5451	043-52686 VERSATECH VRC	M, D
122	VIKOMA INTERNATIONAL LTD.	88 Place Road Coves Isle of Wight, PO31 7AE	ENGLAND ANGLETERRE	+44 (983) 29.60.21	869111 VIKERP G	M, D
123	WARREN RUPP CO.	P.O. Box 1568 Mansfield, OH 44901	U.S.A. ETATS-UNIS	+1 (419) 524-8388	987458	M
124	MELCHEM INC.	5450 Northwest Central Dr. Houston, TX 77375	U.S.A. ETATS-UNIS	* +1 (713) 462.4783	NA	M
125	WILLIAM R. SELWOOD LIMITED	Bournemouth Road Chandlers Ford, Eastleigh Hampshire SO5 3ZL	ENGLAND ANGLETERRE	+44 (4215) 66.311	477481 PASCOV G	M
126	WILLIAM WARNE LTD.	Gascoigne Road Barking, Essex	ENGLAND ANGLETERRE	+44 (1) 59.43.800	23979 WARNE G	M

LIST OF MANUFACTURERS AND DISTRIBUTORS / LISTE DES FABRICANTS ET DISTRIBUTEURS (8)

NO.	NAME	ADDRESS ADRESSE	COUNTRY PAYS	TELEPHONE	TELEX	(*)
127	WILSON MALTON INTERNATIONAL S.A.F.	42 rue Barbès 92120 Montrouge	FRANCE	+33 (1) 46.56.60.42	250674	N, D
128	WORLD SERVICES EUROPE S.A.R.L.	P.O. Box 1081 1010 Luxembourg	LUXEMBOURG	+352 (-) 21.24.08 31.24.09	2707 WSEPOL LU	N, D
129	ZIDELL EXPLORATIONS INC.	3121 S.W. Moody Avenue Portland, OR 97201	U.S.A. ETATS-UNIS	+1 (503) 228.8691	36-0503	N
130	ZUGOL INTERNATIONAL A/S	Pilestredet 45 B Oslo 3	NORWAY NORVEGE	+47 (2) 46.26.79	NA	D
131	TANGUY MARINE S.A.	24 quai d'Anvers 76600 Le Havre	FRANCE	+33 (-) 35.42.25.59	TANGUY 190323 F	N
132	MARCO POLLUTION CONTROL	2300 West Commodore Way Seattle, WA 98199	U.S.A. ETATS-UNIS	+1 (206) 285.3200	160587 MARCO UT	N
133	MALFLEET MARINE CHEMICALS	P.O. Box 11 Northwich, Cheshire CW9 4DX	ENGLAND ANGLETERRE	+44 (606) 74.488	668663 MALFLC G	N
134	GLENRATE LTD.	Room F 21 St. Leonards House Leonardgate, Lancaster	ENGLAND ANGLETERRE	+44 (524) 38.25.05	635091 ALBION G Attn.: ADDISON	D

NO.	MANUFACTURER / DISTRIBUTOR FABRICANT / DISTRIBUTEUR	EQUIPMENT / PRODUCT EQUIPEMENT / PRODUIT
1	ABASCO	BO, RD, SV, OV, SE, OE, SO
2	ACME PRODUCTS CO.	RD
3	AERODYNE DEVELOPMENT CORP.	RD
4	AGA INFRARED SYSTEMS AB	DE
5	AGMA PLC	DI
6	ALFRED KARCHER GMBH & CO., REINIGUNGSSYSTEME	BC, OE, OP
7	ALBA CLEAN LTD. (O.P.D. Division)	BO, RD
8	ALSTHOM ATLANTIQUE NEYRTEC	RD, SV, TA, OE
9	AMERICAN MARINE, INC.	BO
10	ANTIPOLLUTION INTERNATIONAL INC.	RD
11	AQUA-GUARD SALES INC.	BO, RD, SV, BC, OE
12	AQUAPHYSIK DR DIETZEL	OE
13	ARROW CHEMICALS LTD.	DI
14	ATLAS COPCO AQUATEC DEPT.	BO
15	BARR & STROUD LTD.	DE
16	B&O CLAYS & CHEMICALS LTD.	SO
17	BENNEX A/S	BO, RD
18	BIEGERT AVIATION INC.	SE
19	BIGGS WALL FABRICATORS LTD.	BO, RD, TA, SE, DI
20	BP DETERGENTS LTD.	DI
21	BYRON JACKSON	PU
22	CECA S.A.	BO, RD, BC, OP
23	CENTRI-SPRAY CORP.	RD
24	CLARK PRODUCTS COMPANY INC.	OE
25	COASTAL ENGINEERING AND RESEARCH CO.	OV, OE
26	COMAR INC.	BC
27	CONTAINMENT SYSTEMS CORP.	BO, RD, SE, SO
28	CONTINENTAL CHEMICAL CO.	DI
29	CONMED CORP.	SO
30	COUSIN FRERES S.A. (Département SEINE & LYS)	RD
31	COVALCA PLASTICI S.p.A.	BO
32	CRAYFORD SPECIAL EQUIPMENT CO. LTD.	OE
33	CROWLEY ENVIRONMENTAL SERVICES CORP.	BO
34	DAEDALUS ENTERPRISES INC.	DE
35	DAIICHI KASEI SANGYO CO. LTD.	DI
36	DARCY PRODUCTS LTD.	SO
37	DASIC INTERNATIONAL LTD.	DI
38	POMPE DELASCO S.A.	PU
39	A/S DE SMITHSKE	RD, PU
40	R.O. DEZINSEKCIJA	BO
41	DICKSON-CONSTANT	BO, PU, TA
42	DOVER CORPORATION / BLACKMER PUMP DIV.	PU
43	DREW AMERIOD FRANCE	DI
44	ETS A. DUBOIS	SE
45	ECOLINE S.R.L.	RD
46	ECOLMARE S.p.A.	SV
47	S.E.P. EGMO (DEPARTEMENT EGMOPOLO)	RD, SV, PU, BC
48	ENERGETEX ENGINEERING	OE, OP

AC - Aircraft / Aéronefs

BC - Beach Cleaning Equipment / Equipements Nettoyage de Plage

BO - Booms / Barrages

DE - Detection Devices / Appareils de Détection

DI - Dispersants / Dispersants

OE - Other Equipment / Autres Equipements

OP - Other Products / Autres Produits

OV - Other Vessels / Autres Bâteaux

PU - Pumps / Pompes

RD - Recovery Devices / Dispositifs de Récupération

SE - Spraying Equipment / Equipements d'Épandage

SO - Sorbents / Absorbants - Adsorbants

SV - Antipollution Vessels / Navires Antipollution

TA - Tanks / Citernes

NO.	MANUFACTURER / DISTRIBUTOR FABRICANT / DISTRIBUTEUR	EQUIPMENT / PRODUCT EQUIPEMENT / PRODUIT
49	ESSOCHER PERFORMANCE CHEMICALS LTD.	DI, OP
50	FINA FRANCE	DI
51	FRANK AYLES & ASSOCIATES LTD.	DE, RD, SE
52	FRANK MOHN AS	RD, PU
53	FURMANITE ENGINEERING LTD.	BO, RD, PU, SO
54	GAMLEN EUROPE S.A.	BO, RD, SO, DI
55	GELMAN INSTRUMENT S.p.A.	OP
56	GLOBE INTERNATIONAL INC.	BO
57	GRAMOS CHEMICALS INTERNATIONAL LTD.	DI, OP
58	HOLLAND SPECIAL PUMPS B.V.	PU
59	HORIBA FRANCE	DE
60	HOYLE MARINE LTD.	BO
61	HYOCO HYDRAULICS & MACHINERY LTD.	BC
62	HYDROTECHNIK LUBECK GMBH	BO, RD
63	HYDROVAC SYSTEMS (HOLLAND) B.V.	RD, SV, PU
64	INSTITUT DES TECHNOLOGIES NOUVELLES	SO
65	JACKSON (P.D.) LTD.	BO
66	K.A.A.F.	SE
67	KAISER AG FAHRZEUGWERK	RD
68	KLEBER INDUSTRIE, CAOUTCHOUC MANUFACTURE & PLASTIQUES	BO
69	KRUPP RUHRORTER SCHIFFSMERFT GMBH	RD
70	FRATELLI LAMBERTI S.p.A.	DI
71	LISTEX CHEMICALS	OP
72	LOGAN ENGINEERING & CONTRACTING CO.	DE
73	L.P.I. CORPORATION	SV
74	MAGNUS MARITEC INTERNATIONAL INC.	DI
75	MANNESMANN ITALIANA	BO, SV, OV, PU, SE, SO, DI
76	MARFLEX B.V.	PU
77	MATSSONPRODUKTER	RD
78	MEGATOR PUMPS & COMPRESSORS LTD	RD, PU, DE
79	N.A.T. (NOUVELLES APPLICATIONS TECHNOLOGIQUES)	BO, RD
80	NEOS COMPANY LIMITED	BO, RD, SV, SE, SO, DI, OP
81	NORPOL ENVIRONMENTAL SERVICES A/S	AC, DE, BO, RD, SV
82	DEL MOLTE, OIL SPILL RECOVERY SERVICE INTERNATIONAL	DE, BO, RD, SV, PU, TA, BC, DE
83	OFFSHORE DEVICES INC.	BO, RD, SV, PU, DE
84	OIL EQUIPMENT B.V.	BO, RD, SV, SE, SO
85	OIL HOP INC.	BO, RD, SV, PU, DE, SO
86	OIL POLLUTION ENV. CONTROL LTD.	RD, SV, TA, BC, SO
87	O.M.I. LTD.	BO, RD, SV, DE, SO
88	PETROLITE LTD.	DI
89	PETROMEND INC.	DE, DI
90	AB PHAROS MARINE	RD, PU
91	PICHON ETS	DE
92	R. PONS	SE
93	PROMAL	TA, DE
94	PROTECMO S.A.	TA
95	REINWELT AG	BO
96	ROCHEM	DI, OP

AC - Aircraft / Aéronefs

BC - Beach Cleaning Equipment / Equipements Nettoyage de Plage

BO - Booms / Barrages

DE - Detection Devices / Appareils de Détection

DI - Dispersants / Dispersants

OE - Other Equipment / Autres Equipements

OP - Other Products / Autres Produits

OV - Other Vessels / Autres Bateaux

PU - Pumps / Pompes

RD - Recovery Devices / Dispositifs de Récupération

SE - Spraying Equipment / Equipements d'Épandage

SO - Sorbents / Absorbants - Adsorbants

SV - Antipollution Vessels / Navires Antipollution

TA - Tanks / Citernes

NO.	MANUFACTURER / DISTRIBUTOR FABRICANT / DISTRIBUTEUR	EQUIPMENT / PRODUCT EQUIPEMENT / PRODUIT
97	THE ROLFITE COMPANY	OP
98	A/S ROULUNDS FABRIKER	BO, RD, OE
99	AB SANDVIK PROCESS SYSTEMS	BO, RD, SV
100	SCHMIDT FRANCE NEIGE	BC
101	SEACLEAN INC.	SO
102	S.E.P.I.C.	DI
103	CHEMISCHE FABRIK SERVO B.V.	DI
104	SHELL CHEMICAL INTERNATIONAL TRADING CO.	DI, OP
105	SIMPLEX MANUFACTURING COMPANY	SE
106	SLICKBAR INC.	BO, RD, SV, SE
107	SOCIETE ESCA	RD
108	SOCIETE D'HYDROCARBURES DE ST. DENIS	DI
109	SOOPRES A/S	RD
110	SORBENT PRODUCTS CO. INC.	SO
111	STEPIER INTERNATIONAL S.R.L.	SO
112	TAMMILHOLMA OY	BO, SO
113	3 M COMPANY, ENVIRONMENTAL SPECIALITIES	SO
114	TOHO CHEMICAL INDUSTRY CO. LTD.	DI
115	TRACOR MARINE INC.	RD
116	TRELLEBORG AB	BO, TA
117	T.R. SILLINGER	BO, RD, SV, OV, TA
118	UNITROYAL INC., ENGINEERING SYSTEMS	BO
119	UNIVERSAL MATTHEY PRODUCTS	SE, DI, OP
120	VALSAM INTERNATIONAL CORPORATION	PU
121	VERSATECH PRODUCTS INC.	BO, RD, SV, OV, TA, OE
122	VIKOMA INTERNATIONAL LTD.	BO, RD, SV, OV, PU, SE, BC, OE, OP
123	MARREN RUPP CO.	PU
124	MELCHEM INC.	DI
125	WILLIAM R. SELWOOD LTD.	PU
126	WILLIAM WARNE LTD.	BO
127	WILSON WALTON INTERNATIONAL S.A.F.	OE
128	WORLD SERVICES EUROPE S.A.R.L.	BO, RD, SV, PU, TA, SO, DI
129	ZIDELL EXPLORATIONS INC.	SV
130	ZUGOL INTERNATIONAL A/S	SO
131	TANGUY MARINE S.A.	SV, OV
132	MARCO POLLUTION CONTROL	SV
133	NALFLEET MARINE CHEMICALS	DI, OP
134	GLENRATE LTD.	SV

AC - Aircraft / Aéronefs
 BC - Beach Cleaning Equipment / Equipements Nettoyage de Plage
 BO - Booms / Barrages
 DE - Detection Devices / Appareils de Détection
 DI - Dispersants / Dispersants
 OE - Other Equipment / Autres Equipements
 OP - Other Products / Autres Produits
 OV - Other Vessels / Autres Bateaux
 PU - Pumps / Pompes
 RD - Recovery Devices / Dispositifs de Récupération
 SE - Spraying Equipment / Equipements d'Épandage
 SO - Sorbents / Absorbants - Adsorbants
 SV - Antipollution Vessels / Navires Antipollution
 TA - Tanks / Citernes

PRODUCTS: AIRCRAFT (AC)
PRODUITS: AERONEFS (AC)

SECTION 1.

81 NORPOL ENVIRONMENTAL SERVICES A/S

PRODUCTS: OIL SPILL SURVEILLANCE/DETECTION DEVICES (DE)
PRODUITS: APPAREILS DE DETECTION (DE)

SECTION 2.

4 AGA INFRARED SYSTEMS AB
15 BARR & STROUD LTD
34 DAEDALUS ENTERPRISES INC.
51 FRANK AYLES & ASSOCIATES LTD
59 HORIBA FRANCE
81 NORPOL ENVIRONMENTAL SERVICES A/S
82 OEL NOLTE

PRODUCTS: BOOMS (80)
PRODUITS: BARRAGES (80)

SECTION 3.

1 ABASCO
7 ALBA CLEAN LTD
9 AMERICAN MARINE INC.
11 AQUA-GUARD SALES INC.
14 ATLAS COPCO AQUATEC DEPT
17 BENNEX A/S
19 BIGGS WALL FABRICATORS LTD
22 CECA S.A.
27 CONTAINMENT SYSTEMS CORP.
31 COVALCA PLASTICI S.P.A.
33 CROWLEY ENVIRONMENTAL SERVICES CORP.
40 DEZINSEKCIJA R.O.
41 DICKSON-CONSTANT
53 FURMANITE ENGINEERING LTD
54 GAMLEN EUROPE S.A.
56 GLOBE INTERNATIONAL INC.
60 HOYLE MARINE LTD
62 HYDROTECHNIK LUBECK GMBH
65 JACKSON (PD) LTD
68 KLEBER INDUSTRIE
75 MANNESMANN ITALIANA S.P.A.
79 N.A.T.
80 NEOS COMPANY LTD
81 NORPOL ENVIRONMENTAL SERVICES A/S
82 OEL NOLTE
83 OFFSHORE DEVICES INC.
84 OIL EQUIPMENT B.V.
85 OIL MOP INC.
87 OMI LTD
95 REINWELT AG
98 ROULUNDS FABRIKER A/S
99 SANDVIK PROCESS SYSTEMS AB
106 SLICKBAR INC.
112 TAMMIHOLMA OY
117 TR SILLINGER
116 TRELLEBORG AB
118 UNIROYAL INC.
121 VERSATECH PRODUCTS INC.
122 VIKOMA INTERNATIONAL LTD
126 WILLIAM WARNE LTD
128 WORLD SERVICES EUROPE S.A.R.L.

PRODUCTS: RECOVERY DEVICES (RD)
PRODUITS: DISPOSITIFS DE RECUPERATION (RD)

SECTION 4.

1 ABASCO
2 ACME PRODUCTS CO.
3 AERODYNE DEVELOPMENT CORP.
7 ALBA CLEAN LTD
8 ALSTHOM ATLANTIQUE NEYRTEC
10 ANTI POLLUTION INTERNATIONAL INC.
11 AQUA-GUARD SALES INC.
19 BIGGS WALL FABRICATORS LTD
22 CECA S.A.
23 CENTRI-SPRAY CORP.
27 CONTAINMENT SYSTEMS CORP.
30 COUSIN FRERES S.A. (DEPARTEMENT SEINE & LYS)
39 DE SMITHSKE A/S
45 ECOLINE S.R.L.
47 EGMO S.E.P. (DEPT. EGMOPOL)
51 FRANK AYLES & ASSOCIATES LTD
52 FRANK MOHN AS
53 FURMANITE ENGINEERING LTD
54 GAMLEN EUROPE S.A.
60 HOYLE MARINE LTD
62 HYDROTECHNIK LUBECK GMBH
63 HYDROVAC SYSTEMS B.V.
67 KAISER AG FAHRZEUGWERK
69 KRUPP RUHRORTER SCHIFFSWERT GMBH
77 MATTSONPRODUKTER
78 MEGATOR PUMPS AND COMPRESSORS LTD
79 N.A.T.
80 NEOS COMPANY LTD
81 NORPOL ENVIRONMENTAL SERVICES A/S
82 OEL NOLTE
83 OFFSHORE DEVICES INC.
84 OIL EQUIPMENT B.V.
85 OIL MOP INC.
86 OIL POLLUTION ENV. CONTROL LTD
87 OMI LTD
90 PHAROS MARINE (AB)
98 ROULUNDS FABRIKER A/S
99 SANDVIK PROCESS SYSTEMS AB
106 SLICKBAR INC.
107 SOCIETE ESCA
109 SOOPRES A/S
117 TR SILLINGER
115 TRACOR MARINE INC.
121 VERSATECH PRODUCTS INC.
122 VIKOMA INTERNATIONAL LTD
128 WORLD SERVICES EUROPE S.A.R.L.

PRODUCTS: SPECIALIZED ANTIPOLLUTION VESSELS (SV)
 PRODUITS: NAVIRES ANTIPOLLUTION (SV)

SECTION 5.

1 ABASCO
 8 ALSTHOM ATLANTIQUE NEYRTEC
 11 AQUA-GUARD SALES INC.
 46 ECOLMARE S.P.A.
 47 EGMO S.E.P. (DEPT. EGMOPOL)
 134 GLENRATE LTD
 63 HYDROVAC SYSTEMS B.V.
 73 LPI CORP.
 75 MANNESMANN ITALIANA S.P.A.
 132 MARCO POLLUTION CONTROL
 80 NEOS COMPANY LTD
 81 NORPOL ENVIRONMENTAL SERVICES A/S
 82 OEL MOLTE
 83 OFFSHORE DEVICES INC.
 84 OIL EQUIPMENT B.V.
 85 OIL MOP INC.
 86 OIL POLLUTION ENV. CONTROL LTD
 87 OMI LTD
 99 SANDVIK PROCESS SYSTEMS AB
 106 SLICKBAR INC.
 131 TANGUY MARINE S.A.
 117 TR SILLINGER
 121 VERSATECH PRODUCTS INC.
 122 VIKOMA INTERNATIONAL LTD
 128 WORLD SERVICES EUROPE S.A.R.L.
 129 ZIDELL EXPLORATIONS INC.

PRODUCTS: OTHER VESSELS (OV)
 PRODUITS: AUTRES BATEAUX (OV)

SECTION 6.

1 ABASCO
 25 COASTAL ENGINEERING/RESEARCH COMP.
 75 MANNESMANN ITALIANA S.P.A.
 131 TANGUY MARINE S.A.
 117 TR SILLINGER
 121 VERSATECH PRODUCTS INC.
 122 VIKOMA INTERNATIONAL LTD

PRODUCTS: PUMPS (PU)
 PRODUITS: POMPES (PU)

SECTION 7.

21 BYRON JACKSON
 39 DE SMITHSKE A/S
 38 DELASCO POMPES S.A.
 41 DICKSON-CONSTANT
 42 DOVER CORP. (BLACKMER PUMP DIV.)
 47 EGMO S.E.P. (DEPT. EGMOPOL)
 52 FRANK MOHN AS
 58 HOLLAND SPECIAL PUMPS B.V.
 63 HYDROVAC SYSTEMS B.V.
 75 MANNESMANN ITALIANA S.P.A.
 76 MARFLEX B.V.
 78 MEGATOR PUMPS AND COMPRESSORS LTD
 82 OEL NOLTE
 83 OFFSHORE DEVICES INC.
 85 OIL MOP INC.
 90 PHAROS MARINE (AB)
 120 VALSAN INTERNATIONAL CORP.
 122 VIKOMA INTERNATIONAL LTD
 123 WARREN RUPP CO.
 125 WILLIAM R. SELWOOD LTD
 128 WORLD SERVICES EUROPE S.A.R.L.

PRODUCTS: TANKS/STORAGE UNITS (TA)
 PRODUITS: CITERNES (TA)

SECTION 8.

8 ALSTHOM ATLANTIQUE NEYRTEC
 19 BIGGS WALL FABRICATORS LTD
 41 DICKSON-CONSTANT
 82 OEL NOLTE
 86 OIL POLLUTION ENV. CONTROL LTD
 93 PRONAL
 94 PROTECMO S.A.
 117 TR SILLINGER
 116 TRELLEBORG AB
 121 VERSATECH PRODUCTS INC.
 128 WORLD SERVICES EUROPE S.A.R.L.

PRODUCTS: SPRAYING EQUIPMENT (SE)
PRODUITS: EQUIPEMENTS D'EPANDAGE (SE)

SECTION 9.

1 ABASCO
18 BIEGERT AVIATION INC.
19 BIGGS WALL FABRICATORS LTD
27 CONTAINMENT SYSTEMS CORP.
44 DUBOIS A. ETS
51 FRANK AYLES & ASSOCIATES LTD
66 K.A.A.F.
75 MANNESMANN ITALIANA S.P.A.
80 NEOS COMPANY LTD
84 OIL EQUIPMENT B.V.
92 PONS R.
105 SIMPLEX MANUFACTURING COMPANY
106 SLICKBAR INC.
122 VIKOMA INTERNATIONAL LTD

PRODUCTS: BEACH CLEANING EQUIPMENT (BC)
PRODUITS: EQUIPEMENTS NETTOYAGE DE PLAGE (BC)

SECTION 10.

6 ALFRED KARCHER GMBH & CO
11 AQUA-GUARD SALES INC.
22 CECA S.A.
26 COMAR INC.
47 EGMO S.E.P. (DEPT. EGMOPOL)
61 HYDCO HYDRAULICS & MACHINERY LTD
82 OEL NOLTE
86 OIL POLLUTION ENV. CONTROL LTD
100 SCHMIDT FRANCE NEIGE
122 VIKOMA INTERNATIONAL LTD

PRODUCTS: OTHER EQUIPMENT (OE)
 PRODUITS: AUTRES EQUIPEMENTS (OE)

SECTION 11.

1 ABASCO
 6 ALFRED KARCHER GMBH & CO.
 8 ALSTHOM ATLANTIQUE NEYRTEC
 11 AQUA-GUARD SALES INC.
 12 AQUAPHYSIK DR DIETZEL
 24 CLARK PRODUCTS COMPANY INC.
 25 COASTAL ENGINEERING/RESEARCH COMP.
 32 CRAYFORM SPECIAL EQUIPMENT CO. LTD
 44 DUBOIS A. ETS
 48 ENERGETEX ENGINEERING
 72 LOGAN ENGINEERING & CONTRACTING CO.
 78 MEGATOR PUMPS AND COMPRESSORS LTD
 82 OEL NOLTE
 83 OFFSHORE DEVICES INC.
 85 OIL MOP INC.
 87 OMI LTD
 89 PETROMEND INC.
 91 PICHON ETS
 93 PRONAL
 98 ROULUNDS FABRIKER A/S
 119 UNIVERSAL MATTHEY PRODUCTS
 121 VERSATECH PRODUCTS INC.
 122 VIKOMA INTERNATIONAL LTD
 127 WILSON WALTON INTERNATIONAL S.A.F.

PRODUCTS: SORBENTS (SO)
 PRODUITS: ABSORBANTS-ADSORBANTS (SO)

SECTION 12.

1 ABASCO
 16 B&D CLAYS & CHEMICALS LTD
 27 CONTAINMENT SYSTEMS CORP.
 29 CONWED CORP.
 36 DARCY PRODUCTS LTD
 53 FURMANITE ENGINEERING LTD
 54 GAMLEN EUROPE S.A.
 64 INSTITUT DES TECHNOLOGIES NOUVELLES
 75 MANNESMANN ITALIANA S.P.A.
 80 NEOS COMPANY LTD
 84 OIL EQUIPMENT B.V.
 85 OIL MOP INC.
 86 OIL POLLUTION ENV. CONTROL LTD
 87 OMI LTD
 101 SEACLEAN INC.
 110 SORBENT PRODUCTS CO. INC.
 111 STEPIER INTERNATIONAL S.R.L.
 112 TAMMIHOLMA OY
 113 THREE M (3M) COMPANY-ENV.SPECIALITIES
 128 WORLD SERVICES EUROPE S.A.R.L.
 130 ZUGOL INTERNATIONAL A/S

PRODUCTS: DISPERSANTS (DI)
 PRODUITS: DISPERSANTS (DI)

SECTION 13.

5 AGMA PLC
 13 ARROW CHEMICALS LTD
 19 BIGGS WALL FABRICATORS LTD
 20 BP DETERGENTS LTD
 28 CONTINENTAL CHEMICAL CO.
 35 DAIICHI KASEI SANGYO CO. LTD
 37 DASIC INTERNATIONAL LTD
 43 DREW AMERIOD FRANCE
 49 ESSOCHEM PERFORMANCE CHEMICALS LTD
 50 FINA FRANCE
 54 GAMLEN EUROPE S.A.
 57 GRAMOS CHEMICALS INTERNATIONAL LTD
 70 LAMBERTI FRATELLI S.P.A.
 74 MAGNUS MARITEC INTERNATIONAL INC.
 75 MANNESMANN ITALIANA S.P.A.
 133 NALFLEET MARINE CHEMICALS
 80 NEOS COMPANY LTD
 88 PETROLITE LTD
 89 PETROMEND INC.
 96 ROCHEM
 102 SEPPIC
 103 SERVO CHEMISCHE FABRIK B.V.
 104 SHELL INTERNATIONAL TRADING CO.
 108 SOCIETE D'HYDROCARBURES DE SAINT-DENIS
 114 TOHO CHEMICAL INDUSTRY CO. LTD
 119 UNIVERSAL MATTHEY PRODUCTS
 124 WELCHEM INC.
 128 WORLD SERVICES EUROPE S.A.R.L.

PRODUCTS: OTHER (SPILL CONTROL) PRODUCTS (OP)
 PRODUITS: AUTRES PRODUITS (OP)

SECTION 14.

6 ALFRED KARCHER GMBH & CO.
 22 CECA S.A.
 48 ENERGEIEX ENGINEERING
 49 ESSOCHEM PERFORMANCE CHEMICALS LTD
 55 GELMAN INSTRUMENT S.P.A.
 57 GRAMOS CHEMICALS INTERNATIONAL LTD
 71 LISTEX CHEMICALS
 133 NALFLEET MARINE CHEMICALS
 80 NEOS COMPANY LTD
 96 ROCHEM
 97 ROLFITE COMPANY
 104 SHELL INTERNATIONAL TRADING CO.
 119 UNIVERSAL MATTHEY PRODUCTS
 122 VIKOMA INTERNATIONAL LTD

UNEP REGIONAL SEAS DIRECTORIES AND BIBLIOGRAPHIES

- UNEP. 1976.** Directory of Mediterranean marine research centres, 1st ed. UNEP Regional Seas Directories and Bibliographies. Geneva, UNEP. 280 p.*
- UNEP. 1977.** Directory of Mediterranean marine research centres, 2nd ed. UNEP Regional Seas Directories and Bibliographies. Geneva, UNEP. 622 p.*
- NIO/UNEP. 1978.** Directory of Indian Ocean marine research centres. UNEP Regional Seas Directories and Bibliographies. National Institute of Oceanography, Goa, India. 360 p.*
- UNEP/IOC. 1980.** Directory of Caribbean marine research centres. UNEP Regional Seas Directories and Bibliographies. Geneva, UNEP. 500 p.*
- IAEA/UNEP. 1981.** Directory of Kuwait Action Plan marine science centres. UNEP Regional Seas Directories and Bibliographies. Geneva, UNEP. 110 p.*
- UNEP/CPPS. 1981.** Directory of the South-East Pacific marine science research centres. UNEP Regional Seas Directories and Bibliographies. Geneva, UNEP. 120 p.*
- UNEP/FAO/UNESCO/WHO/WMO/IOC/IAEA. 1981.** Selected bibliography on the pollution of the Mediterranean Sea. UNEP Regional Seas Directories and Bibliographies. Geneva, UNEP. 135 p.*
- UNEP/UN-ECA/UNESCO. 1982.** Directory of marine research centres in Africa. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 254 p.
- UNEP. 1984.** Bibliography of the marine environment in the Kuwait Action Plan region, 1972-1981. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 52 p.
- UNEP. 1984.** Bibliography of the marine environment in South Asian Seas. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 39 p.
- UNEP/FAO. 1984.** Bibliography of the marine environment in the East Asian Seas Region. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 68 p.
- UNEP/FAO. 1984.** Directory of marine environmental centres in East Asian Seas. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 138 p.
- UNEP/PSA/SPREP/UOG. 1984.** Directory of coral reef researchers in the Pacific. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 101 p.
- UNEP/FAO. 1985.** Directory of marine environmental centres in Caribbean, 2nd ed. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 214 p.
- UNEP/FAO. 1985.** Directory of marine environmental centres in Mediterranean, 3rd ed. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 302 p.
- SPREP/UNEP/FAO. 1985.** Directory of marine environmental centres in South Pacific. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 147 p.

- UNEP/UNESCO/UN-DIESA. 1985.** Bibliography on coastal erosion in west and central Africa. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 92 p.
- UNEP/FAO. 1985.** Directory of marine environmental centres in Indian Ocean and Antarctic Region. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 226 p.
- CCA/UNEP. 1985.** Directory of environmental education Institutions, programmes and resource people in the Caribbean region. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 89 p.
- UNEP/FAO. 1985.** Bibliography of the marine environment in the Mediterranean, 1978-1984, 2nd ed. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 151 p.
- Eldredge, L.G. (ed.). 1987.** Directory of coral reef researchers in Pacific, 2nd ed. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 104 p.
- Eldredge, L.G. (ed.). 1987.** Bibliography of marine ecosystems in Pacific Islands. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 72 p.
- PNUMA/CPPS. 1987.** Directorio de centros de investigacion marina: Pacifico Sudeste. UNEP Regional Seas Directories and Bibliographies. Rome, FAO. 145 p.
- UNEP. 1988.** Directory of organizations and organizational units co-ordinating or contributing to the co-ordination of the action plans related to the regional seas programme, Rev.1. Nairobi, UNEP. 34 p.
- UNEP. 1988.** Preliminary directory of organizations co-operating with and contributing to UNEP Oceans Programme. UNEP Regional Seas Directories and Bibliographies. Nairobi, UNEP. 77 p.
- Wells, S.M. (ed.). 1988.** Coral reefs of the world. Volume 1: Atlantic and Eastern Pacific. UNEP Regional Seas Directories and Bibliographies. IUCN, Gland, Switzerland and Cambridge, U.K./UNEP, Nairobi. 373 p.
- Wells, S.M., and C. Sheppard (eds.). 1988.** Coral reefs of the world. Volume 2: Indian Ocean, Red Sea, and Gulf. UNEP Regional Seas Directories and Bibliographies. IUCN, Gland, Switzerland and Cambridge, U.K./UNEP, Nairobi. 389 p.
- NOAA/IUCN/UNEP. 1988.** Directory of marine mammal specialists. UNEP Regional Seas Directories and Bibliographies. FAO, Rome. 139 p.
- UNEP/FAO. 1988.** Bibliography of the marine environment: Caribbean. UNEP Regional Seas Directories and Bibliographies. FAO, Rome. 297 p. (Trilingual)

* out of print

United Nations Environment Programme
P.O. Box 30552 Nairobi



Published by: Food and Agriculture Organization of the
United Nations (FAO)

For:



Oceans and Coastal Areas Programme Activity Centre
United Nations Environment Programme (UNEP)



International Maritime Organization (IMO)

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