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Synthetic net materials and their trade names

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I. Kinds of synthetic fibres

The following chemical groups of synthetic fibres are used for fishing nets:

Polyamide	Symbol: PA
Polyester	" : PES
Polyethylene	" : PE
Polypropylene	" : PP
Polyvinyl alcohol	" : PVA
Polyvinyl chloride	" : PVC
Polyvinylidene chloride	" : PVD

This classification does not include all kinds of synthetic fibres produced by chemical industries. Thus, one of the most important groups for textile industry is not mentioned, the polyacrylonitriles, known, among others, by the trade marks Orlon, Dralon, Acrilan. These fibres seem not to be used for fishing nets. In the fishing industries of the most countries not all of the seven kinds of fibres mentioned above are to be found as net material. What kind of fibre is preferred in a country, that not ever depends on its qualifications for fishery's purposes, but often on the supply of the netting industry.

The polyamide fibres are manufactured in some types, differing in the chemical components and also in some properties, e.g. the melting point. The two most important polyamides are:

polyamide 66, with the components hexamethylenediamine and adipic acid and
polyamide 6, made from caprolactam (= aminocaproic acid).

("Polyamides are frequently described by a numerical shorthand. The numbers used refer to the numbers of carbon atoms in the diamine, the dibasic acid, or the amino acid. Thus, a polyamide from a diamine and a dibasic acid will have two numbers giving, respectively, the number of carbon atoms in the amine and the acid, such as 66, ... whereas those from amino acids have only one number, such as 6 ...").(9)

The first fibre from polyamide 66, made in the USA, was called "nylon", the first fibre from polyamide 6, made in Germany, has the trade mark "Perlon". The term "nylon" is no more a trade name but has become a generic term which applies to all polyamide fibres. It may be used as a synonymous word for polyamide, such as nylon 66, nylon 6, nylon 11.

Polyester fibres have been developed in the United Kingdom; the first trade mark was "Terylene".

Polyethylene and polypropylene fibres are often subsumed under the group of polyolefine. Because of their different properties with regard to fishing nets, we quote them as two separate groups. The first polypropylene fibre, made in Italy, is known by the trade mark "Meraklon".

These four groups, polyamide, polyester, polyethylene and polypropylene, are the most important synthetic fibres used for fishing nets in the ICNAF area.

Netting yarns made of polyvinyl alcohol fibres and polyvinyl chloride fibres (both first discovered in Germany) are now mainly produced in Japan. Polyvinylidene chloride fibres are usually made from a co-polymer of vinylidene chloride and a small amount of a vinyl derivative. "Saran" is a name given to a wide variety of co-polymers of vinylidene chloride (9 and 10). It is not only used as a trade name but also as a generic term, similar to the term "nylon".

These three kinds of fibres, polyvinyl alcohol, polyvinyl chloride and polyvinylidene chloride, are used quite extensively in Japanese fishing gear, but probably to a small extent only in the ICNAF area.

II. Basic forms of synthetic net material

Netting yarns of synthetic fibres can be manufactured from four basic forms (7):

1. spun yarns, consisting of staple fibres (fibres of short length), bound together by twist,
2. filament yarns, composed of fine, silk-like, continuous fibres, that run the whole length of yarn, also called "multifilament" yarns;
3. monofilaments, (synthetic wires), continuous filaments which have greater diameter and stiffness than those used in filament yarn;
4. synthetic film tapes, which are broken down into fibrous material by twisting under tension.

Polyamide is used as net material in the forms 1, 2 and 3, though in marine fishing gears preference is given to the second form, the twines made of fine, continuous filaments. This is the same with netting yarns made from polyester. Netting yarns based on polyethylene are made of monofilaments. Polypropylene netting yarns for marine fishing in the present are mostly manufactured from form 2 (continuous filaments). A rather recent development is the production of yarns from synthetic films "which actually fibrillate in spinning under standard conditions of tension, speed and twist level" (3). Polypropylene is best suitable for producing such fibrillating film tapes, followed by polyethylene (6). It is possible that, in future, the new film twines made from these two kinds of synthetic material will appear more and more on the net market.

III. Remarks to the list of trade names of ICNAF

given in the Circular Letter 65-1 of ICNAF (24 November 65):

- (a) BNS (British Nylon Spinners), DuPont, Fabelta, Rhodiaceta, Toray, Celanese are not names of fibres but of companies manufacturing fibres.
- (b) "Rilsan" (not Rislán, as in the letter) and "Tergal" are no more used for fibres but as trade marks for specially manufactured webbing or finished textile products (4).
- (c) "Nyak" is the name of a combination twine and therefore mentioned in Table 2 of this paper.
- (d) The name of the polyester fibre "Lanon" has been changed into "Grisuten".

Netting yarn = "General term for any kind of yarn construction, such as single, plied or cabled yarn, monofilaments or combination of yarns usable for the manufacture of netting"
(Draft 61 of ISO Subcommittee 38/9, November 1965)

- (e) "Anzolon" seems to be a mis-spelling. Two similar trade names are known: "Anzalon" and "Anzylon", both polyamide fibres.
- (g) "Celanese" is, as already mentioned, the name of a big company, but also the registered trade mark for cellulose man-made fibres produced in the USA, Great Britain, Columbia and Venezuela, than the registered trade mark of a polyamide 6 fibre in Mexico; "Celanese PP" is a polypropylene fibre in the USA (4).
- (h) "Hizex", a registered Japanese trade mark, is written: "Hi - Zex".
- (g) "Hostalen" is not the name of a fibre but the trade mark for the chemical basis substance from which polyethylene fibres are made.
- (h) The list contains a number of names of fibres which certainly are not used in ICNAF fisheries. They should be deleted. On the other hand, trade names of some fibres made of PVA, PVC and PVD should be added.
- (i) The names of the countries are neither complete nor exact in all cases. Some examples are given: Nylon is not only used in Denmark, USA and West Germany, but probably in all fishing countries of the world, and it is manufactured in many industrial countries, e.g., Canada, France, Germany, Italy, Japan, Spain, Switzerland, UK, USA. "Lilion" is made in Italy, Spain and USA, "Terylene" not only in the United Kingdom but also in the Argentine, Australia, Canada and India, "Nymplex" in the Netherlands and in Denmark, "Meraklon" not only in Italy but also in the USA. The polyamide fibre "Perlon" is made under this trade mark only in West Germany. "Corfiplaste" is produced in Portugal and not in Iceland (4).
Such fibres as Nylon, Terylene, Meraklon, Perlon, Nymplex, Corfiplaste and some others are not only used by the fishing industries of the fibre producing countries but are exported to many other fishing countries too.
Therefore it is proposed that the names of the countries should be removed from the list.
For fishery's purposes it is necessary to identify the chemical group of the fibre trade names and to know the main properties of the chemical groups.

IV. Trade names of synthetic net materials

About 600 trade names of synthetic fibres (most of them registered trade marks) are known. In Table 1 a selection is made basing on a former ICNAF paper by A. v. Brandt (2), on comments kindly given by Mr P.J.G. Carrothers, and on information gained by the author. Fibres, whose names in the list are underlined, are supposed to be certainly used in marine fishing gears. Combined trade names consisting of the generic name of the fibre and the name of the manufacturing company have not been listed in Table 1, e.g. Asahi-Saran, Bolta-Saran, Bri-Nylon, Chemstrand-Nylon, Dawbarn-Nylon, Dawbarn-Saran, Draka-Saran, DuPont-Nylon, Eastman-Polypropylene, Emmenbrücke-Nylon, Enka-Nylon, IGG-Saran, Imperial-Nylon, Kurashiki-Vinylon, Nichibo-Vinylon, NRC-Nylon, Nylon-BNS, Nylon-Deutsche Rhodiacea, Nylon-Fabelta, Plate-Nylon, Polyäthylen-Draht-Hoechst, Polymers-Nylon, Polypropylen-Draht-Hoechst, Richmond-Saran, Teijin-Nylon, Teijin-Teteron, Toray-Nylon, Toray-Teteron.

It is not possible to give a list of trade names, which is in conformity with the actual situation in all details. Year by year new names are formed by the manufacturers of synthetic fibres. By the development of the modern extruders, by which the production of monofilaments and fibrillating films from polypropylene and polyethylene has become relatively simple, the number of manufacturers is increasing more and more and with them the number of trade names for these materials will increase likewise.

A second category of trade names for net materials is listed in Table 2, containing names of combination twines, specially made for the use in fishing gears. With the exception of "Nyak" (USA) they all are of Japanese origin. The best known names are underlined.

Table 1

List of the trade names of synthetic net materials

<u>POLYAMIDE 66</u>	<u>POLYVINYL ALCOHOL</u>	<u>POLYPROPYLENE</u> (Continued)	<u>POLYETHYLENE</u> (Continued)
Anid	Cremona	Movlon	Gunlene
Enkalon	Kancbian	Multiflex	Hi-Zex
Kenlon	Kuralon	Nufil	Kanelight
Knoxlock	Kuremona	Propylon	Laveten
Lamonyl	Manryo	Pylen	(Laveten)
Nailon	Mewlon	Trofil P	Marlex 50
Nylex	Trawlon	Ulstron	Norfil
Nylon	Vinylon	Velon PS	Northylen
Nylsuisse			Nymplex
Platil			Plachylon
Roblon	<u>POLYESTER</u>	<u>POLYVINYL</u>	<u>Polyfa</u>
Tynex	Dacron	<u>CHLORIDE</u>	Pylen E
	Diolen	Envilon	Trofil
<u>POLYAMIDE 6</u>	Enkalene	Krchalon S	Velon LP
Amilan	Grisuten	Nip	Vetex
Anzalon	Terital	Ramelon	Wirilene
Caprolan	Terlenka	Rhovyl	Wynene 18
Celon	Terylene	Teviron	
Dayan	Tetoron	Vinyon	<u>POLYVINYLIDENE</u>
Dederon	Trevira		<u>CHLORIDE</u>
Enkalon		<u>POLYETHYLENE</u>	Clorène
Forlion	<u>POLYPROPYLENE</u>	Akvaflex	Daran
Grilon	Akvaflex PP	Argon	Krchalon
Kapron, Capron	Courlene PY	Bellefex	Kurchalon
Lilion	Danaflex	Corfiplaste	Saran
Nopalon	Drumfil	Courlene	Velon
Perlon	Drylene 6	Drumlene	
Steealon	Herculon	Drylene 3	
	Meraklon	Echylon	

Table 2

Trade names of combination netting yarns
(Twines of dissimilar components)

<u>Trade name</u>		<u>made of yarns from</u>
<u>Kyokurin</u>	: PA filament	and saran
<u>Livlon</u>	: PA filament	and saran
<u>Marlon A</u>	: PA filament	and PVA staple
<u>Marlon B</u>	: PA filament	and saran
<u>Marlon C</u>	: PA filament	and PVC filament
<u>Marlon D</u>	: PP filament (?)	and saran
<u>Marlon E</u>	: PA staple	and PVA (or PVC) staple
<u>Marumoron</u>	: PA filament	and PVA staple
<u>Nyak</u>	: PA filament	and acetate staple
<u>Polex</u>	: PE	and saran
<u>Polysara</u>	: PE	and saran
<u>Polyteveye</u>	: PE	and PVC filament
<u>Polytex</u>	: PE	and PVC filament
<u>Ryclon</u>	: PES filament	and PVC filament
<u>Saran - N</u>	: PA filament	and saran
<u>Tailon (Tylon-P)</u>	: PA filament	and PA staple
<u>Tevimew</u>	: PVA staple	and PVC staple

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