



BSI Standards Publication

Circular design of fishing gear and aquaculture equipment

Part 1: General requirements and guidelines

National foreword

This British Standard is the UK implementation of EN 17988-1:2024.

The UK participation in its preparation was entrusted to Technical Committee CED/1/2.

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© The British Standards Institution 2024
Published by BSI Standards Limited 2024

ISBN 978 0 539 28024 1

ICS 13.020.20; 65.150

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2024.

Amendments/corrigenda issued since publication

Date	Text affected
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English Version

Circular design of fishing gear and aquaculture equipment - Part 1: General requirements and guidelines

Circularité et recyclabilité des engins de pêche et des
équipements d'aquaculture - Partie 1 : Exigences
générales et lignes directrices

Kreislaufwirtschaft von Fischfanggeräten und
Aquakulturausrüstungen - Teil 1: Allgemeine
Anforderungen und Leitlinien

This European Standard was approved by CEN on 6 October 2024.

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European foreword

This document (EN 17988-1:2024) has been prepared by Technical Committee CEN/TC 466 “Circularity and recyclability of fishing gear and aquaculture equipment”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2025, and conflicting national standards shall be withdrawn at the latest by May 2025.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a standardization request addressed to CEN by the European Commission (M/574). The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

This document is part of the EN 17988 series.

The EN 17988 series consists of the following parts, under the general title *Circular design of fishing gear and aquaculture equipment*:

- Part 1: General requirements and guidelines
- Part 2: User manuals and labelling
- Part 3: Technical requirements and guidelines
- Part 4: Environmental and circularity requirements and guidelines
- Part 5: Circular business models
- Part 6: Requirements and guidelines for digitalization of information of components of fishing gear and aquaculture equipment

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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Introduction

As part of the European Green Deal, launched in 2019, the European Commission introduced measures to move to a climate neutral and circular economy, together with a digital transition. One of the targets in the transition to a circular economy was to reduce the amount of waste released into the environment by decreasing the amount of waste generated, increasing the amount of waste collected and re-introducing the materials regenerated from waste into the production of new products.

Specifically, the accumulation of plastics in marine and other aquatic environments were addressed in two directives:

- The revised Port Reception Facilities (PRF) Directive [1] encourages fishers and aquaculturists to bring not only their own end-of-use gear but also bring ashore abandoned, lost or otherwise discarded (ALD) fishing gear and aquaculture equipment, thus encouraging waste to be carried back to port.
- The Single Use Plastics (SUP) Directive [2], which lays down rules concerning different plastic products, including fishing gear and aquaculture equipment containing plastics, and sets requirements to the Member States to establish Extended Producer Responsibility (EPR) schemes. Concerning fishing gear, it also contains rules on minimum national annual collection rates, together with reporting on fishing gear placed on the market and waste fishing gear collected in ports.

In 2021, the standardization request M/574 on the circular design of fishing gear [3] was passed by the European Commission and the parliament and accepted by CEN, which forms the basis for this series of documents (EN 17988 series). While the term ‘fishing gear’ is used predominantly in the SUP Directive and M/574, both documents encompass aquaculture equipment.

The purpose of this series of documents is to provide stakeholders with requirements, recommendations and guidelines to address the different aspects of circular design of fishing gear and aquaculture equipment containing plastics, encourage preparing for reuse and facilitate recyclability at end-of-use. These requirements are intended to be applied from the design phase across the entire life cycle of the fishing gear and aquaculture equipment. This includes but is not limited to: manufacturing, use, maintenance, repair, collection, sorting, preparation for reuse, recycling, remanufacturing, disposal, uptake of recycled content and recycling.

Although this standard is written for fishing gear and aquaculture equipment containing plastics, the requirements, recommendations and guidelines are also applicable to other materials.

This series of documents does not address other important design criteria such as fishing or farming efficiency. When implementing the requirements, recommendations and guidelines provided in these documents, balanced trade-offs between all relevant criteria need to be taken into account.

This series of documents aims to contribute to the following UN Sustainable Development Goals (SDGs) [4]:

- 9 Industry, innovation, and infrastructure,
- 12 Responsible consumption and production,
- 14 Life below water, in particular target 14.1: ‘By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.’

This part of the series provides the reader with requirements, recommendations and guidelines for changing from a linear economy to a circular one, by introducing general principles of circular design for fishing gear and aquaculture equipment, situating them in the current context of the European circular

economy. This part also includes a full outline of all parts of the standard and how they relate to each other.

This document also specifies the stakeholders and their relationships with each other in the value network as well as for the different parts of the series of standards to which this part belongs.

Note to the reader on normative language: In this document, the following verbal forms are used in accordance with the CEN/CENELEC Internal Regulations Part 3, Clause 7:

- “shall” indicates a requirement;
- “should” indicates a recommendation;
- “may” indicates a permission;
- “can” indicates a possibility or a capability;
- “must” indicates an external constraint.

1 Scope

This document gives guidance on the general principles of circular design for fishing gear and aquaculture equipment containing plastics. It specifies the general requirements, recommendations and guidelines for establishing a circular economy for these products.

This document also identifies stakeholders and their relationships in a general context.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 17988 (all parts), *Circular design of fishing gear and aquaculture equipment*

CEN/TS 18101, *Circular design of fishing gear and aquaculture equipment - Terms and definitions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in CEN/TS 18101 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Outline of the EN 17988 series

This series of documents highlights the different aspects of circular design of fishing gear and aquaculture equipment containing plastics. The requirements, recommendations and guidelines herein are intended to be applied from the design phase across the entire life cycle of the fishing gear and aquaculture equipment. This includes but is not limited to: manufacturing, use, maintenance, repair, collection, sorting, preparation for reuse, recycling, remanufacture, disposal, uptake of recycled content and recycling.

Part 1 provides the reader with requirements, recommendations and guidelines for changing from a linear economy to a circular one, by introducing general principles of circular design for fishing gear and aquaculture equipment and situating them in the current context of the European circular economy. Part 1 also specifies the stakeholders and their relationships with each other in the value network as well as for the different parts of the EN 17988 series.

Part 2 specifies the requirements, recommendations and guidelines for user manuals and labelling to be issued with circular designed fishing gear and aquaculture equipment. These will, next to assisting the producer (manufacturer or importer) with fulfilling legal requirements, enable traceability and proper management during the lifetime of the fishing gear and aquaculture equipment.

Part 3 provides technical requirements, recommendations and guidelines to be applied from the design phase across the entire life cycle of the fishing gear and aquaculture equipment, including development and selection of materials and components, the manufacturing, assembly and disassembly, as well as the use and maintenance. These technical requirements also encompass recommendations and guidelines for the repair, remanufacturing and refurbishing, storage and transport; and finally end-of-use including recycling.

Part 4 addresses the environmental and circularity requirements, recommendations and guidelines together, as these two are interrelated and interdependent. The circular economy is a sustainable

ecosystem which focuses on preventing and reducing waste, keeping the value retention of fishing gear and aquaculture equipment at its highest level, while preventing and reducing its environmental impacts throughout its life cycle. It contributes to a more sustainable world, but not all sustainability initiatives contribute to circularity. Therefore, part 4 provides requirements, recommendations and guidelines towards a more efficient use of materials and resources, as well as reducing the amount of plastics lost as waste, while delivering the best environmental outcome.

Part 5 addresses the development of circular business models for fishing gear and aquaculture equipment. Circular business models are intended to keep a product in its original intended use for as long as possible, as well as to provide business opportunities with other sectors. Such interactions enable the development of completely new market and cooperation opportunities. Part 5 provides supporting guidelines for EPR schemes addressing fishing gear and aquaculture equipment.

Part 6 addresses requirements for the hardware, software and systems for digitalization of product information of circular designed fishing gear and aquaculture equipment. Marking, labelling and information sharing are the key elements of digitalization. The availability and transparency of shared information enables the interoperability across value network participants and can lead to better use of assets.

5 Overview of plastics use in fishing gear and aquaculture equipment

Various types of plastics are used for different types of fishing gear and aquaculture equipment. Table 1 presents a general overview of the most important polymer types and examples for their usage.

Table 1 — Main plastics in fishing gear and aquaculture equipment

Main plastics in fishing gear and aquaculture equipment	Examples for usage in fishing gear and aquaculture equipment
Polyamide (PA), Predominately polyamide 6 (PA6)	Ropes, nets and twines
Polypropylene (PP)/ polyethylene (PE)	Ropes, nets and twines. Floats and buoys, tubing and piping
Polyester (PES)	Ropes, nets and twines
High-density polyethylene (HDPE)	Trawl doors, dredges, small parts and cladding
Expanded polystyrene (EPS, foam)	Insulation, floats and buoys
Ethylene vinyl acetate (EVA)	Floats and buoys
Polyurethane (PU)	Fish Aggregating Devices (FADs) coatings, floats and buoys
Polyvinylchloride (PVC)	Aquaculture cages, tubing and piping
Acrylonitrile butadiene styrene (ABS)	Aquaculture valves, pipe fixtures
High-modulus polyethylene (HMPE)	Ropes, nets and twines
Glass-fibre reinforced plastic (GFRP)	Aquaculture

These plastics, and the fibres or other components prepared from them, have well-defined characteristics and are often combined, either in form of mixed materials or mixtures of materials to enhance their suitability for the different types of fishing gear and aquaculture equipment or parts thereof. If the composition of the plastic components is not provided by the manufacturer, one needs to use specialised equipment (e.g. near-infrared radiation (NIR) spectroscopy or density separation processes) to (a) identify the composition and (b) separate the components. This poses a challenge to recycling the plastic

components in fishing gear and aquaculture equipment into secondary materials of high quality and purity.

Additional challenges towards recycling of the plastic materials and components of fishing gear and aquaculture equipment are:

- the combination with non-plastic materials (e.g. metal, wood or minerals), some of which possibly being toxic or unrecyclable (e.g. lead shot in sink lines);
- contamination from use, with e.g. sand, salt or biological material;
- additives to the materials and/ or components which are particularly problematic in terms of end-of-life treatment, especially the substances of very high concern (SVHC) and persistent organic pollutants (POP) classified under REACH [5].

6 General principles of circular design of fishing gear and aquaculture equipment

6.1 Circular economy transition process

Often the transition from a linear to a circular economy is depicted as the closing of the value chain (see A and B in Figure 1), while it rather should be seen as the transition to a value network (see C in Figure 1).

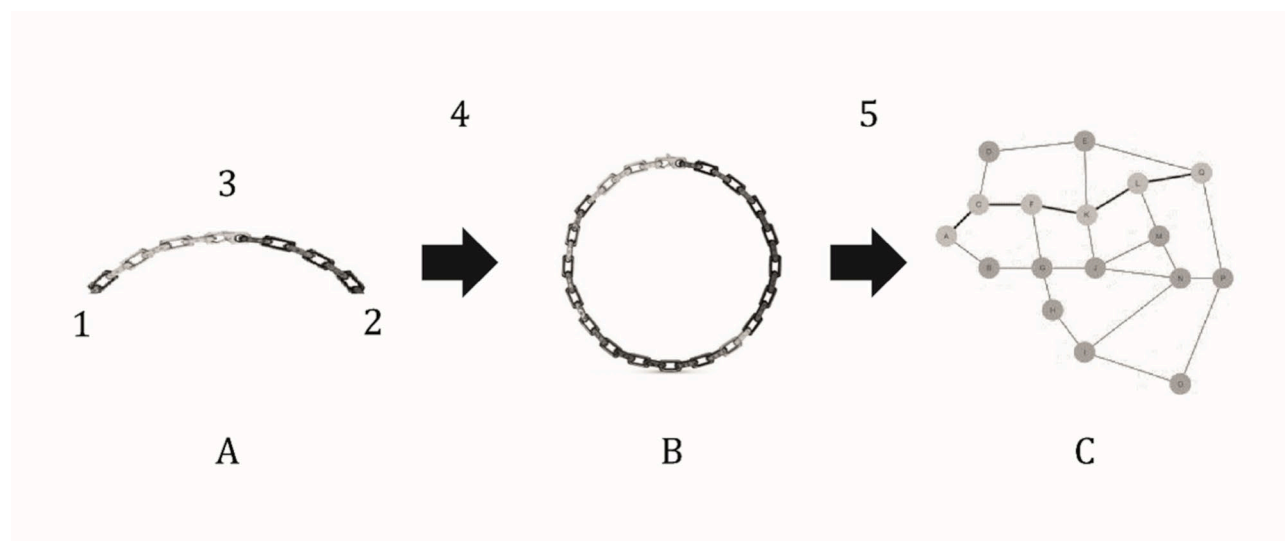


Figure 1 — Circular economy transition process [adapted from ISO 59010:2024, Figure A.2]

See EN 17988-4 and EN 17988-5 of this series of standards for the detailed circularity requirements, recommendations and guidelines and circular business models, respectively.

6.2 Waste hierarchy and circular economy

The five steps of the waste hierarchy, as defined in Directive (EU) 2008/98/EC [6] are: prevention of waste, preparing for reuse, recycling, recovery and disposal. The standards of the EN 17988 series do not cover the last or lowest steps recovery (including, but not limited to anaerobic digestion, incineration with energy recovery, gasification and pyrolysis producing energy) and disposal (including, but not limited to landfilling, incineration with low energy recovery and injection into land).

In order to integrate more principles that are regarded as necessary for establishing a circular economy a system of nine R-strategies was developed. Table 2 depicts the comparison of a set of nine R-strategies

in the circular economy with the five categories of the waste hierarchy. Additionally, Table 2 indicates which strategies are in scope and out of scope of the EN 17988 series of standards.

Table 2 — Waste hierarchy and circular economy strategies

Life cycle phase	Waste hierarchy	Circular economy strategies	In scope/ out of scope
Pre-use	Prevention (design)	Refuse	In scope
		Rethink	
		Reduce	
Use/reuse	Use/reuse (same function)	Use/reuse	
End of use	Preparing for reuse (different function)	Repair	
		Refurbish	
		Remanufacture	
		Repurpose	
		Recycle	
End of life	Recovery	-	Out of scope
	Disposal		

The strategies 'refuse', 'rethink' or 'reduce', which are preventive measures, are generally considered as the most powerful circularity strategies as they aim at reducing the production of fishing gear and aquaculture equipment and components. They are therefore also referred to as strategies for "narrowing the loop". Strategies 'reuse', repair', 'refurbish', 'remanufacture' and 'repurpose' help in circulating any product in its use phase for longer, thus reducing the amount of end-of-use material and processing. These strategies are also denoted as contributing to "slowing the loop". Recycling is used for "closing the loop" of materials. As indicated in Table 2, recovery and disposal do not belong to a circular economy since relying on these strategies will not bring materials or products back into the economic cycle.

6.3 Life cycle perspective

From a life cycle perspective, both the waste hierarchy and circular economy consider the whole life cycle of a product, including the pre-use stage, use stage, and post-use stage, and have evolved over time to emphasize the design and use of a product before it turns into waste. The circular economy and the waste hierarchy share a joint philosophy, aiming to prevent and reduce waste generation and to reduce impacts of waste by rethinking, redesigning and repurposing products as well as to reduce overall impacts of resource use and improve the resource efficiency of such use. The minor difference is that the waste hierarchy still allows disposal, while the framework of a circular economy does not.

6.4 Resource and material efficiency

For further guidance on material efficiency see the EN 4555x series [7].

6.5 Optimizing strategies in product design and business models

Generally, product designs that optimize durability, ease of maintenance and repair, upgradability, re-manufacturability, separability, disassembly and reassembly are considered key elements for the transition towards circularity of products. Detailed guidelines, recommendations and requirements for this are described in EN 17988-4.

Circular business models will have to be developed by the stakeholders and actors in the value chains of fishing gear and aquaculture equipment. These models shall take into account the required EPR scheme referred to in the SUP Directive [2]. More details and examples on circular business models can be found in EN 17988-5 [9].

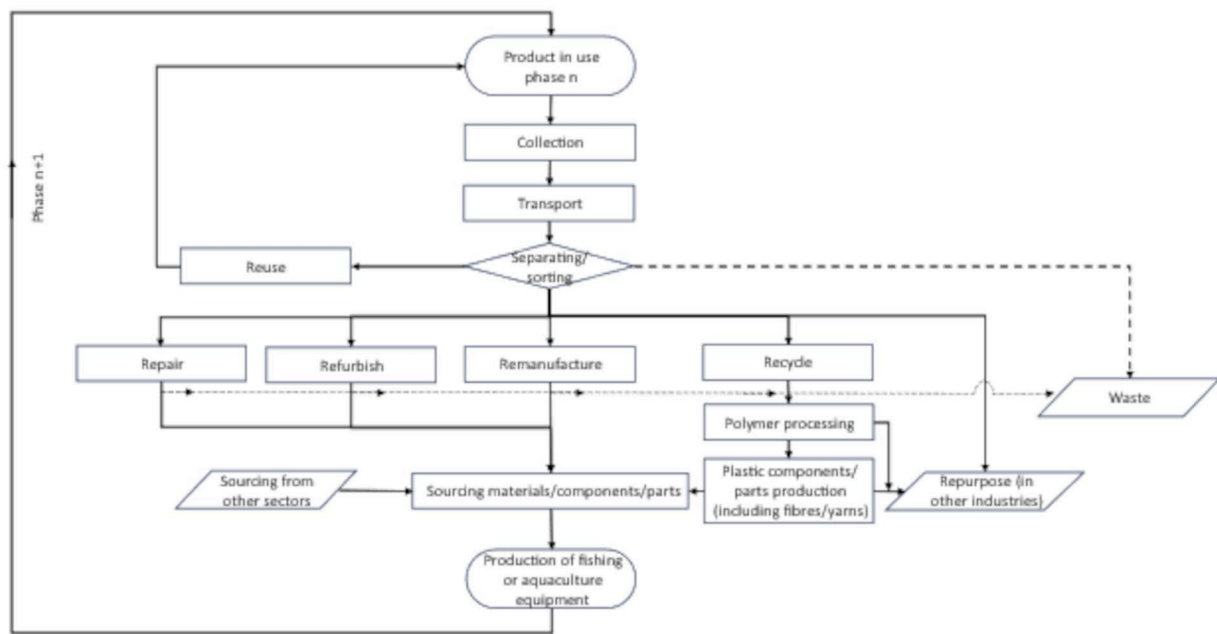
6.6 Extended Producer Responsibility (EPR) schemes

EPR is a self-financed and incentivized system with no cost to public budgets. It makes producers accountable for financing end-of-use cost (take-back and recycling) while providing incentives for producers to prevent waste at the source as well as incentive producers to design products that are recyclable or reusable. EPR implementation opportunities and challenges linked specifically to waste gear are discussed in EN 17988-5 [9].

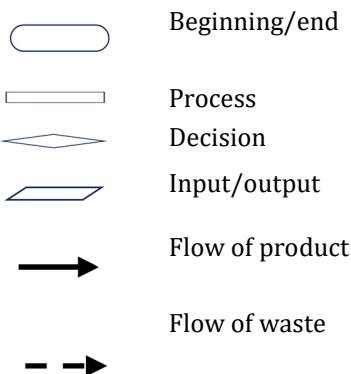
7 Stakeholders and their roles and responsibilities in the value network

7.1 Value network

Figure 2 shows an overview of the value network for producing, using and end-of-use treatment of fishing gear and aquaculture equipment in a circular economy.



Key



NOTE 1 In this figure, 'repurpose' is defined as product that can be used in other industries. Repurpose can also be interpreted as a strategy and is one of the valid R-strategies available

NOTE 2 Waste can be produced in any (re)processing step

Figure 2 — Diagram describing part of a circular value network applicable to fishing gear and aquaculture equipment

7.2 Key actors and their roles

7.2.1 Producers of fishing gear and aquaculture equipment

A producer is any natural or legal person that professionally manufactures, sells or imports and places on the market fishing gear or aquaculture equipment containing plastic, such as a local country gear producer, third country producer via an authorized representative (who might be a local country gear producer) or via direct imports by fishers or aquaculturists.

A gear producer designs and coordinates assembling or sells directly or via chandlers all various materials required to build the fishing gear or aquaculture equipment.

The producer should equip any fishing gear or aquaculture equipment with an identifier that is specific to his product. The identifier should contain information on the owner of the product, as well as necessary information for repairing, dismantling or pre-sorting it, in order to not destroy the circularity properties of the fishing gear or aquaculture equipment.

NOTE Exact definitions of the roles of producers, importers, manufacturers, fishers etc. are or will be defined in European and national regulations like the SUP Directive and national regulations defining EPR schemes.

7.2.2 Delivery and installation stakeholders

Installation of fishing gear and aquaculture equipment is normally done in cooperation with its seller. Often this is a net loft (for professional products) but it could also be an importer of fishing gear and aquaculture equipment, which normally is the case for recreational fishing.

Aquaculture: size of equipment is determined by stock type. The finfish sector has large and bulky equipment requiring construction on site prior to installation. Installation of aquaculture equipment on-site can be carried out by equipment suppliers or by site workers. Larger equipment might require specialist installers.

Fisheries: installation of fishing gear is the responsibility of owners, with support from suppliers.

7.2.3 Users: fishers or aquaculturists

The fisher or aquaculturist should use the information on the composition of the fishing gear or aquaculture equipment in its identifier to choose appropriate materials in the maintenance and repair for retaining its circular design.

The fisher or aquaculturist should use the information on the composition of the fishing gear or aquaculture equipment in its identifier to choose appropriate materials in the maintenance and repair with the purpose of retaining its circular design.

7.2.4 Retrievers of ALD fishing gear and aquaculture equipment from seas

Retrieval of ALD fishing gear and aquaculture equipment is carried out at sea and on shorelines by various actors, including (fishing and aquaculture) industries, organisations (environmental, non-governmental or other), local municipalities or governmental organisations, community groups and other volunteers. Retrieval programmes do not necessarily require high-tech support or significant resources. Where coastal fishing areas are impacted, small-scale fishers can choose to coordinate gear retrieval actions themselves to recover gear.

7.2.5 End-of-use fishing gear or aquaculture equipment collectors

In general, the end-of-use fishing gear or aquaculture equipment is collected or deposited at on shore collection sites by the user or owner.

In the case of fish farming, end-of-use aquaculture equipment is frequently collected by their new equipment suppliers. In the case of shellfish and seaweeds, the majority of farms are very rural and have more complex collection routes.

The end-of-use starts with collection. This takes place mainly in harbours where the port facilities provide containers or similar receptacles in which the fishers and aquaculturists must deposit their end-of-use fishing gear and aquaculture equipment. At the deposit places, the gear and equipment can be partially pre-sorted by, for example, keeping metal and plastics separated. This increases the circularity and keep costs lower. Aquaculture equipment is frequently collected by the new equipment suppliers.

If possible, collected gear or equipment shall be re-used, refurbished, remanufactured, repurposed or prepared for recycling. In some instances, recycling might not be practical, as the plastic material can be mixed with organic debris including the remains of entangled animals, which might raise health issues and odour problems and limit the recycling possibilities to the extent that safe disposal would be more

appropriate. Additionally, energy and resources required to transport material to a suitable recycling facility might exceed the benefit derived from recycling it.

7.2.6 Waste handlers

A waste handler role is a treatment facility where operations, including preparation prior to recovery or disposal, are carried out. The waste handler should distinguish between the preliminary storage of waste pending its collection (where waste is unloaded in order to permit its preparation for further transport for recovery or disposal elsewhere), the collection of waste (where waste is gathered) and the storage of waste pending treatment (according to the type of waste, the size and time period of storage and the objective of the collection).

7.2.7 Waste pre-processors

The waste pre-processor disassembles, dismantles, cleans or otherwise pretreats the waste before or after sorting. This role can also be taken up by both the waste handler or sorter.

7.2.8 Sorters

Sorters separate the waste into different components which can then be further processed by other stakeholders into secondary materials, components, parts or products. This role can also be taken up by the waste handler.

7.2.9 Recyclers

Fishing gear or aquaculture equipment recycling is an operation by which waste materials are reprocessed into products, materials or substances whether for the original or new purposes. It does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Recycling is a process to alter the physical (mechanical recycling) or chemical properties (chemical recycling) of waste material allowing it to be used again for the same or other applications. Recycling includes any physical, chemical or biological treatment leading to a material which is no longer a waste.

7.2.10 Authorities

Legislators and other authorities play an important role for the design and circularity options of fishing gear and aquaculture equipment, related to regulations as well as support.

Examples of influences of regulation can be

- new or changed regulations make equipment in use illegal,
- regulations can lead to changes to the practical life-length of a gear or equipment.

Examples of support can be

- guidance documents and FAQs,
- subsidies when replacing old fishing gear or aquaculture equipment with new ones based on circular design and with reduced environmental impact,
- funding of innovative projects aiming to increase circularity.

It is recommended for all other stakeholders to have a regular dialogue with the relevant authorities.

7.2.11 Other Stakeholders

There are other stakeholders who are linked indirectly to the value network. Examples of these stakeholders are insurance, testing, inspecting and certifying companies or organisations. These stakeholders are not specified further in this standard.

8 General approaches for increasing the circularity of fishing gear and aquaculture equipment

8.1 General design aspects

Rethinking the design of fishing gear and aquaculture equipment should consider multiple aspects in order to reduce impact on the marine environment. For example using less material in design and manufacturing, keeping products for longer, reducing waste through reuse, minimizing the use of substances of concern (SoC), including those that negatively affect the reuse of fishing gear and aquaculture equipment and recycling of their materials, increasing research on environmentally friendly design, avoiding off-cuts or discards, redesigning of nets, developing technology, optimizing performance versus degradation in use, preventing littering, reducing the use of a variety of materials in products, using performance additives and employing more durable materials.

Design for disassembly and dismantling facilitates repair and allows the recycling and recovery of fishing gear and aquaculture equipment as well as their parts and materials with the help of modular design. Easy disassembly is required to minimize the manual labour time and cost to prepare gear and equipment for recycling. Fishing gear and aquaculture equipment should be designed to include as few types of components as possible and fixings which are reusable.

Fishing gear and aquaculture equipment should be designed for product life extension, to enable repair, remanufacturing, refurbishment and other R-strategies of parts of the gear or equipment. The use of as few different materials as possible makes recycling and recovery more feasible. Designing with materials which have higher values on the secondary market can incentivise recycling. Recyclers require accurate information on what materials have been used in the production of fishing gear or aquaculture equipment, including chemicals used in coatings.

These considerations should also be taken into account during maintenance and repair of fishing gear and aquaculture equipment. It is recommended that the stakeholders performing these tasks are given the necessary training.

Use of auxiliary materials in delivery and installation of fishing gear and aquaculture equipment should also follow design guidelines for circularity. Packaging should be designed for reuse or recycling and should be collected separately after use. Construction and installation should work with minimal waste, and any waste should be collectable and recyclable.

More details on design of fishing gear and aquaculture equipment, taking environmental and circularity requirements into account, can be found in EN 17988-4.

8.2 Collection at end-of-use

The containers in the harbour should be easily accessible for the fisher or aquaculturist, but not by members of the public for domestic waste disposal. Simple carriers such as big bags or pallets keep costs low and increase circularity. There is a low risk that the material is blended with public waste.

The port facility instructions state that old fishing gear and aquaculture equipment left by the fisher or aquaculturist and the material collected by fishing for litter should be sorted separately. The material from fishing for litter often goes directly to landfill or incineration, because it is too dirty for material recycling. So, sorting adds value to material streams, as well as lowering the cost.

For recreational fishing, collection point should be identified in cooperation with the affected interested parties, take into account the national and local culture and infrastructure, be controlled or supervised, to facilitate ease of discarding the wasted gear and equipment, and avoid blending with other waste. If the collected materials from recreational fishing could be recycled with fishing gear and aquaculture equipment, this would give an added synergy value for both material streams and reduce costs.

After the material is collected, it moves to dismantling or pre-sorting in order to get fractions suitable for the recyclers. The dismantling or pre-sorting requires information of the composition of the gear and equipment in order to make the pre-sorting effective for the recyclers. These operations are eased by using modular design of fishing gear and aquaculture equipment and detachable joints to separate parts from different materials.

Information on the composition of the fishing gear and aquaculture equipment can be useful to retain materials in the value chain and can facilitate high quality recycling.

Recyclers have their own quality specifications that the dismantling or pre-sorting must fulfil.

8.3 Reuse and preparing for reuse

Preparing for reuse means checking, cleaning or repairing operations, by which products or components of products that have become waste are prepared so that they can be re-used without further pre-processing.

The key difference between 're-use' and 'preparing for re-use' is that in the first case the material or object has not become waste, whereas in the case of 'preparing for re-use', the material in question has become waste.

Reuse is a means of waste prevention. Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived is considered reuse of a product or component.

8.4 (High-quality) recycling

The following aspects should be considered for enabling high-quality recycling:

- use a single type of polymer or polymers compatible in the recycling stream,
- prioritize usage of chemical and mechanical recycled raw materials,
- design without SoCs that impede the reuse and recycling of fishing gear and aquaculture equipment,
- give preference to materials for which secondary markets exist, or which are technically easier to recycle,
- utilize alternatives for copper threads/coatings in ropes and lines,
- use alternatives to heavy metals in sink lines,
- develop environmentally friendly coatings,
- move away from exclusive consideration of functionality towards more circular economy-oriented design,
- implement (national) economic incentives to increase purity (reduce use of mixed materials) in gear and equipment manufacturing,
- promote re-use and repair: increase awareness of materials during repairs,

- provide clear guidelines for pre-processing and sorting, including a degree of necessary pre-processing, and
- examine ways to reduce pre-processing costs.

8.5 Abandoned, lost or otherwise discarded (ALD) fishing gear and aquaculture equipment

In order to achieve the reduction, and ultimately the elimination of ALD fishing gear and aquaculture equipment, the measures towards the circular design of fishing gear and aquaculture equipment described in the EN 17988 series shall be implemented.

Additionally, it is recommended to implement a wide range of preventative, mitigating and curative measures. Examples are economic incentives and measures to encourage fishers and aquaculturists to report and to return to port their ALD fishing gear and aquaculture equipment as well as (training) programs to raise awareness of stakeholders.

Bibliography

- [1] Directive (EU) 2019/883 of the European Parliament and of the Council of 17 April 2019 on port reception facilities for the delivery of waste from ships, amending Directive 2010/65/EU and repealing Directive 2000/59/EC
- [2] Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment
- [3] Commission Implementing Decision M/574 of 10.2.2021 on a standardization request to the European Committee for Standardisation as regards circular design of fishing gear in support of Directive (EU) 2019/904
- [4] THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS (SDGS). Also available at <https://sdgs.un.org/goals>
- [5] Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC
- [6] Directive (EU) 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives
- [7] EN 45553, *General method for the assessment of the ability to remanufacture energy-related products*
- [8] EN 45552, *General method for the assessment of the durability of energy-related products*



BSI Standards Publication

Circular design of fishing gear and aquaculture equipment

Part 2: User manuals and labelling

National foreword

This British Standard is the UK implementation of EN 17988-2:2024.

The UK participation in its preparation was entrusted to Technical Committee CED/1/2.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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© The British Standards Institution 2024
Published by BSI Standards Limited 2024

ISBN 978 0 539 26764 8

ICS 13.020.20; 65.150

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2024.

Amendments/corrigenda issued since publication

Date	Text affected
<hr/>	

English Version

Circular design of fishing gear and aquaculture equipment - Part 2: User manuals and labelling

Circularité et recyclabilité des engins de pêche et des
équipements d'aquaculture - Partie 2 : Manuels
utilisateur et étiquetage

Kreislaufwirtschaft von Fischfanggeräten und
Aquakulturausrüstungen - Teil 2: Benutzerhandbuch
und Kennzeichnung

This European Standard was approved by CEN on 30 September 2024.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 17988-2:2024) has been prepared by Technical Committee CEN/TC 466 “Circularity and recyclability of fishing gear and aquaculture equipment”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2025, and conflicting national standards shall be withdrawn at the latest by May 2025.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a standardization request addressed to CEN by the European Commission (M/574). The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

This document is part of the EN 17988 series.

The EN 17988 series consists of the following parts, under the general title *Circular design of fishing gear and aquaculture equipment*:

- Part 1: General requirements and guidelines
- Part 2: User manuals and labelling
- Part 3: Technical requirements and guidelines
- Part 4: Environmental and circularity requirements and guidelines
- Part 5: Circular business models
- Part 6: Requirements and guidelines for digitalization of information of components of fishing gear and aquaculture equipment

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

As part of the European Green Deal, launched in 2019, the European Commission introduced measures to move to a climate neutral and circular economy, together with a digital transition. One of the targets in the transition to a circular economy was to reduce the amount of waste released into the environment by decreasing the amount of waste generated, increasing the amount of waste collected and re-introducing the materials regenerated from waste into the production of new products.

Specifically, the accumulation of plastics in marine and other aquatic environments were addressed in two directives:

- The revised Port Reception Facilities (PRF) Directive [1] encourages fishers and aquaculturists to bring not only their own end-of-use gear but also bring ashore abandoned, lost or otherwise discarded (ALD) fishing gear and aquaculture equipment, thus encouraging waste to be carried back to port.
- The Single Use Plastics (SUP) Directive [2], which lays down rules concerning different plastic products, including fishing gear and aquaculture equipment containing plastics, and sets requirements to the Member States to establish Extended Producer Responsibility (EPR) schemes. Concerning fishing gear, it also contains rules on minimum national annual collection rates, together with reporting on fishing gear placed on the market and waste fishing gear collected in ports.

In 2021, the standardization request M/574 on the circular design of fishing gear [3] was passed by the European Commission and the parliament and accepted by CEN, which forms the basis for this series of documents (EN 17988 series). While the term ‘fishing gear’ is used predominantly in the SUP Directive and M/574, both documents encompass aquaculture equipment.

The purpose of this series of documents is to provide stakeholders with requirements, recommendations and guidelines to address the different aspects of circular design of fishing gear and aquaculture equipment containing plastics, encourage preparing for reuse and facilitate recyclability at end-of-use. These requirements are intended to be applied from the design phase across the entire life cycle of the fishing gear and aquaculture equipment. This includes but is not limited to: manufacturing, use, maintenance, repair, collection, sorting, preparation for recycling, reuse, remanufacture, disposal, uptake of recycled content and recycling.

Although this standard is written for fishing gear and aquaculture equipment containing plastics, the requirements, recommendations and guidelines are also applicable to other materials.

This series of documents does not address other important design criteria such as fishing or farming efficiency. When implementing the requirements, recommendations and guidelines provided in these documents, balanced trade-offs between all relevant criteria need to be taken into account.

This series of documents aims to contribute to the following UN Sustainable Development Goals (SDGs) [4]:

- 9 Industry, innovation, and infrastructure,
- 12 Responsible consumption and production,
- 14 Life below water, in particular target 14.1: ‘By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.’

For a full outline of the parts of the standard, and how the parts relate to each other, see part 1.

Part 2 specifies the requirements, recommendations and guidelines for user manuals and labelling (and other information) that accompanies circular designed fishing gear and aquaculture equipment. This will

enable traceability and proper management during the lifetime of fishing gear and aquaculture equipment.

The aim of part 2 is to provide requirements, recommendations and guidelines for producers (manufacturers and importers) of fishing gear and aquaculture equipment, netting and raw materials. In addition, this part can also be relevant for other stakeholders, such as those involved in the end-of-use of fishing gear and aquaculture equipment. Stakeholders that will need to be provided with user manuals include fishers, aquaculture companies, collectors (of wasted gear), sorters, those who are doing maintenance (including washing and cleaning), and distributors. Information that needs to be provided to authorities can also be covered by user manuals or labelling.

Note to the reader on normative language: In this document, the following verbal forms are used in accordance with the CEN/CENELEC Internal Regulations Part 3, Clause 7:

- “shall” indicates a requirement;
- “should” indicates a recommendation;
- “may” indicates a permission;
- “can” indicates a possibility or a capability;
- “must” indicates an external constraint.

1 Scope

This document specifies the requirements for the user manuals and labelling that accompany circular designed fishing gear and aquaculture equipment containing plastics, to ensure traceability and proper management during the lifetime of its components.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CEN/TS 18101, *Circular design of fishing gear and aquaculture equipment - Terms and definitions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in CEN/TS 18101 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Requirements and guidelines for user manuals

4.1 General

4.1.1 General guidelines based on EN IEC/IEEE 82079-1: 2019

EN IEC/IEEE 82079-1 [6] provides general principles and detailed requirements for the design and formulation of all types of instructions for users. The requirements in EN IEC/IEEE 82079-1: 2019 help set the guidelines for the user manuals of fishing gear and aquaculture equipment.

The content for 'information for use' is based on three pillars and applies to all stages of the fishing gear and aquaculture equipment life cycle:

- a) Conceptual information: concepts, explanations and descriptions that enable the target groups to perform tasks by understanding their purpose and the principles of operation of the supported fishing gear or aquaculture equipment.
- b) Instructional information: procedures and task-oriented step-by-step instructions.
- c) Reference information: troubleshooting, maintenance schedule or codes.

See Annex A (informative) and B (informative) for the general requirements and a checklist from EN IEC/IEEE 82079-1: 2019.

4.1.2 Specific stakeholder requirements

Fishing gear and aquaculture equipment manufacturers shall provide user manuals to stakeholders where applicable.

Fishing gear and aquaculture equipment manufacturers shall identify which stakeholders need to be provided with user manuals. When preparing instructions for use, the needs and capabilities of the intended stakeholders shall be addressed.

Stakeholders that shall be taken into account, where applicable, include:

- distributors;
- users of fishing gear and aquaculture equipment (including fishers, aquaculturists);
- those who repair fishing gear and aquaculture equipment;
- those who provide maintenance services (for example washing and cleaning);
- those who collect, sort (including pre-sorting) and transport used or wasted fishing gear and aquaculture equipment;
- recyclers; and
- EPR bodies.

Other stakeholders, such as authorities, should also be considered.

The user manuals shall include the information and needs listed in clauses 4.2, 4.3, 4.4 and 4.5 that are applicable for the identified stakeholders.

4.2 Stage of selecting and sourcing of materials and components

a) Conceptual information

At this stage in the life cycle, information on materials and components needs to be aggregated in order to be added and collated once the fishing gear aquaculture equipment and its components are assembled or manufactured.

The information gathered at this stage will be used throughout the development of the user manual. This guarantees proper care of the product to maximize its lifetime and allows preparation for the different stage in its life cycle, such as reuse, repair, refurbish, remanufacture, repurpose, recycling, recovery and disposal. See Clause 6.2 of EN 17988-1: 2024 [5] for more information on the different life cycle stages of fishing gear and aquaculture equipment.

b) Instructional information

The user manual shall include information on:

- The materials, including aggregation of data for reporting and the amount of recycled material used in the fishing gear and aquaculture equipment, where applicable.

The user manual should include information on:

- EPR relevance. See EN 17988-1:2024, Clause 6.6 [5] for an explanation on EPR.
- Installation care for materials. For example, lubrication requirements and avoiding contact with certain types of surfaces or chemicals during installation, as described in Annex C
- Use and maintenance
 - Storage conditions to maximise lifetime.
 - Precautions, where applicable. For example, occupational health and safety and for environmental concerns.

- Information on mechanical limitations of the fishing gear and aquaculture equipment. For example: avoid compression, cyclic loading or other stresses that can reduce the lifetime of the fishing gear and aquaculture equipment.
- End-of-use
 - End-of-use treatment options.
 - Disposal of materials with specific requirements such as biocides.

c) Reference information

Not applicable.

4.3 Manufacturing, assembly and installation stage

a) Conceptual information

At this stage in the life cycle of a product, the manual should be set up integrating the information from the materials and components, using a holistic approach and stipulating circularity for the user and downstream stakeholders. The user manual shall take into account the concepts described in the next two paragraphs and emphasize the importance of circularity of materials and components and the possibilities to reuse, repair and recycle materials and components.

Fishers and aquaculturists customise their fishing gear and aquaculture equipment for the particular circumstances in which they operate, including adapting nets, ropes and floats to target species and for functionality at sea. Fishing gear and aquaculture equipment, therefore, can be composed of different types of plastics, metal pieces (including metal weights), natural materials (for example, wood in trawl doors) and are sometimes treated with copper-based antifouling coatings.

Typically, local net lofts assemble fishing gear and aquaculture equipment, while the manufacturing of raw materials and components is generally done by other companies. Components can also be sold directly to users who then assemble the final fishing gear and/or aquaculture equipment themselves, or use the components to replace or repair parts of other gear and/or equipment. Other users purchase fully assembled fishing gear and/or aquaculture equipment directly from manufacturers and suppliers, and are often involved in design and specification.

b) Instructional information

The user manual shall include information on:

- Assembly
 - This shall include a description of the fishing gear or aquaculture equipment design which allows for the easy identification of the components.
 - This can be done by using a drawing or diagram or using other alternative tools that will guarantee the identification of the components within the gear. An example of such design is provided in Annex C.
- Components
 - This shall include a description of good practices to increase the durability of components.

- This shall include a preventive maintenance plan.
- This shall include possible end-of-use options for the components.
- Installation
 - This shall include proper installation guidelines to guarantee maximum durability for the components and their circularity.
- Materials
 - This shall include the information described in clause 4.2 regarding the types of materials, quantities, potential end-of-use and proper care for the materials used in each (sub)component.
 - See EN 17988-4 [7] for more information on environmental and circularity requirements and guidelines.

NOTE The materials are chosen based on strength, durability, accessibility, weight and cost. There are four envisaged dominant polymer types, namely: PA6 (polyamide 6), PET (polyester), PP (polypropylene) and PE (polyethylene). The use of specific plastics can vary greatly, with many gears constructed from more than one type.

- Gear taxonomy
 - Each Member State can set up their own additional taxonomies. However, reporting on fishing gear and aquaculture equipment collected as waste should at least be comparable to the reporting on fishing gear and aquaculture equipment placed on the market. This enables the definition and monitoring of collection targets.
 - Detailed information on gear taxonomy can be found in Annex D.

c) Reference information

Not applicable.

4.4 Use and maintenance stage

4.4.1 Needs for use of fishing gear and aquaculture equipment

a) Conceptual information

Providing information on correct use allows the user to care for the fishing gear and aquaculture equipment to extend the durability and allow for reuse, repair and recycle at the end-of-use stage. See Annex C for examples on how to provide information on component usage and care.

b) Instructional information

The user manual shall include information on:

- Materials (see Clause 4.3).
- Maintenance, including information on preventive maintenance.

The user manual should include information on:

- Proper guidelines for installation and removal to guarantee the maximum durability for the components, when appropriate.
- Precautions and information to avoid that fishing gear or aquaculture equipment gets damaged or lost. For example, strengths or weights of material and utilities, or weather conditions.
- Necessary materials that need to be made available for proper usage and preventive maintenance during the lifetime of the fishing gear and aquaculture equipment.

c) Reference information

See Annex E for examples of gear labels, and Annex F for the suggested placement of labels in relation to gear type based on the FAO Report of the expert consultation on the marking of fishing gear [10].

4.4.2 Needs for maintenance and repair operations

a) Conceptual information

Including information on maintenance and repair allows fishing gear and aquaculture equipment to retain its characteristics and extend its durability.

b) Instructional information

The user manual shall include information on:

- Materials (see clause 4.3).
- Disassembly and dismantling for maintenance.
- Maintenance, including information on preventive maintenance.
- Repair, including spare parts and materials for reparation.
- Expected lifetime of components.

The user manual shall include information on:

- An adequate maintenance schedule, to avoid premature degradation and loss of fishing gear and aquaculture equipment.

The user manual should include information on:

- Step-by-step instructions for maintenance, preferably linking the components to the list, table and design as presented in Annex C.

c) Reference information

Not applicable.

4.4.3 Needs for preparation for reuse

a) Conceptual information

Information on lifetime allows the user or refurbishing company to extend the usage and avoid premature disposal of the material.

Component lifetime is typically described in years or number of cycles. Nevertheless, the component lifetime described can only be used for reference purposes. The actual component lifetime will vary according to the region, conditions in which the material is used, and frequency and haul load in each cycle.

b) Instructional information

The user manual shall include information on:

- Materials (see Clause 4.3).
- Disassembly and dismantling for reuse.
- Precautions, where applicable. For example, occupational health and safety and for environmental concerns.

The user manual can include information on:

- Organizations that provide take-back systems for reuse.

c) Reference information

See Annex C for information on component lifetime.

4.5 End-of-use stage

4.5.1 Needs for collecting, (pre)sorting and transporting used and/or wasted fishing gear and aquaculture equipment

a) Conceptual information

Providing information on collecting, (pre)sorting and transporting used and/or wasted fishing gear and aquaculture equipment maximizes the value that can be obtained, as it aids prioritization of circularity practices according to the different R-strategies. See Clause 6.2 of EN 17988-1: 2024 [5] for more information on the different circular economy strategies.

Giving information on fishing gear and aquaculture equipment design and materials allows for efficient and effective separation and sorting at the end-of-use stage. See Annex C for information on component usage and care.

b) Instructional information

The user manual shall include information on:

- Disassembly and dismantling of the individual components, with the aim of maximizing reuse and recycling. This information can be presented either as text or as a diagram.
- Precautions, where applicable. For example, occupational health and safety and for environmental concerns.
- Circularity of materials of which the fishing gear and aquaculture equipment is comprised, allowing the stakeholders to increase the efficiency of the process of collecting, (pre)sorting and transporting.

The user manual should include information on:

- Precautions, where applicable. For example, occupational health and safety and for environmental concerns.

The user manual can include information on:

- The preferred destination of the sorted material in order to maximize its circularity potential.

c) Reference information

Not applicable.

4.5.2 Needs for recycling

a) Conceptual information

Materials and quantity information is necessary to aid an efficient recycling process. Moreover, it is important to include information regarding presence of regulated substances of concern (SoC).

b) Instructional information

The user manual shall include information on:

- Pre-processing prior to recycling. Pre-processing includes washing, shredding, manual separation, density separation and a final washing. This is mainly important when the fishing gear or aquaculture equipment is expected to be comprised of mixed materials.

NOTE Fishing gear and aquaculture equipment disposed of responsibly can often be cleaned and separated, reducing processing procedures.

- Precautions, where applicable. For example, occupational health and safety and for environmental concerns.
- Regulatory information regarding presence of SVHC.
- Information on whether specific mixed materials are included which can be recycled without separation

c) Reference information

See Annex C for information on recycling.

5 Requirements for labelling

5.1 Placement and implementation of labelling on fishing gear and aquaculture equipment

The labelling shall comply with labelling systems that are required by applicable regulations, and by this series of standards.

The labelling shall include information on:

- Fishing gear or aquaculture equipment ID. The fishing gear or aquaculture equipment ID shall include material identification and shall be linked to the technical specifications of the fishing gear or aquaculture equipment.

The labelling can include information on:

- Geolocation ID. Geolocation identifies the position of the fishing gear. An identifier can be attached to the fishing gear or aquaculture equipment itself or to marking equipment used to visualize the fishing gear or aquaculture equipment (the latter is the most common for stationary gear and aquaculture equipment.). The principal benefit of geolocation is that it offers the possibility for tracking and tracing, and therefore the possibility of locating ALD fishing gear and aquaculture equipment, which can then be put back in use, recycled or disposed of properly.

NOTE It is advisable to check applicable regulatory traceability requirements.

- Owner ID. Fishing gear or aquaculture equipment can be labelled with the owner's ID. It is less likely to be intentionally discarded, and is also easier to return to an owner in case of accidental loss. If included, the labelling can include resources to identify and locate the owner of fishing gear or aquaculture equipment. If used, this system shall be designed to cover changes of ownership.

Where applicable, a system for labelling fishing gear and aquaculture equipment shall contain practical means of:

- Identifying the fishing gear, aquaculture equipment and material components, for example through marking equipment. See Annex E for examples of marking and labelling for identification.
- Placement of appropriate labelling on fishing gear and aquaculture equipment to facilitate access to information. See Annex F for suggested information on placement of labels/marks in relation to gear type.
- Implementing a system for labelling fishing gear and aquaculture equipment, as described in Clause 5.2
- Information on how the labelling system can facilitate mechanisms to support the recycling or reuse of fishing gear and aquaculture equipment.
- Information on how the labelling system can facilitate end-of-use actions to collect, sort, repair, reuse, refurbish or recycle the fishing gear or aquaculture equipment (for example maps over collection spots).

A system for labelling fishing gear and aquaculture equipment can contain practical means of locating and identifying ownership of fishing gear and aquaculture equipment. See Annex G for guidance on the labelling of fishing gear to indicate geolocation positions.

5.2 Implementation of labelling systems

5.2.1 General

End-to-end sustainable traceability depends on several components and systems working in conjunction. This includes unique identification, consistent and reproducible data collection, and information-sharing practices. To be compliant with regulations and accomplish business needs, companies should practice record keeping and data sharing with value chain partners.

Labelling of fishing gear and aquaculture equipment should be considered in the context of broader management of fisheries and aquaculture measures, which support sustainable fisheries and aquaculture as well as healthy oceans, including the reduction, minimization and elimination of ALD fishing gear and aquaculture equipment.

5.2.2 Requirements for implementation of labelling systems

Responsibilities for designing and implementing the labelling systems can be shared among different stakeholders. For example, owners, EPR organizations and manufacturers of fishing gear and aquaculture equipment and components.

The labelling system shall:

- be used for the labelling of fishing gear or aquaculture equipment;
- ensure compliance with procedures for reporting, data storage, retrieval and information exchange.

The labelling system can ensure the identification of the fisheries, fishing gears, vessels, aquaculture organizations and equipment or areas to which the system applies, and can ensure specification of conditions for implementation and potential exemptions from the agreed system.

The systems for the labelling of fishing gear and aquaculture equipment should be designed to make their implementation as feasible as possible to ensure their adoption.

Where applicable, traceability needs shall be taken into account. To extend internal traceability to meet the business needs of interoperable, end-to-end traceability throughout the value chain, the following steps for businesses across the value chain can be taken into account:

- Where the labelling of fishing gear and aquaculture equipment is implemented by relevant national, sub-national or regional requirements, implementation of a labelling system for fishing gear and aquaculture equipment can be a condition of any new fishing authorization or license for fishing or aquaculture.
- Where there is no fishing authorization or license to fish required, a system of labelling of fishing gear and equipment can be implemented as part of the fisheries or aquaculture management system when necessary and practical.

An owner of fishing gear or aquaculture equipment subject to a labelling system should be allocated a unique identifier and label to be applied to all fishing gear and aquaculture equipment owned by the organization or person. When the fishing gear is associated with a registered fishing vessel, if applicable, the label allocated for the fishing gear should match the vessel registration details (e.g. the port letters and numbers or International Maritime Organization (IMO) number, if available).

Connecting an internal traceability system to up and downstream systems can be more complicated and is, where not demanded by regulations, optional. The following points are of highest importance:

- Labels should be of a type and design approved by the competent authority, fitted in accordance with technical specifications, and if applicable, available international standards.
- These labels can be documented in the form of records for fishing gear and aquaculture equipment or through a fishing licensing or authorization system for fishing or aquaculture plants. Information associated with the label should be recorded and incorporated into the existing fishery licensing or authorization system, if applicable.

5.3 Packaging material information

If information regarding the materials used for the packaging is included, the information shall comply with alphanumerical codes.

NOTE 1 Legal requirements and guidelines on packaging labelling and providing information regarding the materials used for the packaging can be applicable.

NOTE 2 See EU decision 97/129/EC [9] for information on alphanumerical codes.

Annex A

(Informative)

Optional requirements to comply with EN IEC/IEEE 82079-1: 2019

EN IEC/IEEE 82079-1: 2019 [6] provides general principles and detailed requirements for the design and formulation of all types of user manuals. The standard provides requirements on the content, structure, quality, process, media and format of the 'information for use', which is considered an integral part of a product and covers more than instructions/activities or operations to be performed by or with the product.

EN IEC/IEEE 82079-1: 2019 implements four main principles of minimalism:

- Choose an action-oriented approach. This principle reflects the self-centredness of minimalism.
- Anchor the tool in the task domain. This principle asks designers to select training tasks that are meaningful for the user.
- Support error recognition and recovery. There are several ways to increase user competence and comfort levels in handling mistakes.
- Support reading to do, study and locate. Designs shall fit as much as possible the diverging needs and propensities of the intended audience. This principle reflects the self-centredness of minimalism.

Some of the most important requirements on usability that can be found throughout the EN IEC/IEEE 82079-1: 2019 standards to help write user-friendly information are as follows:

- Make sure the information for use is usable and relevant for the target audiences with respect to their expected tasks and goals.
- The Information for use should meet the target audiences' needs for information quality by being complete, correct, concise, consistent, comprehensible, accessible and that it applies the principles of minimalism.
- Use consistent terminology.
- List and explain unavoidable acronyms, abbreviations and technical terms.
- Make sure that information for use is easily searchable, contains convenient navigation and unambiguous content.
- Include predefined information types.
- Use consistent formatting.
- Include navigation, such as page numbering or a table of contents.
- Use text fonts, safety signs and graphical symbols that are clearly legible for the target audiences, both for print and electronic media (recommended minimum text font sizes and heights of safety signs and graphical symbols are listed in a table that is included in the standard).
- Base the media and format of the information for use on the needs of the target audiences.

Also, the EN IEC/IEEE 82079-1: 2019 standard emphasizes that both the intended use of the product and the reasonably foreseeable misuse should be included.

Further, the EN IEC/IEEE 82079-1: 2019 standard mentions including the following elements in information for use:

- Identification of the information for use, the supported product and the supplier.
- Information regarding retaining the information.
- Presentational conventions. For example, the use of a particular typeface for text to be entered by the user, keyboard keys, or menu items. The conventions can best be listed, and their meaning explained.
- Explanation of terminology. Also, if the information for use of a complex system contains several documents from more than one supplier, you should explain the meaning of the different terms used.
- Explanation of abbreviations, technical terms, safety signs, graphical symbols and markings.
- Safety related information such as safety signs and product safety labels, safety notes and warning messages.
- Signal words for warning messages for harm to persons (DANGER, WARNING, CAUTION) or damage to property (NOTICE, BEWARE, TAKE CARE).
- Repacking information.
- Transportation and storage information.
- Installation information.
- Commissioning information.
- Modification information and/or restrictions.
- Operation information.
- Information on exceptional and emergency situations.
- All information needed during the life cycle of the supported product such as information on maintenance, replacement of parts, repair and troubleshooting.
- The standard also suggests that information can be structured around so called leading criteria, such as tasks, the product life cycle, target audience and the product's functions.
- In order to do so, tasks can be structured by the order in which tasks are performed.
- When structured around the life cycle of the product, the product's life cycle stages, such as design, delivery, installing, operating, preparing for reuse, servicing, repairing, recycling, recovery and disposing, can be used.

The EN IEC/IEEE 82079-1: 2019 standard has become less strict when it comes to the media and format of the information for use and should be based on the needs of the target audiences.

Annex B

(Informative)

Compliance checklist for the optional requirements on the information for use- EN IEC/IEEE 82079-1: 2019

1. The following applies to information for use of all fishing gear and aquaculture equipment products:

- It provides the necessary information for the target audiences to make safe, efficient, and effective use of a supported product.
- It is an integral part of the supported product.
- It is usable and relevant for the target audiences with respect to their expected tasks and goals.
- It promotes the safe operation and maintenance of the supported.
- It meets the target audiences' needs for information quality by being complete, correct, concise, comprehensible, accessible and by applying the principles of minimalism.
- The content of the information for use covers the needs of the target audiences for the safe, effective and efficient use of the product, applying the principle of minimalism.
- It describes the intended use and reasonably foreseeable misuse.
- Information product can be identified.
- The supported product can be identified in the information for use.
- The supplier can be identified in the information for use.
- The importance of retaining printed information for use is emphasized.
- Presentational conventions are listed and explained.
- Consistent terminology is used.
- Unavoidable acronyms, abbreviations and technical terms are listed and explained.
- Safety signs, graphical symbols, pictograms, and markings placed on the supported product and packaging are explained.
- It contains a general description of the supported product, including a visualization.
- The product description includes the product's specifications.
- Supplied accessories, consumables and spare parts are mentioned.
- Where legal requirements, safety, or technical reasons prohibit the installation, operation, or maintenance of the supported product by non-skilled persons, this is made clear in the information for use. The qualifications, competencies, and skills required are clearly stated in the information for use.

- It contains repacking information.
- It contains transportation and storage information.
- It contains installation information.
- It contains commissioning information.
- It contains modification information and/or restrictions.
- It contains (normal) operation information.
- It contains information on exceptional and emergency situations.
- Information for use contains information on indications of faults and warning device signals of the supported product.
- The meaning of signals is explained.
- It contains information on the maintenance of the supported product by non-skilled and skilled persons.
- Maintenance and service procedures of complex systems are included.
- It contains information on troubleshooting and repair of the supported product by non-skilled and skilled persons.
- It contains information on the replacement of parts of the supported product by non-skilled and skilled persons.
- It contains information on disassembly, recycling, disposal of the supported product.
- It contains safety-related information, such as safety signs, safety notes and warning messages.
- Safety notes are provided in a separate clause or section at the beginning of the information for use.
- Precautions for particular target audiences such as children or older persons are given.
- The design of the warning messages is consistent.
- Signal words for harm to persons or to damage property are used.
- Instructions for assembly of self-assembly products make safe, efficient, and effective assembling of the product possible.
- Information regarding security and data privacy is given.
- The most common methods of providing information protection or assurance are taken into account when creating, exchanging, delivering or storing information.
- Where training is required for the target audiences, this shall be specified in the information for use.
- It is structured so as to enhance its usability and according to the requirements and principles in the standard.
- It is easy searchable, contains convenient navigation and unambiguous contents.