BRITISH STANDARD

BS EN
858-1:2002
Incorporating Amendment No. 1

Separator systems for light liquids (e.g. oil and petrol) —

Part 1: Principles of product design, performance and testing, marking and quality control

The European Standard EN 858-1:2002, with the incorporation of amendment A1:2004, has the status of a British Standard

ICS 13.060.99

BSI
British Standards

National foreword

This British Standard is the official English language version of EN 858-1:2002, including amendment A1:2004.

EN 858-1:2002 is now a candidate "harmonized" European Standard and fully takes into account the requirements of the European Commission mandate M118, *Wastewater engineering products*, given under the EU Construction Products Directive (89/106/EEC), and is intended to lead to CE marking. The date of applicability of the amended EN 858-1:2002 as a harmonized European Standard, i.e. the date after which this standard may be used for CE marking purposes, is subject to an announcement in the *Official Journal of the European Communities*. The Commission in consultation with Member States have agreed a transition period for the co-existence of harmonized European Standards and their corresponding national standard(s). It is intended that this period will comprise a period, usually nine months after the date of availability of the European Standard, during which any required changes to national regulations are to be made, followed by a further twelve-month period for the implementation of CE marking. At the end of this co-existence period, the national standard(s) will be withdrawn.

EN 858-1 is the subject of transitional arrangements agreed under the Commission mandate. In the UK there are no corrsponding national standards. There are no regulations in the UK dealing with reaction to fire of light liquid separators. Therefore the requirements of **6.2.8** and **8.4** are not applicable to separators intended for use in the UK.

The UK participation in its preparation was entrusted to Technical Committee B/505, Wastewater engineering, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled "International Standards Correspondence Index", or by using the "Search" facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

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(includes amendment A1:2004)

Installations de séparation de liquids légers (par exemple hydrocarbures) — Partie 1: Principes pour la conception, les performances et les essays, le marquage et la maîtrise de la qualité (inclut l'amendement A1:2004)

Abscheideranlagen für Leichtflüssigkeiten (z.B – Öl und Benzin) — Teil 1: Bau-, Funktions- und Prüfgrundsätze, Kennzeichnung und Güteüberwachung (enthält Änderung A1:2004)

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Contents

page

Foreword 4

1 Scope 4

2 Normative references 5

3 Terms and definitions 7

4 Classes of separators 8

5 Nominal sizes 8

6 Requirements 8
6.1 General 8
6.2 Materials 8
6.2.1 General 8
6.2.2 Concrete 9
6.2.3 Metallic materials 9
6.2.4 Plastic materials 9
6.2.5 Sealing materials 10
6.2.6 Coatings/linings 11
6.2.7 Chemical resistance 11
6.2.8 Reaction to fire 12
6.3 Design requirements 12
6.3.1 Area of the separator or sludge trap 12
6.3.2 Watertightness of components 13
6.3.3 Accessibility 13
6.3.4 Water seals 13
6.3.5 Pipes and pipe joints 13
6.3.6 Internal components 13
6.3.7 Sludge traps 13
6.3.8 Access covers 14
6.4 Structural stability 14
6.4.1 General 14
6.4.2 Separator systems made of unreinforced concrete, fibre-reinforced concrete, reinforced concrete 14
6.4.3 Separator systems made of glass fibre-reinforced plastics 14
6.5 Functional requirements 14
6.5.1 General 14
6.5.2 Storage capacity for light liquids 14
6.5.3 Automatic closure devices 14
6.5.4 Automatic warning devices and additional devices 15
6.5.5 Separators with a bypass device 15
6.5.6 Determination of the nominal size and class 15
6.6 Marking 16
6.6.1 Separator systems 16
6.6.2 Automatic closure devices, automatic warning devices 17

7 Manufacturer's product information 17

8 Test methods 17
8.1 Materials 17
8.1.1 Concrete 17
8.1.2 Plastics materials 17
8.1.3 Coatings 17
8.1.4 Chemical resistance of internal surfaces 19
8.1.5 Chemical resistance of external coatings 20
8.2 Watertightness of system components 20

8.3 Functional requirements 22
8.3.1 Storage capacity for light liquid 22
8.3.2 Automatic closure device 22
8.3.3 Determination of the nominal size and class 24
8.4 Reaction for fire 31
8.4.1 Products deemed to satisfy the requirements for reaction to fire Class A1 31
8.4.2 Products not deemed to satisfy reaction to fire Class A1 31

9 Type testing of factory made separator systems 31
9.1 General 31
9.2 Prototypes and documentation 31

10 [A1] Evaluation of conformity [A1] 34
10.1 General 34
10.2 Factory production control 34

Annex A (normative) Analysis of effluent samples 35
A.1 General 35
A.2 Infrared spectroscopy method 35
A.2.1 Extraction and preparation of the extract 35
A.2.2 Evaluation 36
A.3 Gas chromatography method 37
A.3.1 General 37
A.3.2 Reagents 37
A.3.3 Interferences 37
A.3.4 Procedure 37
A.3.5 Gas chromatographic analysis 37
A.3.6 Example GC conditions 38
A.3.7 Calibration 38
A.3.8 Calculation of the oil concentration 39

Annex B (normative) Factory production control 40

Annex C (informative) Established methods of calculation and testing 46
C.1 Germany 46
C.2 The Netherlands 46
C.3 France 46
C.4 Austria 47

Annex D (informative) Control by third party (third party control) 48
D.1 General 48
D.2 Procedure of the third party control 48
D.2.1 Factories certified to EN ISO 9001 48
D.2.2 Factories not certified to EN ISO 9001 48
D.3 Report by the third party 49
D.4 Non-conforming products 49

Annex E (informative) Relevant extracts from EC Decision 96/603/EC, as amended 50

Annex ZA (informative) Clauses of this European Standard addressing the provisions of EU Constructions Products Directve 51

Bibliography 55

Foreword

This European Standard has been prepared by Technical Committee CEN /TC 165, "Wastewater engineering", the secretariat of which is held by DIN.

[A1] This document has been prepared under Mandate M/118 "Wastewater engineering products" given to CEN/CENELEC by the European Commission and the European Free Trade Association to allow CE marking under the Construction Products Directive (89/106/EEC).

For relationship with this Directive, see informative Annex ZA, which is an integral part of this standard. [A1]

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 July 2002, and conflicting national standards shall be withdrawn at the latest by December 2002.

This is the first part of the two part standard for separator systems for light liquids. Part 2 of this standard contains the necessary statements on selection of nominal size, installation, operation and maintenance of separator systems for light liquids.

Annexes A and B are normative. The annexes C, D and E are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard : Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Foreword to amendment A1

This document (EN 858-1:2002/A2:2004) has been prepared by Technical Committee CEN /TC 165, "Wastewater engineering", the secretariat of which is held by DIN.

This Amendment to the European Standard EN 858-1:2002 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2005, and conflicting national standards shall be withdrawn at the latest by August 2006.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) .

For relationship with EU Directive(s), see informative Annex ZA, which is integral part of this document.

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

1 Scope

This standard specifies definitions, nominal sizes, principles of design, performance requirements, marking, testing and quality control for separator systems for light liquids.

This standard applies to separator systems for light liquids, where light liquids are separated from waste water by means of gravity and/or coalescence.

This standard does not apply to the treatment of stable emulsions, solutions of light liquids and water, grease and oils of vegetable and animal origin.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ISO 48, *Rubber, vulcanized or thermoplastic – Determination of hardness (hardness between 10 IRHD and 100 IRHD).*

ISO 178, *Plastics – Determination of flexural properties.*

ISO 180, *Plastics – Determination of Izod impact strength.*

ISO 185, *Grey cast iron – Classification.*

ISO 527-2, *Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics.*

ISO 630, *Structural steels – Plates, wide flats, bars, sections and profiles.*

[A1] ISO 877; *Plastics – Methods of exposure to direct weathering, to weathering using glass-filtered daylight, and to intensified weathering by daylight using Fresnel mirrors.* [A1]

ISO 1083, *Spheroidal graphite cast iron – Classification.*

ISO 1133, *Plastics – Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics.*

ISO 1183, *Plastics – Methods for determining the density and relative density of non-cellular plastics.*

ISO 1518, *Paints and varnishes – Scratch test.*

ISO 1817, *Rubber, vulcanized – Determination of the effect of liquids.*

ISO 1920, *Concrete tests – Dimensions, tolerances and applicability of test specimens.*

ISO 2409, *Paints and varnishes – Cross-cut test.*

ISO 2736-1, *Concrete tests – Test specimens – Part 1: Sampling of fresh concrete.*

ISO 2736-2, *Concrete tests – Test specimens – Part 2: Making and curing of test specimens for strength tests.*

ISO 2808, *Paints and varnishes – Determination of film thickness.*

ISO 2812-1, *Paints and varnishes – Determination of resistance to liquids – Part 1: General methods.*

ISO 2812-2, *Paints and varnishes, determination of resistance to liquids, Part 2 : water immersion method.*

ISO 2815, *Paints and varnishes – Buchholz indentation test.*

ISO 3755, *Cast carbon steels for general engineering purposes.*

ISO 4012, *Concrete – Determination of compressive strength of test specimens.*

ISO 4624, *Paints and varnishes – Pull-off test for adhesion.*

ISO 4628-2, *Paints and varnishes – Evaluation of degradation of paint coatings – Designation of intensity, quantity and size of common types of defects – Part 2: Designation of degree of blistering.*

ISO 4628-3, *Paints and varnishes – Evaluation of degradation of paint coatings – Designation of intensity, quantity and size of common types of defects – Part 3: Designation of degree of rusting.*

ISO 6272, *Paints and varnishes – Falling-weight test.*

ISO 7253, *Paints and varnishes – Determination of resistance to neutral salt spray (fog).*

ISO 8217, *Petroleum products – Fuels (class F) – Specifications of marine fuels.*

ISO 8501-1, *Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 1: Rust grade and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.*

[A1] *Text deleted* [A1]

EN 61, *Glass reinforced plastics – Determination of tensible properties.*

EN 62, *Glass reinforced plastics – Standard atmospheres for conditioning and testing.*

EN 63, *Glass reinforced plastics– Determination of flexural properties – Three point method.*

EN 124:1994, *Gully tops and manhole tops for vehicular and pedestrian areas – Design requirements, type testing, marking, quality control.*

[A1] EN 206-1:2001, *Concrete — Part 1: Specification, performance, production and conformity*. [A1]

EN 228, *Automotive fuels – Unleaded petrol – Requirements and test methods.*

EN 288-1, *Specification and approval of welding procedures for metallic materials – Part 1: General rules for fusion welding.*

EN 288-2, *Specification and approval of welding procedures for metallic materials – Part 2: Welding procedure specification for arc welding.*

EN 288-3, *Specification and approval of welding procedures for metallic materials – Part 3: Welding procedure tests for the arc welding of steels.*

EN 476, *General requirements for components used in discharge pipes, drains and sewers for gravity systems.*

EN 681-1, *Elastomeric seals – Materials requirements for pipe joint seals used in water and drainage applications – Part 1: Vulcanized rubber.*

[A1] EN 682, *Elastomeric seals – Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids*. [A1]

EN 976-1:1997, *Underground tanks of glass-reinforced plastics (GRP) – Horizontal cylindrical tanks for the non-pressure storage of liquid petroleum based fuels – Part 1: Requirements and test methods for single wall tanks.*

EN 978, *Underground tanks of glass-reinforced plastics (GRP) – Determination of factor α and factor β.*

ENV 10080, *Steel for the reinforcement of concrete – Weldable ribbed reinforcing steel B 500 – Technical delivery conditions for bars, coils and welded fabric.*

EN 10088-1, *Stainless steels – Part 1: List of stainless steels.*

EN 10088-2, *Stainless steels – Part 2: Technical delivery conditions for sheet/plate and strip for general purposes.*

EN 10088-3, Stainless steels – Part 3: Technical delivery conditions for semi-finished products, bars, rods and sections for general purposes.

[A1] EN 13501-1, *Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests.* [A1]

[A1] EN ISO 1172, *Textile-glass-reinforced plastics — Prepegs, moulding compounds and laminates — Determination of the textile-glass and mineral-filler content — Calcination methods (ISO 1172:1996).* [A1]

EN ISO 1514, *Paints and varnishes – Standard panels for testing (ISO 1514:1993).*

[A1] EN ISO 9377-2, *Water quality — Determination of hydrocarbon oil index — Part 2: Method using solvent extraction and gas chromatography (ISO 9377-2:2000).* [A1]

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1
light liquid
liquid with a density no greater than 0,95 g/cm^3, which is actually or practically insoluble and unsaponifiable

3.2
separator system
arrangement comprising a separator (class I, class II), a sludge trap and a sampling point

3.3
sludge trap
part of the separator system where material settles, i. e. sludge, silt and grit, and which can be a separate unit or constructed with the separator as a combined unit

3.4
separator (class I, class II)
part of the separator system, which separates light liquid from waste water and retains the light liquid

3.5
sampling point
part of the separator system situated downstream of the separation process where samples can be taken of the waste water discharged from the separator

3.6
extension shaft
component used to extend an opening in the separator system to finished level for inspection and maintenance purposes

3.7
nominal size (NS)
number, without units, approximately equivalent to the maximum effluent flow in litres per second from the separator when tested in accordance with 8.3.3

3.8
separating zone
zone, in which light liquid is separated from waste water in the separator

3.9
storage capacity for light liquids
volume of separated light liquid, which can be held in the separator without the stored light liquid entering the inlet or outlet of the separator

3.10
automatic closure device
mechanism, operated by the accumulated light liquid, which prevents discharge of the light liquid from the separator

3.11
maximum operational liquid level
highest level of liquid at the flow, corresponding to the nominal size and after reaching the storage capacity for light liquids

3.12
automatic warning device
device to warn of excessive depth of light liquid or waste water or low level condition

3.13
bypass separator
separator with a device, which allows a flow in excess of the maximum permissible effluent flow to bypass the separator

3.14
coating/lining
a protective layer on a separator component

4 Classes of separators

There are two classes of separators as shown in table 1.

Table 1 — Classes of separators

Class	Maximum permissible content of residual oil[a] mg/l	Typical separating technique (for example)
I	5,0	Coalescing separators
II	100	Gravity separators
[a] When tested in accordance with 8.3.3.1 and samples being analysed for their hydrocarbon content using infrared spectroscopy in accordance with A.2 and A.3.		

5 Nominal sizes

The preferred nominal sizes of separator systems for light liquids are: 1,5, 3, 6, 10, 15, 20, 30, 40, 50, 65, 80, 100, 125, 150, 200, 300, 400 and 500.

6 Requirements

6.1 General

[A1] Separator systems for light liquids and their separate components shall be in accordance with the material requirements specified in 6.2. [A1]

6.2 Materials

6.2.1 General

Separator systems may be constructed from:

— unreinforced concrete, fibre-reinforced concrete, reinforced concrete;

— metallic materials: cast iron, stainless steel, steel;

— plastics materials: glass fibre reinforced plastics, polyethylene.

[A1] Any other materials used in the construction of a separator system shall meet all the relevant requirements of this document. [A1]

6.2.2 Concrete

[A1] The concrete shall comply with the minimum compressive strength class C 35/45 in accordance with Clause 4.3.1 of EN 206-1:2001. [A1]

6.2.3 Metallic materials

a) The production, quality and testing of the metallic materials listed below shall be in accordance with the following standards:

Flake graphite cast iron	ISO 185	Reinforcing steel	ENV 10080
Spheroidal graphite cast iron	ISO 1083		
Cast steel	ISO 3755		
Rolled steel	ISO 630	Stainless steel	EN 10088-1
			EN 10088-2
			EN 10088-3

b) Additional requirements for metallic materials

Stainless steel

For good general corrosion resistance and stability against intercrystalline corrosion effects of the various steels listed in the EN 10088-1, EN 10088-2 and EN 10088-3, only austenitic steels minimum quality X6 CrNi 1810 shall be used.

Welding of steel

The requirements given in EN 288-1, EN 288-2 and EN 288-3 shall apply

6.2.4 Plastic materials

a) Glass fibre reinforced plastics

The laminate shall be constructed using resins, reinforcement materials, processing agents and other materials in accordance with EN 976-1:1997, clause 3.

b) Polyethylene

1) The requirements for moulding and fabricating polyethylene are as follows:

Polyethylene for rotational moulding:

— Density shall not be less than 935 kg/m^3 when measured in accordance with ISO 1183.

— Melt mass-flow rate, under a nominal load of 21,6 N and at a temperature of 190 °C, shall be between 1,0 g/10 min and 5,0 g/10 min, measured in accordance with ISO 1133.

Polyethylene for blow moulding:

— Density shall not be less than 945 kg/m^3 when measured in accordance with ISO 1183.

— Melt mass-flow rate, under a nominal load of 50 N and at a temperature of 190 °C, shall be between 0,3 g/10 min and 1,0 g/10 min, measured in accordance with ISO 1133.

Polyethylene for injection moulding:

— Density shall not be less than 945 kg/m^3 when measured in accordance with ISO 1183.

— Melt mass-flow rate, under a nominal load of 50 N and at a temperature of 190 °C, shall be between 0,3 g/10 min and 1,0 g/10 min, measured in accordance with ISO 1133.

Polyethylene for buttweld-sheet assembly:

— Density shall not be less than 950 kg/m^3 when measured in accordance with ISO 1183.

— Melt mass-flow rate, under a nominal load of 50 N and at a temperature of 190 °C, shall be between 0,3 g/10 min and 1,0 g/10 min, measured in accordance with ISO 1133.

2) Additional requirements

Tensile strength:

— The tensile properties, when determined in accordance with ISO 527-2 (using a testing speed of 100 mm/min) shall be as follows:

Polyethylene for rotational moulding:

— Tensile stress at yield shall be greater than 15 MPa.

— Tensile strain at yield shall be less than 25 %.

— Tensile strain at break shall be greater than 200 %.

Polyethylene for blow moulding, injection moulding and buttweld-sheet assembly:

— Tensile stress at yield shall be greater than 21 MPa.

— Tensile strain at yield shall be less than 25 %.

— Tensile strain at break shall be greater than 200 %.

U.V. stability:

— [A1] When exposed to U.V. radiation of 3,5 GJ/ (m^2·a) in accordance with ISO 877, the mechanical properties shall not decrease more than 50 %. [/A1]

6.2.5 Sealing materials

For separator systems, only elastomers (rubber) or permanent elastic sealing materials shall be used. Cement mortar and similar sealing cements or compounds shall not be used.

Rubber seals shall comply with the requirements of EN 681-1, type WC, and their hardness for joints shall not be less than 40 IRHD in accordance with ISO 48.

[A1] Elastomeric seals in continuous contact with wastewater and/or light liquid shall comply with the requirements of EN 682, Type GB. [/A1]

6.2.6 Coatings/linings

6.2.6.1 General

If there are coating/lining applied to the surfaces of the separator system for protection against the effects of the influent (for internal surfaces), and ground conditions (for external surfaces), they shall be in accordance with the following requirements.

6.2.6.2 Technical documentation

The supplier of the coating materials shall provide full technical documentation to ensure that:

a) the complete and correct identification and application of the material supplied, and

b) the possibility and limitations of a repair to the coating

are determined.

6.2.6.3 Preparation, application and curing

6.2.6.3.1 Surface preparation

Rolled steel surfaces shall be grit blasted to achieve a degree of cleanliness of at least Sa 2,5 and the roughness profile, *Ra*, shall be between 10 µm and 20 µm in accordance with ISO 8501-1.

Concrete surfaces shall be rough, clean and free from cement skin prior to coating. This can be achieved by grit blasting with non-metallic abrasives, flame blasting or by using pressurized water devices.

6.2.6.3.2 Application and curing

The application and curing shall be carried out in accordance with the supplier's written instructions.

6.2.6.4 Properties

a) Dry film thickness – to be stated by the manufacturer of the separator system.

b) Adhesion – at least 6 N/mm^2 on steel and at least 2 N/mm^2 on concrete in accordance with ISO 4624.

c) Impact resistance – at least 4 Nm in accordance with ISO 6272.

d) Scratch resistance – at least 50 N in accordance with ISO 1518.

e) Porosity – the coating shall have no pores when tested in accordance with 8.1.3.2.5.

6.2.7 Chemical resistance

6.2.7.1 Internal surface

6.2.7.1.1 General

All materials referred to in 6.2 in contact with the influent shall be resistant to mineral oils, fuels (i. e. diesel oil), petrol, gasoline, detergents and their decomposing products or protected accordingly. When tested in accordance with 8.1.4 the following requirements shall be met.

6.2.7.1.2 Concrete

[A1] When uncoated and/or coated concrete is tested in accordance with 8.1.4.1, it shall comply with the requirements given in 6.2.2. [A1]

6.2.7.1.3 Plastics materials

The test specimens from the test in 8.1.4.2 shall retain the following tensile strength, flexural strength, modulas and Izod impact resistance when compared with the control specimen:

— at least 80 % for glass reinforced plastics;

— at least 70 % for polyethylene

6.2.7.1.4 Sealing materials

[A1] When sealing materials others than those in 6.2.5 tested in accordance with 8.1.4.3, the test pieces shall not show any signs which may affect their fitness for use. [A1]

6.2.7.1.5 Coatings

When tested in accordance with 8.1.4.4 the following requirements shall be met:

— Degree of blistering : not worse than degree 2, class 2 gradation in accordance with ISO 4628-2.

— Degree of rusting : Re 0 in accordance with ISO 4628-3.

— Width of coating detachment : not greater than 1 mm along the surface scratch in accordance with ISO 1518.

— Degree of Buchholz : not more than 25 % indentation in accordance with ISO 2815.

6.2.7.2 External surfaces for underground conditions

When external coatings are required to steel or concrete and tested in accordance with 8.1.5 the following requirements shall be met:

— Degree of blistering : not worse than degree 2, class 2 gradation in accordance with ISO 4628-2.

— Degree of rusting : Re 0 in accordance with ISO 4628-3

— Width of coating detachment : not greater than 1 mm along the surface scratch in accordance with ISO 1518.

[A1]

6.2.8 Reaction to fire

Where subject to regulatory requirements, the reaction to fire of separator systems for light liquids shall be declared in accordance with the provisions of 8.4.

NOTE It is recommended that the National Foreword (or a National Annex) to this document states whether regulation for reaction to fire of wastewater engineering products exist in that country. [A1]

6.3 Design requirements

6.3.1 Area of the separator or sludge trap

The area up to 40 mm above the maximum operational liquid level shall be considered as part of the separator or sludge trap.

6.3.2 Watertightness of components

All components of a separator system (including joints, seals, connections and partitions) shall be watertight and the separator system including extension shafts shall be tested in accordance with 8.2.

6.3.3 Accessibility

The separator system including the inlet and outlet areas of the sludge trap and separator shall be accessible for maintenance and inspection. Extension shafts and access openings shall be provided to allow the removal of light liquids and any settled material. Their dimensions shall comply with the requirements for manholes and inspection chambers as given in EN 476.

On separator equal to or greater than NS 10 there shall be at least one access point in compliance with clause 7.3 of EN 124:1994.

6.3.4 Water seals

Water seals shall be provided at the inlet and outlet of the separator. The depth of the water seal shall be a minimum of 100 mm.

Where the separator and sludge trap are combined, the inlet seal may be provided either at the sludge trap or at the separator.

6.3.5 Pipes and pipe joints

The minimum nominal diameters DN_{min} of the inlet(s) and outlet(s) for the separator system shall be selected from table 2 and compatible with standardized pipe systems.

Table 2 — Pipe minimum nominal diametersDN_{min}

Nominal size		DN_{min} [a]
up to and including NS 3		100
Over NS 3	up to and including NS 6	125
Over NS 6	up to and including NS 10	150
Over NS 10	up to and including NS 20	200
Over NS 20	up to and including NS 30	250
Over NS 30	up to and including NS 100	300
Over NS 100		400
[a] The nominal diameter can apply to either the internal or external pipe diameter.		

Provision shall be made for possible ground movement and settlement when joining inlet, outlet and connection pipes.

6.3.6 Internal components

Provision shall be made for cleaning the internal components using pressurized air or water. Parts which need to be removed for maintenance shall be accessible and easily removed. Any oil retained in the separator system shall be prevented from entering the outlet pipe.

6.3.7 Sludge traps

Sludge traps shall be constructed with a flow-control device at the inlet to reduce the inflow velocity and provide a uniform flow pattern. This device shall be designed to avoid short circuits and allow sediments to settle.

6.3.8 Access covers

Access covers shall be in accordance with EN 124. Access covers with ventilation openings or those which can be bolted down, are not permitted.

6.4 Structural stability

6.4.1 General

The separator system shall be designed to withstand the various loadings to which they are expected to be subjected (dead loads, live loads, soil pressure, water pressure) without detriment to their function and to the environment and be protected against possible floating when empty.

The structural stability shall be based on national standards, transposing European Standards as available, or in the absence of those is based on established national procedures and/or regulations for calculation or testing valid in the place of use of separator.

NOTE Annex C lists documents which can be used in the framework of this clause and which will remain valid until replaced by European Standards.

6.4.2 Separator systems made of unreinforced concrete, fibre-reinforced concrete, reinforced concrete

The crack width under design load shall not be greater than 0,20 mm for reinforced concrete.

When steel reinforcement is used, the concrete cover to the steel shall not be less than 20 mm on all sides for prefabricated units, and not less than 30 mm on all sides for units built in-situ.

6.4.3 Separator systems made of glass fibre-reinforced plastics

Under the design load the laminate shall not be strained beyond 0,26 % or 1,3 Ed, whichever is smaller, where Ed is the least strain determined from allowable loadings and the resin properties. The strain level shall be determined by calculation. For general and local stability the separator shall withstand the negative pressure tests in accordance with EN 976-1:1997, clauses 5.8.2.2 and 5.8.3, where the separator system is installed at a minimum depth of 650 mm and a maximum depth of 2000 mm.

6.5 Functional requirements

6.5.1 General

The design of the separator system shall ensure that separated light liquid cannot be discharged either accidentally or in an uncontrolled way, e. g. by syphoning. The design shall also ensure that any separated and retained light liquid is not disturbed.

Where automatic or manual oil skimming devices are fitted they shall not interfere with the separating effect.

6.5.2 Storage capacity for light liquids

For prefabricated separator systems, the separated light liquid storage capacity shall be at least ten times the nominal size in litres where automatic closure devices are fitted, and at least fifteen times the nominal size in litres where automatic closure devices are not fitted. These capacities shall be based on a light liquid density of 0,85 g/cm^3.

6.5.3 Automatic closure devices

Separator systems shall be provided with automatic closure devices.

NOTE Local authorities may allow the use of separator systems without automatic closure devices.

Automatic closure devices shall provide effective operation. The closure shall be operated by the accumulated light liquid. Changes in flow rate shall be taken into consideration.

Automatic closure devices shall be easily maintained. Where closure devices are operated by floats they shall be easily removable and adjustable, and shall be calibrated for light liquids with a density of 0,85 g/cm^3 or 0,90 g/cm^3 or 0,95 g/cm^3.

When tested in accordance with 8.3.2 the leakage shall not exceed 100 NS of the separator, in millilitres, during a period of 15 min.

Unauthorised removal of the automatic closure device shall be prevented.

6.5.4 Automatic warning devices and additional devices

Separator systems shall be provided with automatic warning devices.

NOTE Local authorities may allow the use of separators without automatic warning devices.

6.5.5 Separators with a bypass device

Where a bypass device is incorporated in a separator system the separator itself shall meet the requirements and tests provided in this standard. The maximum flow rate of the separator related to its nominal size shall not be exceeded.

NOTE The characteristics of the bypass device itself are not covered by this standard.

6.5.6 Determination of the nominal size and class

6.5.6.1 Prefabricated separators

The nominal size and class of prefabricated separators shall be determined by their performance when tested in accordance with 8.3.3.1.

NOTE Prefabricated separators are those which are in whole, or in finished parts, produced in the manufacturers' workshop.

6.5.6.2 Separators built in-situ

Separators built in-situ according to this standard are only permissible in nominal sizes equal to or greater than NS 150 and their use is subject to the approval of local authorities. When tested in accordance with clause 8 they shall comply with the requirements given in clauses 6 and 7.

〚A1〛 The nominal size shall be determined 〈A1〉 as follows:

a) by testing in accordance with 8.3.3.1 against models having identical dimensions, components, design and construction characteristics;

b) by constructing the separator system in accordance with the following guidelines:

The ratio of the width to length of the separator shall be between 1:1,5 and 1:5. The distance between the bottom of the separator and the scumboard or the outlet pipe should be 20 % of the water depth H.

The minimum depth H_{min} of water shall be 2,5 m including a depth of 0,15 m for the light liquid storage and a depth of 0,35 m for possible sediment collection.

From the nominal size NS the minimum surface area A_{min}, the minimum total volume V_{min} and the minimum light liquid storage volume $V_{1\,min}$ can be calculated as follows:

Water surface, m^2: A_{min} = 0,2 x NS

Total volume, m^3 : V_{min} = H x A = 0,5 x NS

Light liquid storage volume, m^3 : $V_{1\,min}$ = 0,03 x NS

The calculated values for the nominal sizes NS as well as the minimum nominal diameters DN_{min} of the inlet and outlet pipes are given in table 3. These separators are considered to be class II only.

Table 3 — Sizing of separators built in-situ

Minimum water surface area of separator A_{min} m^2	Minimum total volume V_{min} m^3	Minimum volume of light liquid storage chamber $V_{1\,min}$ m^3	Minimum diameter of inlet and outlet pipes DN_{min}	Nominal size NS
30	75	4,5	400	150
40	100	6,0	400	200
60	150	9,0	500	300
80	200	12,0	500	400
100	250	15,0	600	500

6.6 Marking

6.6.1 Separator systems

The covers of separator systems shall be marked with "Separator", together with the class of cover in accordance with EN 124. Furthermore, nameplates in a durable material e. g. stainless steel, shall be fixed to the separators in a clearly visible position, if possible on the inside.

If a separator and sludge trap are combined, a nameplate on the entrance to the separator manhole, or, on exposed installations, on the separator itself is acceptable. If a separator and sludge trap are separate units a nameplate for each is recommended.

The nameplate shall contain the following information:

— EN 858;

— class (I or II);

— nominal size (NS);

— volume of the separator, in l or m^3;

— volume of the sludge trap, in l or m^3;

— storage capacity for light liquids, in l or m^3;

— depth of maximum storage quantity, in mm;

— year of manufacture;

— manufacturer's name or mark;

— mark of a certification body, where applicable.

[A1] Further marking may be added. Where ZA.3 covers the same information as this Clause, the requirements of this Clause are met. [A1]

6.6.2 Automatic closure devices, automatic warning devices

Float operated automatic closure devices shall be marked with the appropriate light liquid density for which they are designed. Density markings can be 0,85 or 0,90 or 0,95.

Warning devices shall be marked to indicate that they have been approved for use in hazardous areas.

7 Manufacturer's product information

The manufacturer shall supply all the appropriate information concerning the use of the separator system supplied, e. g. handling, transport, temporary storage and instructions for installation, operation and maintenance.

8 Test methods

8.1 Materials

8.1.1 Concrete

Testing shall be carried out in accordance with ISO 4012, ISO 1920, ISO 2736-1 and ISO 2736-2. The results shall meet the requirements of 6.2.2.

8.1.2 Plastics materials

8.1.2.1 Testing

a) Glass reinforced plastics:

Testing shall be carried out in accordance with [A1] EN ISO 1172 [A1], EN 61, EN 63, ISO 180, EN 976-1 and EN 978. The results shall meet the requirements given in 6.2.4 a) and 6.4.3.

b) Polyethylene:

Testing shall be carried out in accordance with ISO 180, ISO 527-2, ISO 1133, ISO 1183 and ISO 877. The results shall meet the requirements given in 6.2.4 b).

8.1.2.2 Test specimen

a) Glass reinforced plastics:

The test specimen shall be prepared in accordance with EN 61 and EN 63. Each test specimen shall be fully encapsulated in the surface resin used to produce the separator.

b) Polyethylene:

Polyethylene test specimens prepared from identical material used to produce the separator shall be used. All test specimens shall all be cut to the same size and shape as specified in ISO 180 and ISO 527-2.

8.1.3 Coatings

8.1.3.1 Preparation, application and curing

Compliance with the requirements stated in 6.2.6.3 shall be checked by visual inspection.

The grade of cleanliness and the surface profile of steel substrates shall be tested in accordance with ISO 8501-1.

8.1.3.2 Properties

8.1.3.2.1 Dry film thickness

The dry film thickness shall be determined in accordance with ISO 2808 and the results shall be in accordance with 6.2.6.4 a).

For coatings on steel substrates a non-destructive test shall be applied using a film thickness gauge, e.g. magneto-inductive, with an accuracy of at least 10 µm.

For coatings on concrete substrates, a destructive test shall be used, e. g. a dial thickness gauge.

8.1.3.2.2 Adhesion

The adhesion shall be determined by the pull-off test in accordance with ISO 4624 and the results shall be in accordance with 6.2.6.4 b).

Where physical constraints prevent the pull-off test being carried out on finished products, this test may be replaced by the cross-cut test in accordance with ISO 2409, using glass test pieces. The result shall meet, at least, class I of ISO 2409.

8.1.3.2.3 Impact resistance

The impact resistance shall be determined by the falling weight test in accordance with ISO 6272 using a ball with a diameter of 15,9 mm and the results shall be in accordance with 6.2.6.4 c).

8.1.3.2.4 Scratch resistance

The scratch resistance shall be determined in accordance with ISO 1518 and the results shall be in accordance with 6.2.6.4 d).

8.1.3.2.5 Porosity

The porosity shall be determined in accordance with the following spark test:

The surface shall be dry for this test. Use spark apparatus with an adjustable voltage. Adjust the spark length to twice the established thickness of the coating and apply 600 V per 100 µm of dry film thickness. Move the electrode slowly over the entire surface of the coating. No spark shall appear in order to meet the requirements in 6.2.6.4 e).

If the coating contains conducting pigments, and has been applied to a steel substrate, the spark test may be replaced by the following resistivity test:

Use test apparatus consisting of a micro-ampere meter connected in series with a potentiometer and a 90 V battery. Connect the ampere meter to a small sponge. To increase the conductivity and penetrating capacity, moisten the sponge with a mixture of the following:

1 part by volume– 25 % (m/m) ammonia

5 parts by volume – 96 % (m/m) ethanol

94 parts by volume – distilled water

Connect the battery, using an elastic wire with a clamp, to the surface of the steel substrate. Move the sponge slowly over the entire surface of the coating. No deflection of the ampere meter needle shall appear in order to meet the requirements in 6.2.6.4 e).

8.1.6.2.6 Test specimens

Hot rolled steel test specimens 200 mm x 100 mm x 4 mm in accordance with EN ISO 1514 and/or concrete test specimens 200 mm x 200 mm x 200 mm having a compressive strength as prescribed in 6.2.2 shall be used, to which the coating system is applied.

8.1.4 Chemical resistance of internal surfaces

8.1.4.1 General

Chemical resistance shall be checked by immersing three test specimens in the following four test liquids:

— demineralised water kept at (40 ± 2) °C;

— fuel oil in accordance with ISO 8217, designation ISO-F-DMA, kept at (23 ± 2) °C;

— unleaded fuel in accordance with EN 228 kept at (23 ± 2) °C;

— a mixture kept at (40 ± 2) °C, as follows:

  — 90 % (m/m) demineralised water;

  — 0,75 % (m/m) sodium hydroxide;

  — 3,75 % (m/m) sodium orthophosphate;

  — 0,50 % (m/m) sodium silicate;

  — 3,25 % (m/m) sodium carbonate;

  — 1,75 % (m/m) sodium metaphosphate.

Each test shall have a duration of 1 000 h. After the immersion tests, the test specimens shall be rinsed with water, dried in air at (20 ± 3) °C for 24 h then checked for compliance with the requirements in 6.2.7.1.

8.1.4.2 Plastics materials and linings

Prepare test specimens in accordance with 8.1.2.2.

Three test specimens of each material type shall be used for each of the four immersion tests described in 8.1.4.1. A fourth test specimen for each test shall be stored in a standard conditioning atmosphere in accordance with EN 62, and shall serve as a control specimen.

After the tests the tensile strength, flexural strength and modulas and Izod impact resistance of every test specimen shall be determined in accordance with EN 61, EN 63 and ISO 180 for glass reinforced plastics, and ISO 178, ISO 180 and ISO 527-2 for polyethylene.

The results shall meet the requirements in 6.2.7.1.3.

8.1.4.3 Sealing materials

Sealing materials shall be tested in each of the four immersion tests described in 8.1.4.1 and the effect determined in accordance with ISO 1817. The results shall meet the requirements in 6.2.7.1.4.

8.1.4.4 Coatings

Prepare test specimens in accordance with 8.1.3.2.6 and determine the dry film thickness, porosity and Buchholz indentation.

Three test specimens of each material type shall be used for each of the four immersion tests described in 8.1.4.1. In these tests a scratch shall be made into the coating, passing through to the steel or concrete surface, in one of the test specimens.

The effect on the coating shall be determined in accordance with ISO 2812-1.

The results shall meet the requirements in 6.2.7.1.5.

8.1.5 Chemical resistance of external coatings

Prepare test specimens in accordance with 8.1.3.2.6 and determine the dry film thickness and porosity.

Three test specimens of each material type shall be used for each test which is to determine the resistance to water in accordance with ISO 2812-2 (for coatings on steel or concrete substrates), and neutral salt spray in accordance with ISO 7253 (for coatings on steel substrates only). In these tests a scratch shall be made into the coating, passing through to the steel or concrete surface, in one of the test specimens.

Each test shall have a duration of 1 000 h. After the immersion tests, the test specimens shall be rinsed with water, dried in air at (20 ± 3) °C for 24 h then checked for compliance with the requirements in 6.2.7.2.

8.2 Watertighness of system components

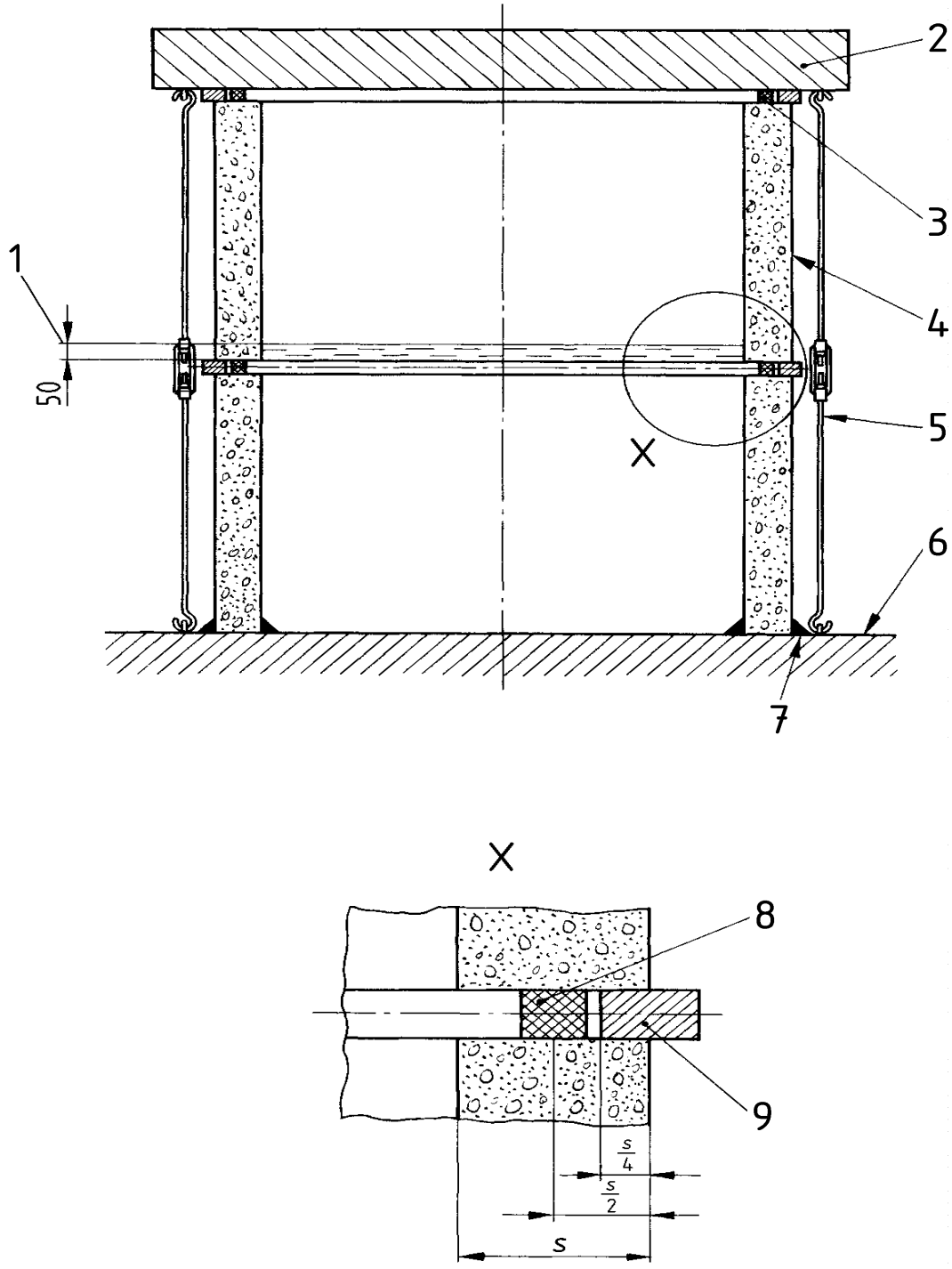
Watertightness of finished system components shall be tested by filling with water up to 40 mm above the maximum operational liquid level for at least 20 min. There shall be no leaks.

In addition, chambers which have assembly joints i. e. those which can be dismantled, and where dissimilar materials are connected, shall be tested as follows:

The test apparatus shall be constructed in accordance with figure 1 using identical materials, coatings and joint seals as those manufactured for the separator system. The assembled test apparatus shall be closed, filled with water and subjected to a water pressure of 0,5 bar for a minimum period of 2 h. There shall be no leaks.

This test shall also be applied to joints between chambers and shafts and extensions shafts.

Dimensions in millimetres



Key

1	Water level min.	6	Base
2	Covering	7	Cement, cement mortar or other appropriate compound
3	Joint sealing	8	Joint sealing
4	Wall equivalent to that of the product manufactured	9	Spacers uniformly distributed around the circumference
5	Tensioning device		

Figure 1 — Example of a test assembly for testing watertightness in accordance with 8.2

8.3 Functional requirements

8.3.1 Storage capacity for light liquid

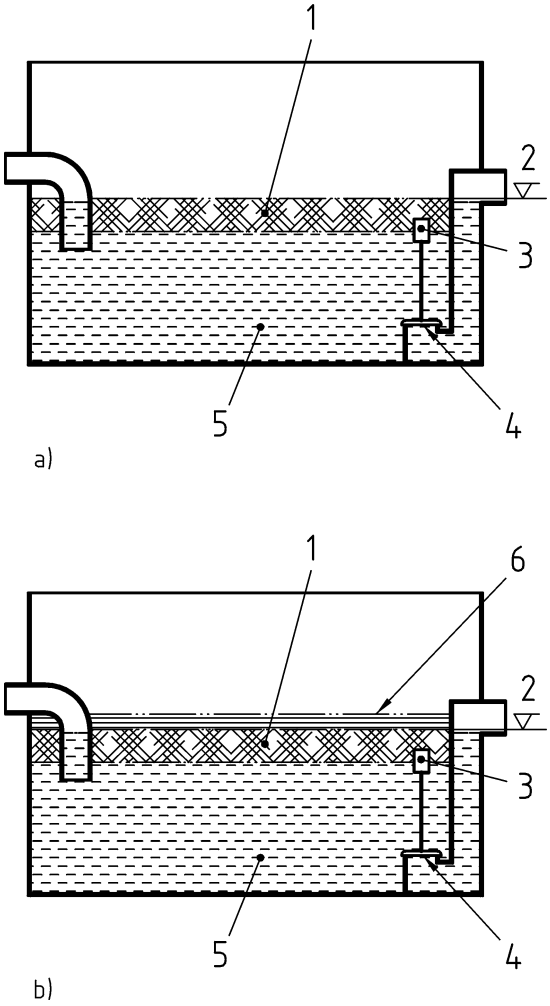
For the test to determine the storage capacity for light liquid see 8.3.3.1.3. The results shall be in accordance with 6.5.2.

8.3.2 Automatic closure device

A tightness test for automatic closure devices shall be carried out using a light liquid with a density of 0,85 g/cm^3 or 0,90 g/cm^3 or 0,95 g/cm^3. During the test light liquid is added to the tank until the device closes. The height of the accumulated light liquid shall be measured and shall comply with the drawings. A pressure difference of 0,01 bar shall be applied between the inlet and outlet of the separator in accordance with figure 2 and the leakage determined.

The results shall be in accordance with 6.5.3.

This test may be carried out during the test to determine the nominal size of the separator, where closure devices are calibrated for a light liquid density of 0,85 g/cm^3, or in a separate tank.



Key

a) Maximum storage capacity

b) Testing with additional light liquid

1 Light liquid

2 Reference level H_0 at closure of the automatic closure device

3 Float

4 Automatic closure device (e. g. operated by floats)

5 Water

6 Liquid level H_1 after adding a layer of $(H_1\text{-}H_0)\approx 100/\gamma$ of light liquid, where γ is the density of the light liquid

Figure 2 — Example for testing the tightness of automatic closure device in accordance with 8.3.2

8.3.3 Determination of the nominal size and class

8.3.3.1 Prefabricated separators

[A1]

8.3.3.1.1 General [A1]

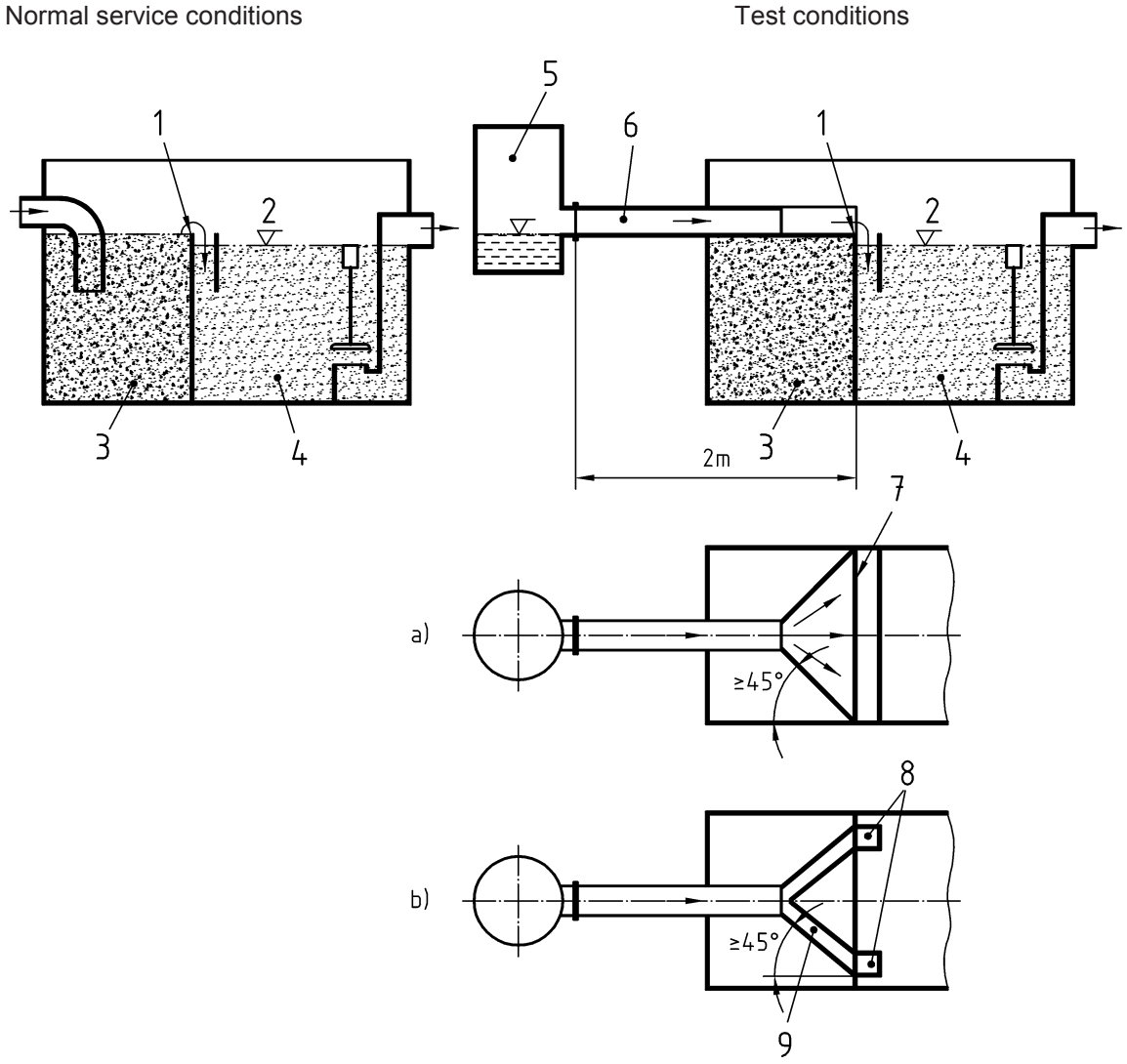
The nominal size and corresponding class of each type of separator (see clauses 4 and 5) are determined under test conditions.

For the test, a model separator made from different materials than the actual product may be used provided that all dimensions, which may influence the hydraulics, fully conform with those of the actual product.

Only the separator shall be tested, therefore, separators with combined sludge traps shall have the sludge trap volume excluded. Where

— the sludge trap is combined and in line with the separator, the volume of the sludge trap shall be excluded by using a supply pipe or pipes across or through the sludge trap as shown in figure 3a);

— the sludge trap is combined and below the static water level of the separator, the volume of the sludge trap shall be filled with an inert and impermeable material having a smooth surface as shown in figure 3b).



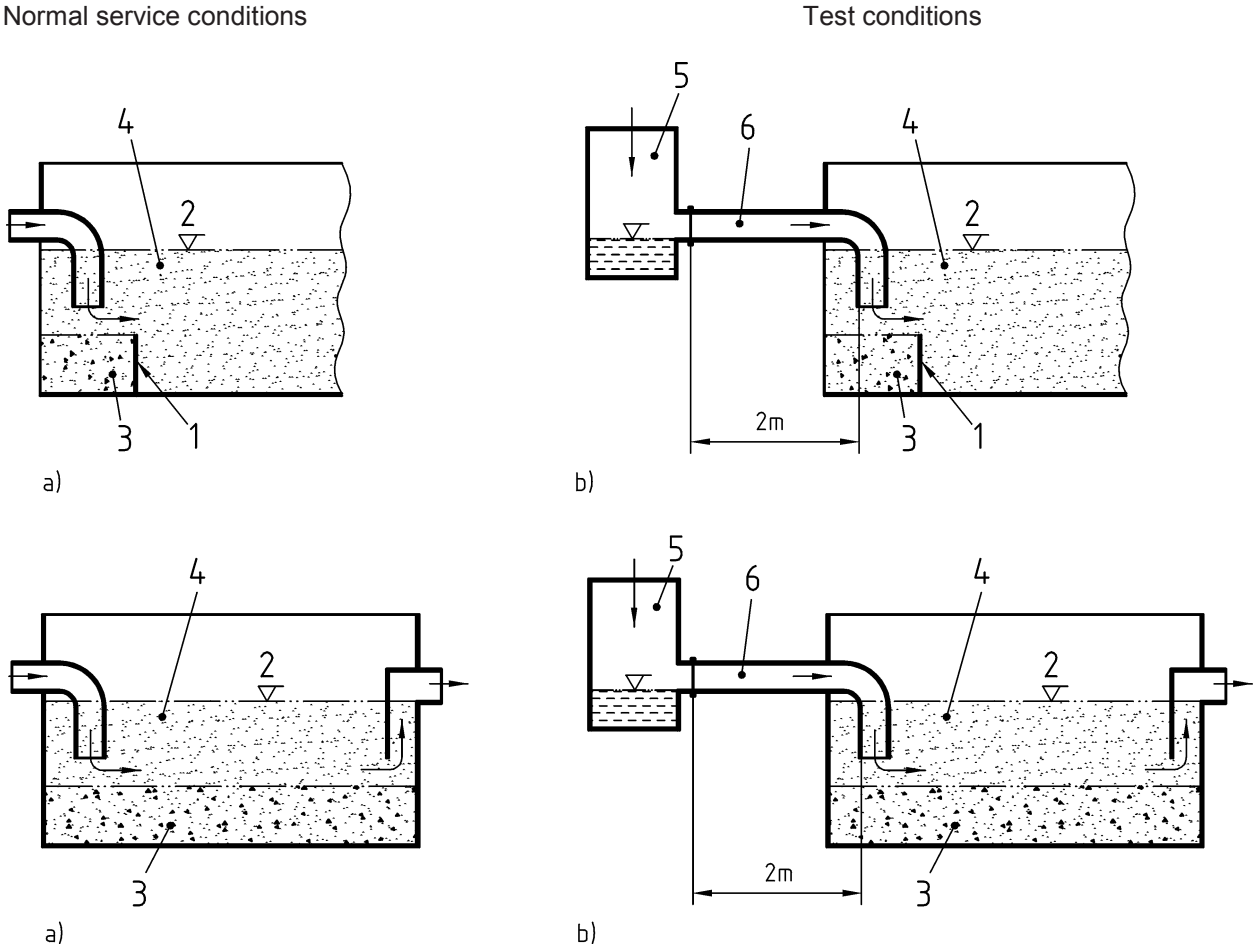
Key

a)	Supply from sludge trap to separator over a weir	1	Scum board	6	[A1] Supply pipe, inclined at (2 ± 0,5) % [A1]
		2	Static water level	7	Weir
b)	Supply from sludge trap to separator by means of e. g. two inlet openings	3	Sludge trap	8	Inlet openings
		4	Separator	9	Connecting pipe
		5	Collecting chamber (see figure 4)		

Figure 3a — Sludge trap combined and in line with the separator

Where the flow, under normal service conditions, between the sludge trap and separator is over an open weir, the supply pipe shall be adapted to form an angular flume with sides not less than 45 ° as shown in a). The discharge of the flume shall extend the full width of the weir.

Where the flow, under normal service conditions, between the sludge trap and separator is by more than one pipe/duct, the cross sectional area of the supply pipe shall be equal to the total cross sectional area of the pipes/ducts and constructed as shown in b).



Key

a) Sludge trap volume as indicated by the manufacturer

b) Sludge trap volume to be filled with an inert and impermeable material having a smooth surface

1 Partition

2 Static water level

3 Sludge trap

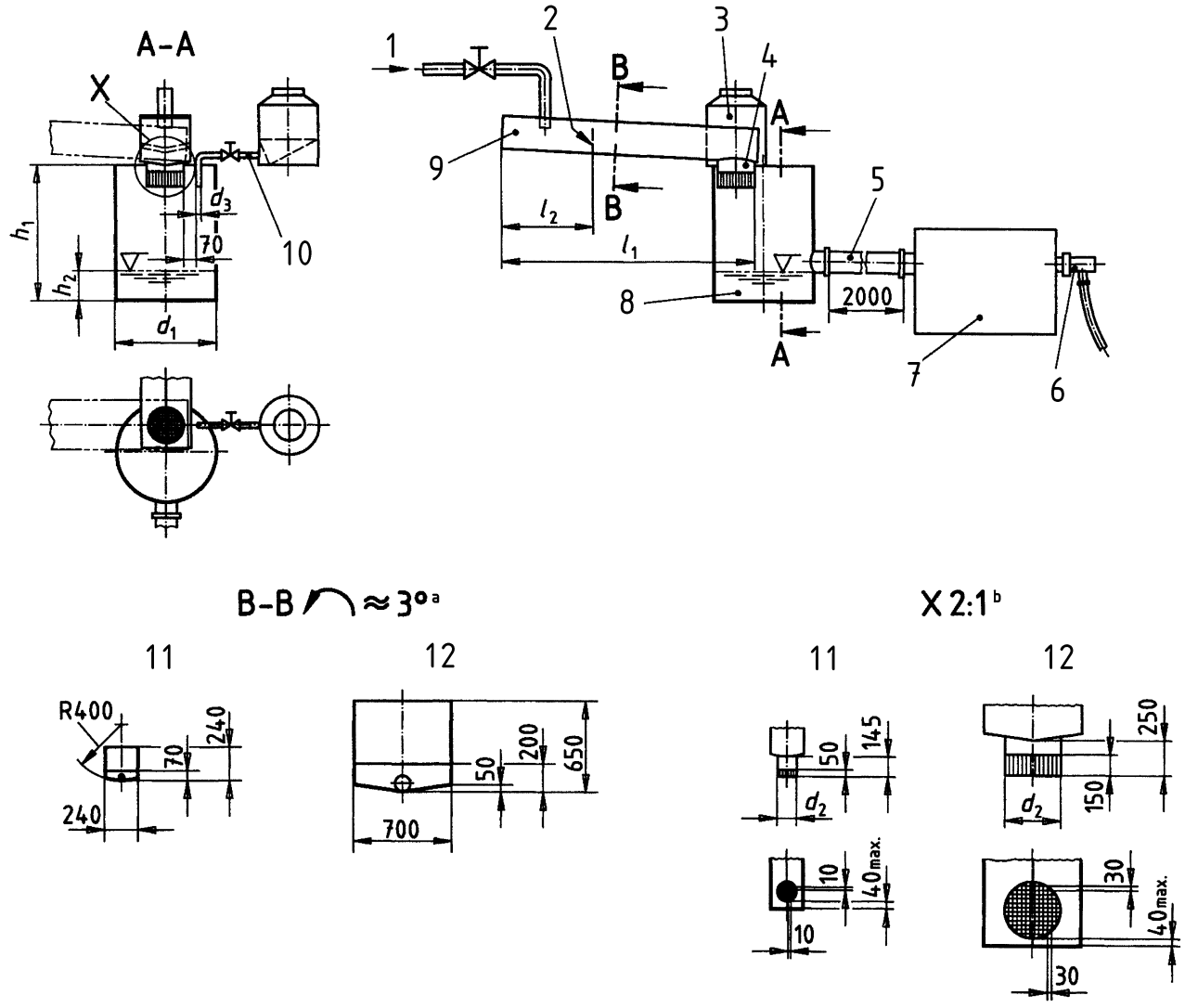
4 Separator

5 Collecting chamber (see figure 4)

6 [A1] Supply pipe, inclined at (2 ± 0,5) % [A1]

Figure 3b — Sludge trap combined and below the static water level of the separator

Dimensions in millimetres



Key

1	Water supply	7	Separator
2	Weir	8	Collecting chamber
3	Receptacle for light liquid	9	A1 Supply channel, inclination ≤5 % A1
4	Outlet pipe	10	Light liquid supply pipe
5	A1 Supply pipe inclined at (2 ± 0,5) % A1	11	For NS ≤ 6
6	Sampling pipe	12	For 6 < NS ≤ 100

a Supply channel with weir (on a larger scale)

b Outlet pipe with flow regulation grid

Figure 4 — Testing apparatus for separators ≤ NS 100

8.3.3.1.2 Test apparatus

The test apparatus shall be in accordance with:

— figure 5 and 4 and table 4 for separators with a nominal size ≤ NS 100 and

— figure 5 and 6 for separators with a nominal size > NS 100.

The supply pipe between the collecting chamber and the separator shall have the same nominal diameter DN as the inlet to the separator. For separators without combined sludge trap, having two inlet pipes, the supply pipe close to the collecting chamber shall be divided into two branch pipes each having a length of 2 m. The cross section of the supply pipe closest to the collecting chamber but before branching shall be equivalent to the total cross section of the two branch pipes.

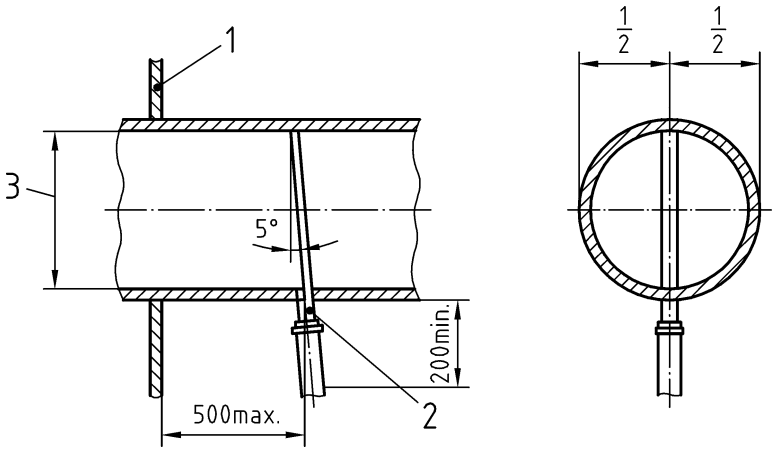
The test fluids shall be supplied by means of dosing pumps allowing appropriate flow control or by gravity. The flow rate shall be constant during the test.

The outlet pipe(s) from the supply channel(s) shall be fitted with a stream regulating grid. The cross section of the outlet pipe(s) shall be totally and uniformly charged with water. The bottom(s) of the outlet pipe(s) from the supply channel(s) and light liquid supply pipe shall be at the same level.

Table 4 — Dimensions

Nominal size of separator NS	d_1 mm	d_2	d_3	h_1 mm	h_2 mm	l_1 mm	l_2 mm
Up to 6	400	DN 125	DN 12	500	200	1500	450
Over 6 to 30	1000	DN 300	DN 25	900	300	2500	900
Over 30 to 100	1000	DN 400	DN 40	1350	300	2500	900

Dimensions in millimetres



Key

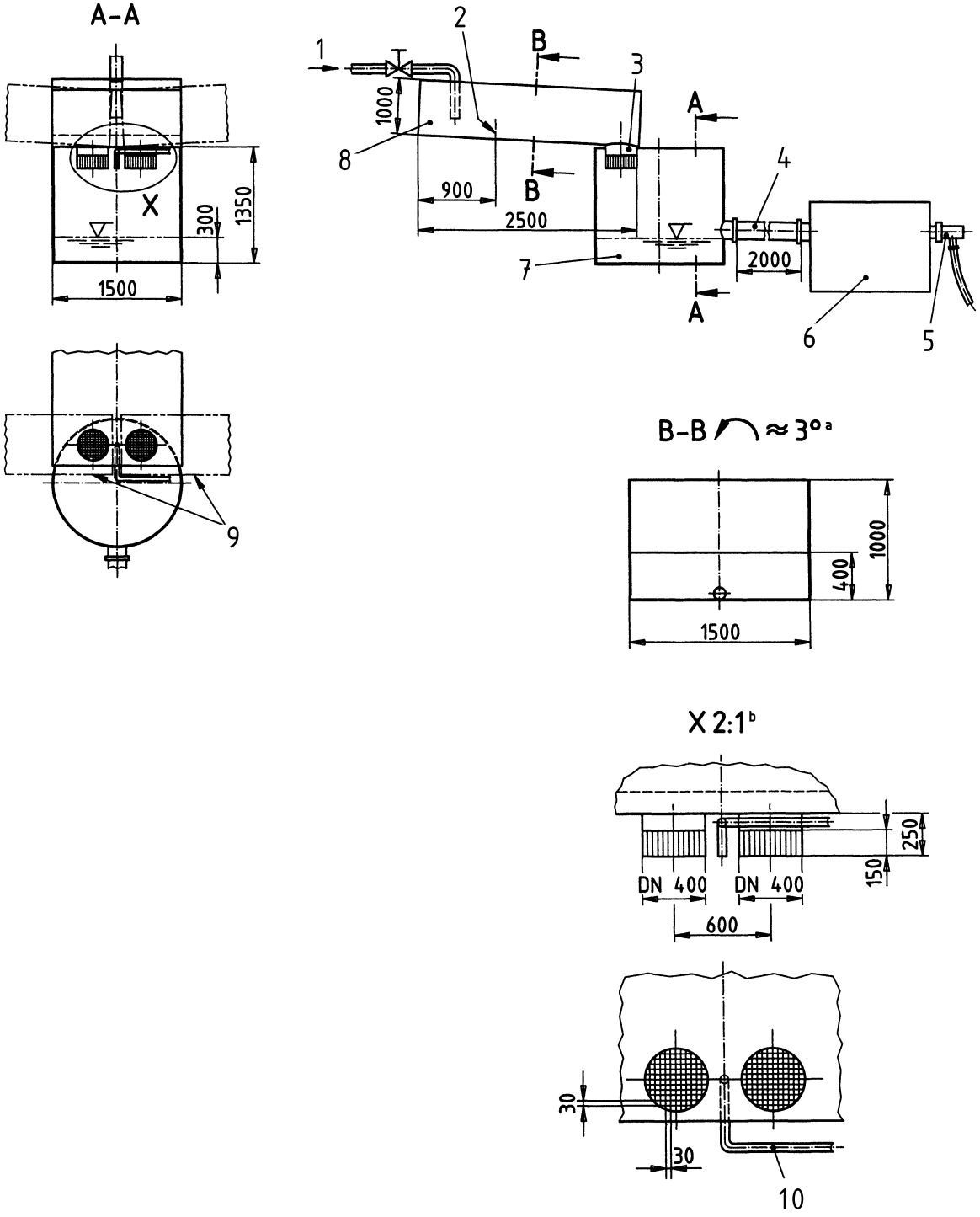
1 Wall of separator

2 Internal diameter ≈ 12,5

3 Nominal diameter of outlet pipe of the separator

Figure 5 — Sampling device

Dimensions in millimetres



Key

1	Water supply	5	Sampling pipe	9	Two supply channels for 30 < NS ≤ 100 (alternative)
2	Weir	6	Separator		
3	Outlet pipe	7	Collecting chamber		
4	[A1] Supply pipe, inclined at (2 ± 0,5) % [A1]	8	Supply channel, inclination ≤ 5 %	10	Light liquid supply pipe DN 50

[a] Supply channel with weir (on a larger scale)

[b] Outlet pipe with flow regulating grid (on a larger scale)

Figure 6 — Testing apparatus for separator > NS 100

8.3.3.1.3 Test fluids

— Water:

The water shall be drinking water or river water purified by mechanical means. The temperature shall be between 4 °C and 20 °C and the pH value shall be 7 ± 1.

— Light liquid:

The light liquid shall be fuel oil in accordance with ISO 8217, designation ISO-F-DMA, having a density of (0,85 ± 0,015) g/cm^3 at temperature of 12 °C.

8.3.3.1.4 Test procedure

Fill the separator with water. Measure the maximum static water level and corresponding volume V_k. At the predetermined maximum allowable flow rate Q_w measure the new water level.

Calculate the total duration of the test T as the sum of the running-in period T_E and the sampling period T_P, so that $T = T_E + T_P$. The running-in period shall be equivalent to the length of time needed to exchange the volume of water V_k four times, with a minimum period of 15 min, and is determined by the following formula:

$$T_E = \frac{4 \times V_k}{Q_w \times 60} \quad (1)$$

where

T_E is the running-in period, in min, with a minimum period of 15 min;

V_k is the water volume of the separator, in l;

Q_w is the maximum allowable flow rate of water through the separator, in l/s.

The sampling period T_P shall be 5 min.

Maintain the maximum allowable flow rate of water Q_w with a tolerance of ± 2 % and add the light liquid at a constant flow rate of 5 ml/l with a tolerance of 5 % for the total duration of the test T, ensuring no light liquid dwells in the collecting chamber. The effluent shall be discharged through the sampling pipe during the whole of the test T.

[A1] From the beginning of the sampling period T_P, and at 1 min intervals, take one sample, at least 500 ml, from every outlet of the separator via the sampling pipe. This will give a total of five samples per outlet. [A1]

[A1] Analyse the samples by infrared spectroscopy or by gas chromatography in accordance with annex A using the light liquid in accordance with 8.3.3.1.2 as the reference liquid. [A1]

Calculate the content of residual oil as the arithmetical mean value of the samples. No individual sample shall have a higher value than 10 mg/l for class I or 120 mg/l for class II.

Determine the nominal size of the separator in accordance with clause 5, and the class in accordance with table 1.

Add more light liquid when there is no flow until the storage capacity for light liquid has been determined, having regard for whether or not a closure device is to be fitted. The result shall be in accordance with 6.5.2. Measure the light liquid level at storage capacity and determine the maximum operational liquid level. For separators greater than NS 6 the storage capacity and the maximum operational liquid level may be determined by calculation.

8.3.3.2 Separators built in-situ

Verify the nominal size of separators built in-situ by measurement with an accuracy of 1 mm and calculation in accordance with 6.5.6.2.

A1

8.4 Reaction for fire

8.4.1 Products deemed to satisfy the requirements for reaction to fire Class A1

The product, or the materials from which it is made, meeting the specifications of 6.2.2 and 6.2.3 and those of Annex E, satisfy reaction to fire Class A1 in accordance with the provisions of EC Decision 96/603/EC, as amended, without the need for testing. Products/materials present in minor quantities (e.g. seals) may be disregarded.

8.4.2 Products not deemed to satisfy reaction to fire Class A1

The product, or the materials from which it is made, which are not Class A1 in accordance with 8.4.1, shall be tested and classified, as separate materials, according to the provisions of EN 13501-1. Products/materials present in minor quantities (e.g. seals) may be disregarded. A1

9 Type testing of factory made separator systems

9.1 General

The separator system shall be subjected to and pass all the tests in table 5 to confirm compliance with clauses 4, 5, 6 and 7 before delivery commences and prior to independent approval, if relevant.

This procedure shall also be applied if the separator system is amended in any way, which will affect performance.

The type tests shall be carried out in order to demonstrate compliance with the requirements of this standard. A1 Tests previously performed in accordance with the requirements of this document (same product, same or more onerous test method and same sampling procedure) may be taken into account for the purpose of type testing. For the purpose of type testing, products may be grouped into families per characteristic where it is considered that tests done for that characteristic on any product within the family are representative for the same characteristic for all other products within the same family. A1 Full reports of these tests shall be retained by the manufacturer and shall be made available to a third party for examination, where applicable.

9.2 Prototypes and documentation

The prototype to be tested shall be equivalent in all respects to the product proposed for manufacture. However, for determining the nominal size of the separator in accordance with 8.3.3.1 the prototype may be made from different materials.

A description of the system, the installation, operating and maintenance instructions and possible static calculations, test reports, material suppliers certificates shall be made available. Also design details, overall dimensions, functional dimensions, internal component details and material specifications shall be made available.

Table 5 — Type tests

Aspect to be tested	Test method/ evaluation of conformity according to	Nature and number of samples, test specimens and measurements	Requirements according to
Class of separator	8.3.3	Every prototype separator	4
Nominal size	8.3.3	Every prototype separator	5
General	6.1	Every prototype separator system	6.1
Concrete	8.1.1	According to 6.2.2	6.2.2
Metallic materials	Analysis or supplier's certificate	According to the standards referred to in 6.2.3	Manufacturers material specification and 6.2.3
Plastics materials	8.1.2	According to the standard referred to in 6.2.4	6.2.4
Sealing materials	Standards referred to in 6.2.5en	According to the standard referred to in 6.2.5	6.2.5
Coatings: – Technical documentation – Surface preparation – Application and curing	 Check for completeness ISO 8501-1 Check for compliance with technical documentation	 Prototype separator system	 6.2.6.2 6.2.6.3.1 6.2.6.3.2
– Dry film thickness	8.1.3.2.1	Concrete or steel test specimens according to 8.1.3.2.6; five measurements on each test specimen	6.2.6.4 a)
– Adhesion	8.1.3.2.2	Three concrete or steel test specimens according to 8.1.3.2.6; one measurement on each test specimen	6.2.6.4 b)
– Impact resistance	8.1.3.2.3	Three steel test specimens according to 8.1.3.2.6; one measurement on each test specimen	6.2.6.4 c)
– Scratch resistance	8.1.3.2.4	Three steel test specimens according to 8.1.3.2.6; one measurement on each test specimen	6.2.6.4 d)
– Porosity	8.1.3.2.5	Every test specimen	6.2.6.4 e)

Table 5 *(continued)*

Aspects to be tested	Test method/evaluation of conformity according to	Nature and number of samples, test specimens and measurements	Requirements according to
Chemical resistance of internal surfaces:			
– Plastics materials and linings	8.1.4.2	Three test specimens according to 8.1.4.2 per material type	6.2.7.1.2
– Sealing materials	8.1.4.3	According to ISO 1817	6.2.7.1.3
– Coatings	8.1.4.4	Three steel test specimens according to 8.1.3.2.6 per test	6.2.7.1.4
Chemical resistance of external surfaces	8.1.5	Three test specimens according to 8.1.3.2.6 per test	6.2.7.2
Dimensions of chambers and components	Measurement for compliance with manufacturer's documentation	Prototype separator system	9.2
Maximum operational liquid level and area of the separator or sludge trap	Procedures in 8.3.3.1.3	Prototype separator	3.11; 6.3.1
Watertightness of components	8.2	Prototype separator system and where necessary test apparatus according to figure 1	6.3.2
Accessibility	Visual inspection and measurement	Prototype separator system	6.3.3
Water seals	Measurement	Prototype separator system	6.3.4
Pipes and pipe joints	Visual inspection and measurement	Prototype separator system	6.3.5
Internal components	Visual inspection, test by way of trial	Prototype separator system	6.3.6
Sludge trap	Visual inspection	Prototype separator system	6.3.7
Access covers	Visual inspection	Prototype separator system	6.3.8
[A1] Reaction to fire	8.4.2	Material test	6.2.8 [A1]
Structural stability	Verification of existence of documents showing compliance with 6.4		6.4
Functional requirements:			
– General	Verification on the basis of the drawings		6.5.1
– Storage capacity for light liquids	Determination in accordance with 8.3.3.1.3		6.5.2
– Automatic closure device	8.3.2	Prototype separator or separate tank	6.5.3
– Automatic warning devices/additional devices	Verify existence of certificates	Prototype separator system	6.5.4
– Bypass separator	All tests concerning the	Prototype separator system	6.5.5

Table 5 *(continued)*

Aspects to be tested	Test method/evaluation of conformity according to	Nature and number of samples, test specimens and measurements	Requirements according to
	separator shall be carried out; in addition check on the basis of the drawings that the maximum effluent flow rate (see 3.7) cannot be exceeded.		
Marking	Visual inspection	Prototype separator system	6.6.1; 6.6.2
Manufacturer's product information	Inspection of details for completeness		7

10 〈A1〉 Evaluation of conformity 〈A1〉

10.1 General

〈A1〉 Products manufactured to this document shall be subjected to evaluation of conformity procedures as follows: 〈A1〉

a) type testing (see 9.1);

b) factory production control (see 10.2).

The control by a third party is recommended. If third party control is carried out this should be done in accordance with annex D.

〈A1〉 NOTE The actual practice of third party control in the different countries can be maintained as long as the third party control in this document retains its recommendatory character. 〈A1〉

10.2 Factory production control

〈A1〉 The purpose of factory production control (FPC) is to ensure that the production of light liquid separator systems conforms to the technical requirements of this document.

The facilities necessary for FPC shall include the test equipment for control based on the requirement of this document.

The manufacturer's FPC documentation shall include details of all steps of production from the arrival of the raw materials through to the final product leaving the factory.

Annex B, tables B.1 to B.3 shall be the minimum prerequisite of factory production control. 〈A1〉

Annex A
(normative)

Analysis of effluent samples

A1

A.1 General

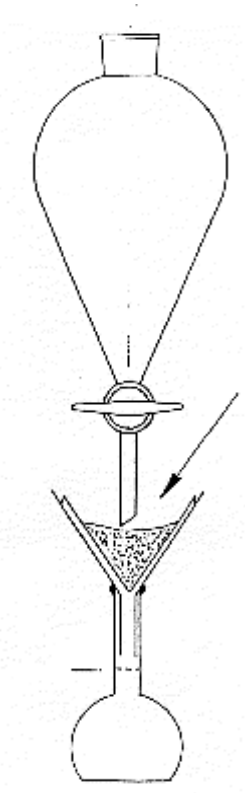
Samples shall be analysed for their hydrocarbon content using infrared spectroscopy in accordance with A.2 or gas chromatography in accordance with A.3.

In case of dispute, the infrared spectroscopy method is the reference method.

A.2 Infrared spectroscopy method

A.2.1 Extraction and preparation of the extract

An effluent sample of approximately 500 ml is weighed into a separating funnel with a rated volume of 1000 ml, directly from the sampling device (see Figure A.1). Within 15 min of sampling the pH shall be set to between 1 and 2 using sulphuric acid (H_2SO_4) and 50 ml of 1.1.2-trichloro-1.2.2-trifluroethane ($C_2Cl_3F_3$) shall be added. It is then immediately shaken, with a frequency of 3 Hz to 4 Hz for 10 min and the phases allowed to settle for 30 min. Alternatively, tetrachloroethylene (C_2Cl_4) (IR grade) may be used as the extraction solvent.



Key

1 Adding trichloro-trifluroethane up to the rated volume

Figure A.1 Filling-up with trichloro-trifluroethane

A1

[A1] If the samples have to be transported to an external laboratory, they shall be weighed into glass bottles. The samples shall be preserved within 15 min by addition of acid as described above. They shall either be further preserved by addition of 1.1.2-trochloro-1.2.2-trifluoroethane as above before transport, or they shall be sent to the analysis laboratory at 4°C. If preserved by solvent, at the analysis laboratory the samples shall be transferred to separating funnels for extraction as above. If the samples have been refrigerated then the solvent should be added to the sample bottle, then transferred to separating funnels for extraction as above.

After phase separation the organic function is run off and immediately filtered through approximately 10 g of anhydrous sodium sulphate (Na_2SO_4) into a volumetric flask with a rated volume of 50 ml. The extract is made up to the mark with the solvent, washed through the sodium sulphate so as to include any hydrocarbons remaining in the sodium sulphate.

A.2.2 Evaluation

Measurement is made against a reference of the pure solvent of same layer thickness using matched cuvettes of equal length. Before measurement, a transmission value of exactly 100 % shall be set with the cuvettes inserted, at 3.2 µm. Those absorption bands showing 3,38 µm and 3,42 µm shall be recorded.

The mass concentration of the hydrocarbons in the water sample is obtained from:

$$G = \frac{1{,}4 \cdot V_{TE} \left(E_1 / C_1 + E_2 / C_2 \right)}{V_P \cdot d} \qquad \text{(A.1)}$$

where

G is the mass concentration of the hydrocarbons in the water sample, in mg/l;

V_{TE} is the volume of the extracting agent used for extraction, in ml;

E_1 is the spectral absorption magnitude of CH_3 band at 3,38 µm;

C_1 is the molecular extinction coefficient of the CH_3 band (8,3 ml/mg·cm);

E_2 is the spectral absorption magnitude of CH_2 band at 3,42 µm;

C_2 is the molecular extinction coefficient of the CH_2 band (5,4 ml/(mg·cm);

V_P is the volume of water sample used, in l;

d is the layer thickness of absorbent solution, in cm.

The result is indicated as a rounded value to an accuracy of:

0,1 mg/l for < 10 mg/l and

1 mg/l for ≥ 10 mg/l.

Fuel oil ISO-F-DMA in accordance with 8.3.3.1.2 shall be used as the reference liquid for calibration, i.e. to determine the group absorbance coefficients.

It is possible to use "fixed wavelength" infrared devices when the hydrocarbon concentrations are more than 5,0 mg/l. With this method the hydrocarbon concentration is evaluated solely using the CH_2 absorption band at 3,42 µm. The fuel oil in accordance with 8.3.3.1.2 shall also be used for calibration. Extraction and preparation of the extract shall be as described in A.2.1. [A1]

A.3 Gas chromatography method

A.3.1 General

This instruction describes a simplified analytical method based on EN ISO 9377-2 to determine fuel oil ISO-F-DMA in accordance with 8.3.3.1.2 in water by gas chromatography (GC). The method is suitable for determining fuel oil, if the concentration is greater than 1 mg/1. This method is not suitable for wastewater.

The samples are extracted in petroleum ether, then analysed by gas chromatography between C_{10} and C_{40}.

A.3.2 Reagents

c) extraction solvent: petroleum ether, boiling range 40 °C to 60 °C;

d) sodium sulphate (Na_2SO_4), anhydrous;

e) fuel oil ISO-F-DMA in accordance with 8.3.3.1.2 to prepare standards;

f) reference standards n-decane ($C_{10}H_{22}$) and n-tetracontane ($C_{40}H_{82}$).

A.3.3 Interferences

If fuel oil ISO-F-DMA in accordance with 8.3.3.1.2 without additives is used, interferences are not be expected.

A.3.4 Procedure

The petroleum ether shall be spiked with n-decane and n-tetracontane prior to analysis to give a concentration of approximately 2 mg/l to 10 mg/l. All solutions analysed with the gas chromatograph shall contain these two chemicals.

The sample may be taken in a sample bottle or separating funnel. Weigh the sampling vessel. Put approximately 500 ml of water directly into the sample vessel then re-weigh to obtain the mass of sample. If the samples shall be transported to an external laboratory, they shall be taken in glass bottles and acidified to pH 2 then transported at 4°C. Add the appropriate volume of petroleum ether to the extraction vessel and shake for at least 10 min. To analyse over the range 1 mg/l to 40 mg/l oil in water use 10 ml of petroleum ether. For the analysis range 10 mg/l to 150 mg/l use 25 ml of petroleum ether. If extracted in a separating funnel, run off the aqueous phase then collect the organic phase. If a glass bottle is used, then a separator device may be used to recover the organic phase. The collected extract is dried using sodium sulphate.

NOTE Failure to dry the extract sufficiently may irreparably damage the GC column.

A.3.5 Gas chromatographic analysis

The gas chromatograph shall be equipped with a non-discriminating injection system and a flame ionisation detector (FID). The GC column shall be fused silica with one of the following stationary phases:

Non-polar, immobilised 100 % dimethylpolysiloxane ($CH_3[(CH_3)_2SiO]_nSi(CH_3)_3$), or 95 % dimethyl-/5 % diphenylpolysiloxane ($CH_3[(CH_6H_5)_2SiO]$n $Si(CH_3)_3$) or modified siloxane polymer ($H_3Si(OsiH_2)_nOSiH_3$).

Typical dimensions:

— Length 5 m to 30 m

— Internal diameter: 5 mm to 0,53 mm

— Film thickness: 25 µm to 1,2 µm

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A.3.6 Example GC conditions

- Injection technique: Programmed temperature vaporisation (PTV)
- Injection temperature: 50 °C to 300 °C
- Injection volume: 1 µl (NOTE Larger volumes will give increased sensitivity)
- Column length: 30 m
- Column internal diameter: 0,25 mm
- Liquid phase: DB 5 MS
- Pre-column: Deactivated fused silica capillary
- Carrier gas: Hydrogen (H_2)
- Carrier gas pressure: 80 kPa
- Oven temperature programme: 40 °C for 5 min, 10 °C/min to 300 °C for 20 min
- Detector: Flame ionisation detector (FID)
- Detector temperature: 300 °C
- Make up gas: Nitrogen (N_2)
- Make up gas flow: 25 ml

The system shall be able to integrate the whole chromatogram and compensate for the blank chromatogram.

The total peak area between n-decane and n-tetracontane shall be integrated. The integration begins immediately at the end of the n-decane peak and ends immediately in front of the n-tetracontane peak. The signal level before the solvent peak shall be used as the baseline. The total peak area for the sample is measured and the area for a blank chromatogram (spiked petroleum ether) is subtracted. This correction eliminates the effect of column bleeding. The extract may be diluted to bring it within the calibration range. A blank chromatogram shall be run at least once every ten samples. A check on the validity of the calibration shall be done with each series of samples using an oil in petroleum ether standard with a concentration between 40 % and 80 % of the calibration range. The result of the check solution shall be within 10 % of the calibration.

A.3.7 Calibration

The system shall be calibrated using a series of five external standards covering the required analysis range and a blank. These standards are prepared in petroleum ether spiked with n-decane and n- tetracontane. The standards shall be prepared by dilution of a stock standard (see Tables A.1 and A.2). A1

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Table A.1 — 10 ml extract, working range 1 mg/l to 40 mg/1

Oil in spiked petroleum ether (mg/l)	Equivalent oil in water (mg/l)
400	8
800	16
1 200	24
1 600	32
2 000	40

Table A.2 — 25 ml extract, working range 10 mg/l to 150 mg/l

Oil spiked petroleum ether (mg/l)	Equivalent oil in water (mg/l)
600	30
1 200	60
1 800	90
2 400	120
3 000	150

Calculate a calibration function by linear regression of the peak areas and oil in petroleum ether concentrations.

A.3.8 Calculation of the oil concentration

The mass concentration of the hydrocarbons is obtained from:

where

- G f is the concentration of hydrocarbons in the water sample, in mg/l;
- a is the slope of the calibration function, in l/mg;
- A_m is the peak area of the sample extract, in instrument specific units;
- f is the dilution factor;
- m_1 is the mass of the filled sampling bottle or separating funnel, in g;
- m_2 is the mass of the empty sampling bottle or separating funnel, in g;
- V is the volume of the final extract, in ml;
- b is the intercept of the calibration function, in instrument specific units;
- w Is the density of water, (1,00 g/ml).

A1

Annex B
(normative)

Factory production control

Table B.1 — Receiving inspection and testing

Aspect of inspection	Method of inspection	Frequency of inspection	Document retention period
Concrete materials:			
Sand	Supplier's certificate	Every delivery	1 year
Stones/gravel	Visually	Every delivery	1 year
Water	Supplier's certificate	Regularly	1 year
Cement	Supplier's certificate	Every delivery	5 years
Additives	Supplier's certificate	Every delivery	1 year
Ready mix concrete	Supplier's certificate	Every delivery	5 years
Reinforcement	Certificate/measurement	Every delivery	5 years
Complete concrete body	Supplier's certificate/ measurement of overall dimensions and covering of reinforcement	Every delivery	5 years
Metallic materials:			
Cast iron:			
– Raw material storage	Visually	Regularly	–
– Pig iron	Supplier's certificate	Every delivery	1 year
– Scrap iron/steel (third party)	Supplier's certificate	Every delivery	1 year
– Scrap returns (first party)	Factory production control	Every delivery	1 year
– Additives	Supplier's certificate	Every delivery	1 year
– Energy for melting			
· Gas	Supplier's certificate	Regularly/when changed	1 year
· Coke	Supplier's certificate	Every delivery	1 year
– Sand for moulds/cores	Supplier's certificate and sieve analysis	Regularly	1 year
Carbon steel:	Supplier's certificate/visually	Every delivery	1 year
Austenitic steel:	Supplier's certificate/visually	Every delivery	1 year

Table B.1 *(continued)*

Aspect of inspection	Method of inspection	Frequency of inspection	Document retention period
Plastics materials:			
Glass fibre-reinforced plastics:			
– Resin	Supplier's certificate	Every delivery	1 year
– Glassfibre	Supplier's certificate	Every delivery	1 year
Polyethylene for buttweld-sheet assembly:	Supplier's certificate	Every delivery	1 year
Sealing materials:			
Elastomeric seals:			
– Mechanical properties	Supplier's certificate or test report of independent laboratory	Every delivery	1 year
– Chemical properties	Supplier's certificate or test report of independent laboratory	Every delivery	1 year
– Dimensions in accordance with the approved factory documents	Measurement	Every delivery	1 year
Coating materials:	Supplier's certificate in accordance with specifications	Every delivery	1 year

Table B.2 — Process control

Aspect of inspection	Method of inspection	Frequency of inspection	Document retention period
〈A1〉 Concrete materials:			
Plant mix concrete	To be defined in FPC documentation	To be defined in FPC documentation	1 year
Reinforcement	Measurement	As appropriate for production method	1 year
Mould control	Visually	Regularly	1 year
Dimensions	Measurement	To be defined in FPC documentation	1 year
Appearance	Visually	Each separator	1 year
Cover on reinforcement	Non-destruction testing	To be defined in FPC documentation	5 years
Compressive strength	Compressive strength test	Three samples per week of production	5 years 〈A1〉
Metallic materials:			
Cast iron:			
– Moulding sand characteristics	Laboratory	Once a shift	1 year
– Ductile iron additives	Weighing/pyrometer	Each treatment ladle	1 year
–Temperature of melt in the casting ladle/furnace	Visually/pyrometer	Frequently	1 year
– Composition of metal/analysis			
• Casting ladle	Laboratory	Each treatment or each furnace or each ladle	5 years
• Mould control	Visually	Regularly	-
• Casting operation	Visually	Regularly	-
• Standing time of each pouring ladle	Visually	Each cast	-
– Mechanical properties			
• Tensile strength	6.2.3	6.2.3	5 years
• Elongation %	6.2.3	6.2.3	5 years
• Nodularity	6.2.3	6.2.3	5 years
– Appearance	Visually	Each cast	-

Table B.2 (continued)

Aspect of inspection	Method of inspection	Frequency of inspection	Document retention period
Carbon steel:			
– Welding preparation	Visually/measurement	Regularly	-
– Welding assembly	Visually/measurement	Regularly	-
– Welding test results	Test plates	Three times a year/ welder	1 year
– Appearance of the welding	Visually	Each welding seam	-
– Dimensions	Measurement according to drawings	Regularly	-
Austenitic steel:			
– Welding preparation	Visually/measurement	Regularly	-
– Welding assembly	Visually/measurement	Regularly	-
– Welding test results	Test plates	Three times a year/ welder	1 year
– Appearance of the welding	Visually	Every welding seam	-
– Dimensions	Measurement according to the drawing	Regularly	-
Plastic materials:			
Glass reinforced plastics:			
– Mould control	Visually	Regularly	-
– Resin-glass ratio	Ratio verification	Every batch	-
– Inner and outer lining	Visually	Every separator	1 year
– Laminate built-up	Visually	Every separator	1 year
– Wet laminate thickness	Measurement	Every separator	1 year
– Removal from the mould/appearance	Visually	Every separator	-
– Dimensions	Measurement	Regularly	-
Polyethylene for buttweld-sheet assembly:			
– Welding preparation	Visually/measurement	Regularly	-
– Welding assembly	Visually/measurement	Regularly	-
– Welding test results	Test plates	Three times a year/welder	1 year
– Appearance of the welding	Visually	Every welding seam	-

Table B.2 (continued)

Aspect of inspection	Method of inspection	Frequency of inspection	Document retention period
Coatings:			
– Surface preparation	6.2.6.3.1	Every separator	–
– Working room temperature	Measurement	Regularly	–
– Working room humidity	Measurement	Regularly	–
– Humidity of concrete	Measurement	Every separator	–
– Time between cleaning and application	Supplier's specification	Regularly	–
– Coating mixture	Supplier's specification	Regularly	–
– Hardening time for each layer	Measurement	Every layer	–
– Control of coating thickness	Measurement	Every separator	–
– Pore absence test	Measurement	Every separator	–

Table B.3 — Product control

Aspect of inspection	Method of inspection	Frequency of inspection	Document retention period
Appearance	Visually	Every separator	-
Automatic alarm device	Supplier's certificate	Every delivery	-
Automatic closure device	Visually	Every separator	-
Manhole cover	Documents showing compliance with EN 124	Every separator	1 year
Dimensions	Measurement regarding the approved factory documents	Every separator	1 year
Elastomeric sealings	Visually	Every separator	1 year
Watertightness	Filling with water	Regularly	1 year
Marking	Visually	Every separator	1 year

Table B.4 — Third party control [A1] (where applicable) [A1]

Aspect of inspection	Method of inspection	Frequency of inspection	Documentation
Receiving inspection and testing	Table B.1	Every visit	In writing/report
Process control	Table B.2	Every visit	In writing/report
Product control	Table B.3	Every visit	In writing/report
Inspection, measuring and test equipment	Certificate[a]	Every visit	In writing/report
Handling, storage, packaging and delivery	Visually	Every visit	In writing/report
Control of non-conforming products	Visually/manufacturer's documentation	Every visit	In writing/report
Factory production control records	Visually	Every visit	In writing/report

[a] For load testing machines: Certificate of an authorized institute. For other measuring equipment: Factory production control records.

Annex C
(informative)

Established methods of calculation and testing

C.1 Germany

DIN 1045	Beton und Stahlbeton – Bemessung und Ausführung
DIN 1055-3	Lastannahmen für Bauten – Verkehrslasten
DIN 1072	Straßen- und Wegbrücken – Lastannahmen
DIN 4034-1	Schächte aus Beton- und Stahlbetonfertigteilen – Schächte für erdverlegte Abwasserkanäle und -leitungen – Maße, Technische Lieferbedingungen
DIN 4281	Beton für Entwässerungsgegenstände – Herstellung, Anforderungen und Prüfungen

These standards can be bought at the following address:
Beuth Verlag GmbH
D-10772 Berlin

ATV A 127	Richtlinie für die statische Berechnung von Entwässerungskanälen und -leitungen

This code of practice can be bought at the following address:

Gesellschaft zur Förderung der Abwassertechnik e.V. (GFA)
Theodor-Heuss-Allee 17
D-53773 Hennef

C.2 The Netherlands

BRL 5251	Olie-afscheiders en slibvangputten van concrete
BRL 5253	Olie-afscheiders en slibvangputten uitgevoerd in grijs gietijzer
BRL 5255	Plaatstalen olie-afscheiders en slibvangputten

These prescriptions can be bought at the following address:

KIWA NV
Certificatie en Keuringen
Sir Winston Churchill-laan 273
NL-2280 AB Rijswijk

C.3 France

Ouvrages d`assainissement, fascicule N ° 70

This prescription can be bought at the following address:
Diffusion et vente
Direction des journaux officiels
26, Rue Dessaix
F-75727 Paris Cedex 151

C.4 Austria

ÖNORM B 2503, Kanalanlagen – Ergänzende Richtlinien für die Planung, Ausführung und Prüfung

This document can be bought at the following address:

Verkauf von ON

Heinestr. 38

A–1020 Vienna

Annex D
(informative)

Control by third party (third party control)

D.1 General

The purpose of third party control is:

a) to ensure that the quality level of the product is continuously maintained according to the requirements of this standard, and

b) to give independent certification to the products.

NOTE For a new production unit this inspection should be undertaken, at the request of the manufacturer, within a twelve month period of its commissioning.

D.2 Procedure of the third party control

D.2.1 Factories certified to EN ISO 9001

Third party control consists of:

a) controlling the validity of the licence granted to the manufacturer for compliance of his quality assurance system with EN ISO 9001;

b) verifying that type testing has been satisfactorily carried out;

c) verifying that the results of controls made by the manufacturer are in compliance with the requirements of this standard;

d) independent random examination of finished products.

The third party control is carried out at least twice a year, at regular intervals, and can be undertaken without previous announcement.

D.2.2 Factories not certified to EN ISO 9001

For factories not certified to EN ISO 9001, the requirements of annex B, table B.4 can be applied.

Third party control consists of:

a) assessing the adequacy of the staff and equipment for continuous and orderly manufacture;

b) verifying that type testing has been satisfactorily carried out in accordance with the requirements of this standard;

c) verifying that factory production control is independent of production;

d) verifying that the manufacturer's controls and tests have been carried out in compliance with this standard, and that the results have met the requirements (see annex B, tables B.1 to B.3), and

e) independent random examination of finished products.

The third party control is carried out at least four times a year, at regular intervals, and can be undertaken without previous announcement.

The frequency of inspection may be reduced to two times a year provided that the third party is satisfied that:

— the manufacturer's internal quality control system is adequate;

— the controls have been continuously carried out in a proper and effective way for one year, and

— the results are in compliance with the requirements of this standard.

This reduced inspection frequency remains valid for as long as no defective products are detected.

The main aspects of third party verification are given in table B.4.

D.3 Report by the third party

The results of the third party control are given in a written report. The manufacturer signs this report. If no agreement can be reached between the inspector and the manufacturer on the content of the report, the manufacturer will sign the report and state his reservations thereon.

This report contains at least the following items:

— name of the manufacturer;

— name and location of the production plant;

— signature of the manufacturer's representative, place and date;

— the third party inspector's signature.

It also contains:

a) for factories certified to EN ISO 9001, a statement regarding:

— the validity of the quality assurance certificate, and

— the conformity of the products.

b) for factories not certified to EN ISO 9001, a statement regarding the results of the inspection in terms of:

— staff;

— equipment;

— conformity of the products;

— factory production control.

Within three weeks of the inspection, an official report will be sent to the manufacturer by the third party.

D.4 Non-conforming products

If, during a third party inspection, a component of a separator system fails to meet any requirement to be tested, or if the third party test results do not confirm those recorded in the manufacturer's internal quality control documentation, the third party conducts further investigations and/or testing to identify the reason(s) for this discrepancy.

Annex E
(informative)

A1 Relevant extracts from EC Decision 96/603/EC, as amended

The materials, and products made from them, that are listed in Table E.1, shall, on account of their low level of combustibility and subject to the conditions also set out in this Annex, be classified in Class A.1.

For the purpose of this classification, no reaction to fire testing of those materials and products made from them shall be required.

Products shall be made only of one or more of the materials in Table E.1, if they are to be considered as Class A1 without testing. Products made by gluing one or more of the materials together are Class A1 without testing provided that the glue does not exceed 0,1 % (m/m or V/V) (whichever is the more onerous).

Products made by coating one of the materials with an inorganic layer (e.g. coated metal products) may also be considered as Class A1 without testing.

None of the materials in Table E.1 is allowed to contain more than 1,0 % (m/m of V/V) (whichever is the more onerous) of homogeneously distributed organic material.

Table E.1 — List of materials/products of Class A1

Material	Notes
Concrete	Includes ready-mixed concrete and precast reinforced and prestressed products
Aggregate concrete (dense and lightweight mineral aggregates, excluding integral thermal insulation)	May contain admixtures and additions (e.g. PFA), pigments and other materials. Includes precast units
Autoclaved aerated concrete units	Units manufactured from hydraulic binders such as cement and/or lime, combined with fine materials (siliceous material, PFA, blast furnace slag), and cell generating material. Includes precast units
Iron, aluminium, copper, steel and stainless steel	Not in finely divided form
Clay units	Units form clay or other argillaceous materials, with or without sand, fuel or other additives. Includes bricks, tiles, paving and fireclay units (e.g. chimney liners)

A1

Annex ZA
(informative)

Clauses of this European Standard addressing the provisions of EU Construction Products Directive

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under the Mandate M/1181[1] given to CEN by the European Commission and the European Free Trade Association.

The Clauses of this European Standard shown in this Annex meet the requirements of the mandate given under the EU Construction Products Directive (89/106/EEC).

Compliance with these Clauses confers a presumption of fitness of the separator systems for light liquids covered by this Annex for their intended use; reference shall be made to the information accompanying the CE marking.

WARNING — Other requirements and other EU Directives, not affecting the fitness for intended uses, can be applicable to the separator systems for light liquids falling within the scope of this European Standard.

NOTE 1 In addition to any specific Clauses relating to dangerous substances contained in the standard, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

NOTE 2 An informative database of European and national provisions on dangerous substances is available at the Construction web site on EUROPA (accessed through http://europa.eu.int/comm/enterprise/construction/internal/dangsub/dangmain.htm).

This Annex establishes the conditions for CE marking of separator systems for light liquids intended for the use indicated in the relevant Clauses applicable (see Table ZA.1).

Table ZA.1 — Scope and relevant Clauses

Product: Intended use:	Separator system for light liquids (e.g. oil and petrol) as covered by scope of this standard Separate light liquids from wastewater to protect sewerage systems and surface water		
Essential Characteristics	**Requirement Clauses in this Standard**	**Levels and/or classes**	**Notes**
Reaction to fire	6.2.8	A1 to F	—
Liquid tightness	6.3.2	None	Pass/fail
Effectiveness	4, 6.3.1, 6.3.3 to 6.3.8, 6.5	None	Pass/fail
Load bearing capacity	6.4	None	Pass/fail
Durability	6.2	None	Pass/fail

[1] Mandate M/118 “Wastewater engineering products” as amended. 〈A1〉

〈A1〉

ZA.2 Procedure for the attestation of conformity of separator systems for light liquids

ZA.2.1 System of attestation of conformity

The system of attestation of conformity of the separator systems for light liquids indicated in Table ZA.1, in accordance with the Decision of the Commission 96/578/EEC of 1996-06-24 as given in Annex III of the mandate for "Wastewater engineering products" is shown in Table ZA.2 for the indicated intended use and relevant level(s) and classe(s).

Table ZA.2 System of attestation of conformity

Product	Intended use	Level(s) or classe(s)	Attestation of conformity system
Separator system for light liquids	Separate light liquids from wastewater to protect sewerage systems and surface water	Reaction to fire A1[a] and F Reaction to fire (A1 to E)[b]	4 3
[a] Products/materials "deemed to satisfy" without the need for testing [b] Products/materials requiring testing			
System 3: See Directive 89/106/EEC (CPD), Annex III (ii), second possibility System 4: See Directive 89/106/EEC (CPD), Annex II (ii), third possibility			

The attestation of conformity of the separator systems for light liquids indicated in Table ZA.1 shall be based on the evaluation of conformity procedure indicated in Table ZA.3 resulting from application of the Clauses of this European Standard indicated therein.

Table ZA.3 — Assignation of evaluation of conformity tasks

Tasks		Content of the task	Evaluation of conformity Clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control	Parameters related to all relevant characteristics of Table ZA.1	10.2
	Type testing by a notified test lab	Reaction to fire (A1 to E)[a]	9
	Type testing by the manufacturer	All characteristics of Table ZA.1 except reaction to fire	9
[a] Products/materials requiring testing			

〈A1〉

A1

ZA.2.2 Declaration of conformity

When compliance with the conditions of this Annex is achieved, the manufacturer of his agent established in the EEA shall prepare and retain a declaration of conformity (EC Declaration of conformity) which authorises the affixing of the CE marking. This declaration shall include:

- name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;
- description of the product (type, identification, use…);
- provisions to which the product conforms (i.e. Annex ZA of this European Standard);
- particular conditions applicable to the use of the product;
- a copy of the CE-marking information;
- name and address of the notified laboratory (only in case of reaction to fire testing);
- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or his authorised representative.

The above mentioned declaration of conformity shall be presented in the language or languages as accepted in the Member State in which the product is to be used.

ZA.3 CE Marking and labelling

The manufacturer or his authorised representative established within the EEA is responsible for the affixing of the CE marking. The CE marking symbol to affix shall be in accordance with Directive 93/68/EC. The CE marking symbol together with the name or identifying mark of the manufacturer and the reference to this European Standard shall be on the separator system for light liquids (see Figure ZA.1).

The CE marking symbol together with the following information shall be on the accompanying documents (e.g. delivery tickets) (see Figure ZA.2):

- name and identifying mark of the manufacturer;
- registered address of the manufacturer;
- the last two digits of the year in which the marking is affixed;
- reference to this European Standard;
- description of the product: generic name (separator system for light liquids), material and nominal size;
- information on regulated characteristics i.e.:
  - load bearing capacity;
  - reaction to fire (only where subject to regulatory requirements);
  - coating/lining thickness (where appropriate);
  - exposure class (for concrete).

A1

A1 Figures ZA.1 and ZA.2 give examples on the information to be given on the product and accompanying commercial documents respectively.

CE marking, consisting of the "CE" symbol given in Directive 93/68/EEC

Name or identifying mark of the manufacturer

Number of European Standard

Figure ZA.1 — CE marking information to affix on the separator system for light liquids

CE conformity marking, consisting of the "CE" symbol given in Directive 93/68/EEC

Name or identifying mark and registered address of the manufacturer

Last two digits of the year in which the marking was affixed

Number of European Standard

Description of product (material, nominal size, class)

Information on regulated characteristics

Figure ZA.2 — CE marking information to be given on accompanying documents

In addition to any specific information relating to dangerous substances shown above, the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE European legislation without national derogations does not need to be taken into account. A1

Bibliography

EN ISO 9001, *Quality management systems – Requirements (ISO 9001:2000)*

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