



BSI Standards Publication

Gully tops and manhole tops for vehicular and pedestrian areas

Part 3: Gully tops and manhole tops made
of steel or aluminium alloys

National foreword

This British Standard is the UK implementation of EN 124-3:2015. Together with BS EN 124-1:2015, BS EN 124-2:2015, BS EN 124-4:2015, BS EN 124-5:2015 and BS EN 124-6:2015, it supersedes BS EN 124:1994 which is withdrawn.

BSI, as a member of CEN, is obliged to publish EN 124-3 as a British Standard. However, attention is drawn to the fact that during the development of this European Standard, the UK committee voted against its approval as a European Standard.

The reasoning behind the response relates to the application of the Construction Products Regulations in respect to subclause 7.3.2.6, as a result of the AVCP Level 1 requirement.

The UK participation in its preparation was entrusted to Technical Committee B/505, Wastewater engineering, to Subcommittee B/505/4, "Manhole Covers, Surface Boxes And Other Road Fittings".

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

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

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English Version

Gully tops and manhole tops for vehicular and pedestrian areas - Part 3: Gully tops and manhole tops made of steel or aluminium alloys

Dispositifs de couronnement et de fermeture pour les zones
de circulation utilisées par les piétons et les véhicules -
Partie 3: Dispositifs de couronnement et de fermeture en
acier ou alliage d'aluminium

Aufsätze und Abdeckungen für Verkehrsflächen - Teil 3:
Aufsätze und Abdeckungen aus Stahl oder
Aluminiumlegierungen

This European Standard was approved by CEN on 12 March 2015.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 124-3:2015) has been prepared by Technical Committee CEN/TC 165 "Wastewater engineering", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by December 2015 and conflicting national standards shall be withdrawn at the latest by March 2017.

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

Together with EN 124-1:2015, EN 124-2:2015, EN 124-4:2015, EN 124-5:2015 and EN 124-6:2015, this document will supersede EN 124:1994.

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 the Regulation (EU) No. 305/2011.

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

EN 124, *Gully tops and manhole tops for vehicular and pedestrian areas*, consists of the following parts:

- *Part 1: Definitions, classification, general principles of design, performance requirements and test methods;*
- *Part 2: Gully tops and manhole tops made of cast iron;*
- *Part 3: Gully tops and manhole tops made of steel or aluminium alloys;*
- *Part 4: Gully tops and manhole tops made of steel reinforced concrete;*
- *Part 5: Gully tops and manhole tops made of composite materials;*
- *Part 6: Gully tops and manhole tops made of polypropylene (PP), polyethylene (PE) or unplasticized poly(vinyl chloride) (PVC-U).*

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

1 Scope

This European Standard is applicable to gully tops and manhole tops made of mild steel, stainless steel and aluminium alloys whether in combination with concrete or not, with a clear opening up to and including 1 000 mm for covering gullies, manholes and inspection chambers for installation in areas subjected to pedestrian and/or vehicular traffic.

It is applicable to manhole tops and gully tops for use in

- areas which can only be used by pedestrians and pedal cyclists (at least class A 15),
- pedestrian areas and comparable areas, car parks or car parking decks (at least class B 125),
- the area of kerbside channels of roads which, when measured from the kerb edge, extends a maximum of 0,5 m into the carriageway and a maximum of 0,2 m into the pedestrian area (at least class C 250),
- carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles (at least class D 400),
- areas imposing high wheel loads, e.g. docks, aircraft pavements (at least class E 600),
- areas imposing particularly high wheel loads, e.g. aircraft pavements (class F 900).

This European Standard is not applicable in isolation but only in combination with EN 124-1 and gives guidance for combinations of covers/gratings made of steel or aluminium alloys with frames according to EN 124-2 and EN 124-4, EN 124-5 or EN 124-6.

Fabrication of manhole tops and gully tops in accordance with this standard is limited to cold forming, mechanical crimping or welding together component parts made of metal plate, strip or bar or rolled or extruded metal sections.

This European Standard is not applicable to:

- manhole tops and gully tops made of aluminium tread plates for use in carriageways of roads (class D 400) and areas imposing high wheel loads (Classes E 600 and F 900);
- concave gratings for class D 400 installed in carriageways of roads or hard shoulders and concave gratings for classes F 900 and E 600;
- gratings/covers as part of prefabricated drainage channels according to EN 1433;
- floor and roof gullies in buildings which are specified in EN 1253 (all parts); and
- surface boxes.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 124-1:2015, *Gully tops and manhole tops for vehicular and pedestrian areas — Part 1: Definitions, classification, general principles of design, performance requirements and test methods*

EN 124-2:2015, *Gully tops and manhole tops for vehicular and pedestrian areas — Part 2: Gully tops and manhole tops made of cast iron*

EN 124-4:2015, *Gully tops and manhole tops for vehicular and pedestrian areas — Part 4: Gully tops and manhole tops made of steel reinforced concrete*

EN 124-5:2015, *Gully tops and manhole tops for vehicular and pedestrian areas — Part 5: Gully tops and manhole tops made of composite materials*

EN 124-6:2015, *Gully tops and manhole tops for vehicular and pedestrian areas — Part 6: Gully tops and manhole tops made of polypropylene (PP), polyethylene (PE) or unplasticized poly(vinyl chloride) (PVC-U)*

EN 206:2013, *Concrete — Specification, performance, production and conformity*

EN 573-3, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 3: Chemical composition and form of products*

EN 1386, *Aluminium and aluminium alloys — Tread plate — Specifications*

EN 1676:2010, *Aluminium and aluminium alloys — Alloyed ingots for remelting — Specifications*

EN 1706, *Aluminium and aluminium alloys — Castings — Chemical composition and mechanical properties*

EN 10025-1, *Hot rolled products of structural steels — Part 1: General technical delivery conditions*

EN 10088-1:2014, *Stainless steels — Part 1: List of stainless steels*

EN 10130, *Cold rolled low carbon steel flat products for cold forming — Technical delivery conditions*

EN ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods (ISO 1461)*

EN ISO 3452-1, *Non-destructive testing - Penetrant testing — Part 1: General principles (ISO 3452-1)*

EN ISO 9606-1, *Qualification testing of welders — Fusion welding — Part 1: Steels (ISO 9606-1)*

EN ISO 9606-2, *Qualification test of welders — Fusion welding — Part 2: Aluminium and aluminium alloys (ISO 9606-2)*

EN ISO 14554 (all parts), *Quality requirements for welding — Resistance welding of metallic materials (ISO 14554)*

EN ISO 14732, *Welding personnel — Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials (ISO 14732)*

EN ISO 15609 (all parts), *Specification and qualification of welding procedures for metallic materials — Welding procedure specification (ISO 15609)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 124-1:2015 apply.

4 Materials

4.1 General

Manhole tops, gully tops and gratings complying with this standard shall be manufactured from the following materials:

- a) steel according to 4.2;
- b) stainless steel according to 4.3;
- c) aluminium alloys according to 4.4.

The minimum thickness of sheet material prior to corrosion protection shall be at least 2,75 mm for C 250 covers and above.

Any element made of the materials specified in 4.1 a) to c) can be used in combination with elements of materials specified in EN 124-2, EN 124-4, EN 124-5 or EN 124-6. In such cases the manhole tops or gully tops shall comply with the relevant design and performance and testing requirements as listed in Table 1.

In addition elements shall comply with the requirements for the material related EN 124-2, EN 124-4, EN 124-5 or EN 124-6 as applicable. Each element shall be marked accordingly. The load class to be declared for the combined product shall be restricted to the lower class determined for any constituent element according to the relevant part of EN 124 series.

EXAMPLE Where a cover is made of steel, class C 250, and the frame is made of PVC-U, class B 125, the manhole top or gully top is marked with EN 124-3 and the class to be declared for the combined product is the class of the frame according to EN 124-6.

4.2 Steel

4.2.1 General

Steel manhole tops and gully tops shall be made from steel according to EN 10130 or EN 10025-1 and shall be resistant to corrosion. For use in normal conditions corrosion resistance can be ensured, e.g. by hot-dip galvanizing on a clean surface in accordance with 4.2.2. Prior to application of any surface corrosion protection system, manhole tops and gully tops shall be fettled.

4.2.2 Hot dip galvanizing

Where corrosion resistance is achieved by hot dip galvanizing it shall be in accordance with EN ISO 1461. There shall be no sharp edges resulting from hot dip galvanizing.

After a manhole top or gully top has been hot dip galvanized it can be straightened to overcome any distortion prior to fitting the manhole cover or gully grating in its frame. Any such straightening shall not adversely affect the integrity of the hot dip galvanizing or the structure of the manhole top or the gully top.

NOTE 1 Hot dip galvanization is regarded as corrosion protection system and not regarded as an aesthetic coating.

NOTE 2 Other supplementary coatings can be applied to the hot dip galvanized surface, e.g. coating or paint systems.

4.3 Stainless steel

Stainless steel manhole tops and gully tops for use in normal conditions (see EN 124-1:2015, 5.1) shall be fabricated from austenitic stainless steel grades 1.4301, 1.4306, 1.4307, 1.4401, 1.4404, 1.4432 or 1.4571 in accordance with EN 10088-1:2014. For normal conditions of use no surface corrosion protection system shall be required. Appropriate post fabrication finishing processes are required to avoid iron contamination, e.g. welded joints shall be treated by pickle passivation process or shot blasting.

Corrosion protection or another grade of stainless steel should be required if the manhole top or gully top is subject to more severe conditions of use, e.g. in a particularly aggressive chemical environment.

Stainless steel manhole tops and gully tops can be supplied with aesthetic surface finishes, e.g. varnish or paint or cleaning or bead blasting.

4.4 Aluminium alloys

Aluminium manhole tops and gully tops shall be fabricated or cast from aluminium alloys according to EN 1706, EN 1676 or EN 573-3 for use under “cyclic wet and dry” conditions and a slightly aggressive chemical environment as specified in EN 124-1:2015, 5.1. Alloys having a declared copper content of less than 0,1 % shall not require additional corrosion protection. Corrosion protection can also be achieved by anodizing according to EN ISO 7599, Class AA 25. Corrosion protection systems other than anodizing or choice of alloys with specific corrosion resistance shall give corrosion protection equivalent to that of anodizing. Corrosion protection or another grade of aluminium may be required if the manhole top or gully top is subject to more severe conditions of use as given in EN 124-1:2015, 5.1, e.g. in a particularly aggressive chemical environment.

Aluminium tread plates shall be in accordance with EN 1386. Their use for manhole tops and gully tops is restricted to classes A 15 to C 250.

4.5 Cover fillings

In the case of covers placed on the market in filled condition the filling shall consist of either:

- a) concrete with a minimum compressive strength class of C35/45 according to EN 206:2013, at least suitable for use in “cyclic wet and dry” conditions, or
- b) other material complying with the intended use/place of installation expectations and with appropriate relevant European Standards at least suitable for use in “cyclic wet and dry” conditions.

In the case of covers placed on the market in unfilled condition and the filling is applied subsequently, the filling materials shall have a minimum performance comparable to concrete or the surrounding pavement materials and shall fulfil the requirements of the appropriate European Standards.

5 Requirements

5.1 Design and performance requirements

Manhole tops, gully tops and gratings made of materials according to 4.1 shall meet the design and performance and testing requirements in accordance with EN 124-1 as listed in Table 1.

Table 1 — Design, performance and testing requirements in accordance with EN 124-1 for gully tops and manhole tops made of mild steel, stainless steel or aluminium alloys

Characteristic	Requirements acc. to EN 124-1: 2015 Clause	Testing acc. to EN 124-1: 2015 Clause	Relevant for class					
			A 15	B 125	C 250	D 400	E 600	F 900
<i>Related to the design</i>								
Vents in covers	6.1	8.4.1	x	x	x	x	x	x
Clear opening of manhole tops for man entry	6.2	8.4.2	x	x	x	x	x	x
Depth of insertion	6.3	8.4.3	–	–	–	x	x	x
Clearance	6.4	8.4.4	x	x	x	x	x	x
Compatibility of seatings	6.5	8.4.5	–	–	–	x	x	x
Handling of covers and gratings	6.7	8.4.7	x	x	x	x	x	x
Slot dimensions of gratings	6.8	8.4.8	x	x	x	x	x	x
Dirt pans and dirt buckets	6.9	8.4.9	x	x	x	x	x	x
Positioning of covers and gratings	6.10	8.4.10	x	x	x	x	x	x
Flatness of manhole covers and gratings	6.11	8.4.11	–	–	–	x	x	x
Concaveness of gratings	6.12	8.4.12	x	x	x	x	x	x
Surface conditions	6.13	8.4.13	x	x	x	x	x	x
Manhole tops with sealing features	6.14	Visual inspection of presence of anchors	x	x	x	x	x	x
Frame bearing area	6.15	8.4.14	x	x	x	x	x	x
Frame depth	6.16	8.4.15	–	–	–	x	x	x
Opening angle of hinged covers/gratings	6.17	8.4.16	x	x	x	x	x	x
Appearance	7.1	Visual inspection	x	x	x	x	x	x
<i>Related to the performance</i>								
Load bearing capacity	7.2	8.3	x	x	x	x	x	x
Permanent set	7.3	8.2	x	x	x	x	x	x
Securing of the cover/grating within the frame	6.6	8.4.6	x	x	x	x	x	x
Skid resistance	7.4	8.4.13	x	x	x	x	x	x
Child safety	7.5	8.5	x	x	x	x	x	x
x To be applied.								

5.2 Covers with fillings

When tested in accordance with EN 124-1:2015, Clause 8, covers placed on the market filled with concrete or other filling materials and covers designed to be filled and placed on the market unfilled shall comply with requirements of Clause 4 and Clause 5.

Covers of classes A 15 and B 125, designed to be filled, placed on the market unfilled and which are capable of meeting the declared load class only in filled condition, can be filled subsequently on site with concrete in accordance with 4.5. Those covers shall comply with the requirements of Clause 4 and Clause 5 in the condition filled with concrete.

They shall be tested after being filled in accordance with the manufacturer's instructions for filling. The manufacturer's instructions for filling shall be supplied with the product and shall include all information for the filling procedure including the grade of the material used to ensure the declared performance after filling.

Filling materials used after the manhole top or gully top with an unfilled cover has been placed on the market, are subject to selection by the specifier or client. Their performance in service and their durability should be controlled to comply with the intended use/place of installation expectations, and with appropriate relevant European Standards. If freeze-thaw resistance is required, covers filled with concrete shall meet the freeze-thaw requirements in accordance with EN 124-4.

5.3 Material-specific characteristics for gully tops and manhole tops made of mild steel or aluminium alloys

5.3.1 Reaction to fire

Where use of manhole tops and gully tops in accordance with this standard is subject to national regulatory requirements on reaction to fire, their reaction to fire performance shall be declared. Manhole tops and gully tops made of steel or aluminium alloys are classified as Class A1 without the need for testing (CWT), in accordance with the relevant Commission Decision¹⁾.

NOTE 1 Steel or aluminium alloys, as homogeneously distributed materials for these products (whether in combination with concrete or not), are considered as material of known and stable performance with respect to the reaction to fire performance as it does not consist of any organic material and consequently does not contribute to fire. Under these conditions it can be considered as Class A1 material.

NOTE 2 The class of reaction to fire performance of manhole tops and gully tops made of steel or aluminium alloys is regarded as the class for the constituent material (e.g. steel or aluminium).

Conversely, where the use of manhole tops and gully tops is not subject to national regulatory requirements on reaction to fire, either the Class A1 (see above) or "No Performance Determined" (NPD) may be declared.

NOTE 3 Where the compatibility of seatings is achieved by the use of cushioning inserts, only a negligible area of the cushioning insert material would be exposed to fire, considering the end use situation. There is no relevance in relation to the reaction to fire performance and embedded cushioning inserts would not be able to ignite or to propagate fire there. Their contribution to fire spread is not of concern, nor is an influence expected on the fire behaviour of the neighbouring material and the contribution to fire propagation is negligible. Considering these aspects, separate testing and classification of cushioning inserts is not necessary.

1) See Decision of the Commission 96/603/EC of 1996-10-04 (see *OJEU L 267 of 1996-10-19*), as amended twice by 2000/605/EC of 2000-09-26 (see *OJEU L 258 of 2000-10-12*) and by 2003/424/EC of 2003-06-06 (see *OJEU L 144 of 2003-06-12*).

5.3.2 Durability

5.3.2.1 General

The materials specified in Clause 4 including their corrosion protection requirements are materials of known and stable performance with respect to their application within the scope of this standard. No further material tests are required for material durability.

The durability of manhole tops and gully tops manufactured from steel, stainless steel or aluminium alloys will depend upon design features and exposure conditions (see EN 124-1:2015, 5.1). The prescribed framework of requirements and test methods for the mandated performance characteristics according to Clause 5 will also reflect the durability of manhole tops and gully tops.

5.3.2.2 Durability of load bearing capacity

Durability of load bearing capacity is ensured by meeting the requirements of EN 124-1:2015, 7.2 and 7.3, the proportion between test load and maximum load to be expected in service and in conjunction with the stable behaviour of the material specified in Clause 4 covers all relevant effects which may influence the durability of the load bearing capacity.

5.3.2.3 Durability of securing of covers/gratings within the frame

Durability of securing of covers/gratings in the frame against unintended lifting is ensured by using materials with proven resistance against corrosion and passing the test according to EN 124-1:2015, 8.4.6.

5.3.2.4 Durability of skid resistance

Durability of skid resistance is ensured by meeting the requirements of EN 124-1:2015, 7.4, in conjunction with the stable resistance of the material itself against loss of grip under normal conditions of use.

5.3.2.5 Durability of effectiveness of child safety characteristics

Durability of the child safety characteristics concerning the resistance of manhole tops and gully tops against the removal by children is ensured by re-inspecting the weight or the locking accessory or the securing feature, as appropriate, is still functional after testing the securing in accordance with EN 124-1:2015, 8.4.6.

5.3.3 Dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets. In the absence of European harmonized test methods, verification and declaration on release/content should be done taking into account national provisions in the place of use.

5.4 Additional requirements for gully tops and manhole tops made of steel or aluminium alloys

5.4.1 Fabrication

Welds shall be visually inspected for integrity. The specification and qualification of welding procedures for covers shall conform to relevant part of EN ISO 15609 series. Fabrication of fusion welded component parts of a fabricated manhole top shall be undertaken by a welder approved by the procedures in EN ISO 9606-1 for steel and EN ISO 9606-2 for aluminium alloys.

Fabrication of resistance welded metallic components shall conform to the quality requirements of EN ISO 14554 (all parts). Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanised and automatic welding of metallic materials shall conform to EN ISO 14732. During approval testing welds shall be evaluated according to EN ISO 3452-1.

5.4.2 Deflection under load

The maximum deflection under load shall be $\leq CO/360$ for covers to be filled with brittle materials other than concrete. For covers to be filled with concrete, the maximum deflection under load shall be $\leq CO/250$. For all other covers according to this standard, the maximum deflection under load shall be declared as mm per mm of clear opening.

6 Testing

6.1 General

Gully tops and manhole tops according to this standard shall be tested as complete units in their intended position of use where the cover/grating is suitably positioned within the frame in accordance with EN 124-1:2015, Clause 8, as listed in Table 1, and in addition in accordance with 6.2.

Gully tops and manhole tops consisting of covers with fillings or covers designed to be filled subsequently, shall be tested as follows:

- 1) Covers placed on the market filled with concrete or other filling materials shall be tested in filled condition.
- 2) Covers placed on the market unfilled shall be tested without filling.
- 3) Covers for the field of application of classes A 15 to B 125 placed on the market unfilled and filled subsequently in accordance with the manufacturer's instructions shall be tested with concrete in accordance with the manufacturer's instructions for filling.

All tested products shall be visually inspected without magnification.

6.2 Testing of deflection under load

Deflection under load shall be tested in accordance with Annex A by applying a test load $F_D = 1/3 F_T$.

7 Assessment and verification of constancy of performance - AVCP

7.1 General

The compliance of gully tops and manhole tops with the requirements of this standard and with the performances declared by the manufacturer in the DoP shall be demonstrated by:

- determination of the product type on the basis of type testing;
- factory production control by the manufacturer, including product assessment.

The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the conformity of the product with its declared performance(s).

7.2 Type testing

7.2.1 General

All performances related to characteristics included in this standard shall be determined when the manufacturer intends to declare the respective performances unless the standard gives provisions for declaring them without performing tests (e.g. use of previously existing data, classified without further testing (CWFT) and conventionally accepted performance).

Assessment previously performed in accordance with the provisions of this standard, may be taken into account provided that they were made to the same or a more rigorous test method, under the same AVCP

system on the same product or products of similar design, construction and functionality, such that the results are applicable to the product in question.

NOTE 1 Same AVCP system means testing by an independent third party, when relevant, under the responsibility of a notified product certification body, when relevant.

For the purposes of assessment, the manufacturer's products may be grouped into families, where it is considered that the results for one or more characteristics from any one product within the family are representative for the same characteristics for all products within that same family.

NOTE 2 Products can be grouped in different families for different characteristics.

Reference to the assessment method standards should be made to allow the selection of a suitable representative sample.

In addition, the determination of the product type shall be performed for all characteristics included in the standard for which the manufacturer declares the performance:

- at the beginning of the production of a new or modified gully top and manhole top (unless a member of the same product range), or
- at the beginning of a new or modified method of production (where this can affect the stated properties), or
- they shall be repeated for the appropriate characteristic(s), whenever a change occurs in the gully top or manhole top design, in the raw material or in the supplier of the components, or in the method of production (subject to the definition of a family), which would affect significantly one or more of the characteristics.

Where components are used whose characteristics have already been determined, by the component manufacturer, on the basis of assessment methods of other product standards, these characteristics need not be re-assessed. The specifications of these components shall be documented.

Products bearing regulatory marking in accordance with appropriate harmonized European specifications may be presumed to have the performances declared in the DoP, although this does not replace the responsibility on the manhole tops and gully tops manufacturer to ensure that the manhole tops and gully tops as a whole are correctly manufactured and its component products have the declared performance values.

7.2.2 Test samples, testing and compliance criteria

The number of samples of gully tops and manhole tops to be tested/assessed shall be in accordance with Table 2. Characteristics for which the performance is to be declared are written in **bold** letters.

Table 2 — Number of samples to be tested and compliance criteria

Characteristic	Requirement	Assessment method	No. of samples ^a	Compliance criteria
<i>for the declared performance:</i>				
Reaction to fire	5.3.1	Classified without testing (CWT)	3	EN 124–3:2015, 5.3.1, Class A1
Frame bearing area	5.1	EN 124–1:2015, 8.4.14	3	EN 124–1:2015, 6.15, calculated value $P_b \leq 7,5 \text{ N/mm}^2$
Load bearing capacity	5.1	EN 124–1:2015, 8.3	3	EN 124–1:2015, 7.2, test load for the declared class

Characteristic	Requirement	Assessment method	No. of samples ^a	Compliance criteria
Permanent set	5.1	EN 124-1:2015, 8.2	3	EN 124-1:2015, 7.3, permissible value for the declared class
Securing of the cover/ grating within the frame	5.1	EN 124-1:2015, 8.4.6	3	EN 124-1:2015, 6.6, declared method and either weight in kg or value F_v in kN and appropriate h in mm, as applicable
Child safety	5.1	EN 124-1:2015, 8.5	3	EN 124-1:2015, 7.5, declared method or weight
Skid resistance of				
a) Covers with				
— concrete surface	5.1	EN 124-1:2015, 8.4.13 a)	3	EN 124-1:2015, 7.4.2 a), declared as “concrete surface” for the material used
— raised pattern		EN 124-1:2015, 8.4.13 b)	3	EN 124-1:2015, 7.4.2 b), declared as “raised pattern” for the specified raised pattern
— other surface		EN 124-1:2015, 8.4.13 c)	3	EN 124-1:2015, 7.4.2 c), for the calculated and declared value of USRV
b) Gratings	5.1	EN 124-1:2015, 8.4.13 b)	3	EN 124-1:2015, 7.4.3, declared as “raised pattern” for the specified raised pattern or “slots” the measured slot dimensions
c) Frames with max. horizontal visible width of — ≤ 40 mm or — > 40 mm	5.1	EN 124-1:2015, 7.4.4	3	EN 124-1:2015, 7.4.2, determined acc. to the requirement clause and expressed as — “NPD” for ≤ 40 mm or — method or value for > 40 mm
Durability of				
— load bearing capacity ^b against mechanical failure	5.3.2	EN 124-1:2015, 8.2 EN 124-1:2015, 8.3	3	EN 124-3:2015, 4.1, EN 124-1:2015, 7.2 and 7.3 declared as “Pass” according to the material used and the test method applied
— securing ^c against unintended lifting	5.3.2	EN 124-1:2015, 8.4.6	3	EN 124-1:2015, 6.6, declared as “Pass” according to the material used and the test method applied
— skid resistance against loss of grip	5.3.2	EN 124-1:2015, 8.4.13	3	EN 124-1:2015, 7.4 declared as “Pass” for the declared value of USRV and for the declared method and the material used
— effectiveness of child safety characteristics	5.3.2	EN 124-1:2015, 8.4.6	3	EN 124-1:2015, 6.6, declared as “Pass” according to the material used and the method declared
for the design:				
Vents in covers	5.1	EN 124-1:2015, 8.4.1	3	EN 124-1:2015, 6.1
Clear opening of manhole tops for man	5.1	EN 124-1:2015, 8.4.2	3	EN 124-1:2015, 6.2

Characteristic	Requirement	Assessment method	No. of samples ^a	Compliance criteria
entry				
Depth of insertion	5.1	EN 124-1:2015, 8.4.3	3	EN 124-1:2015, 6.3
Clearance	5.1	EN 124-1:2015, 8.4.4	3	EN 124-1:2015, 6.4
Compatibility of seatings	5.1	EN 124-1:2015, 8.4.5	3	EN 124-1:2015, 6.5
Handling of covers and gratings	5.1	EN 124-1:2015, 8.4.7	3	EN 124-1:2015, 6.7
Slot dimensions of gratings	5.1	EN 124-1:2015, 8.4.8	3	EN 124-1:2015, 6.8
Dirt pans and dirt buckets	5.1	EN 124-1:2015, 8.4.9	3	EN 124-1:2015, 6.9
Positioning of covers and gratings	5.1	EN 124-1:2015, 8.4.10	3	EN 124-1:2015, 6.10
Flatness of manhole covers and gratings	5.1	EN 124-1:2015, 8.4.11	3	EN 124-1:2015, 6.11
Concaveness of gratings	5.1	EN 124-1:2015, 8.4.12	3	EN 124-1:2015, 6.12
Surface conditions	5.1	EN 124-1:2015, 8.4.13	3	EN 124-1:2015, 6.13
Manhole tops with sealing feature	5.1	Visual inspection of presence of anchors	3	EN 124-1:2015, 6.14
Frame depth	5.1	EN 124-1:2015, 8.4.15	3	EN 124-1:2015, 6.16
Opening angle of hinged covers/gratings	5.1	EN 124-1:2015, 8.4.16	3	EN 124-1:2015, 6.17
Appearance	5.1	Visual inspection	3	EN 124-1:2015, 7.1
Deflection under load	5.4.2	EN 124-3:2015, 6.2	3	EN 124-3:2015, 5.4.2

^a If one of the 3 samples fails, the specific test can be repeated with 5 new samples. All the 5 samples shall pass the test.

^b The proportion between the test load for the declared class and the maximum load to be expected in service in conjunction with the stable behaviour of the material specified in Clause 4 covers all effects which can influence the durability of the load bearing capacity.

^c Ensured by using materials with proven resistance against corrosion and passing the test according to EN 124-1, 8.4.6.

7.2.3 Test reports

The results of the determination of the product type shall be documented in test reports. Test reports shall be retained by the manufacturer for at least 10 years after the last date of production of the gully top or manhole top to which they relate.

7.2.4 Shared other party results

A manufacturer may use the results of the product type determination obtained by someone else (e.g. by another manufacturer, as a common service to manufacturers, or by a product developer), to justify his own declaration of performance regarding a product that is manufactured according to the same design (e.g. dimensions) and with raw materials, constituents and manufacturing methods of the same kind, provided that:

- the results are known to be valid for products with the same essential characteristics relevant for the product performance;

- in addition to any information essential for confirming that the product has such same performances related to specific essential characteristics, the other party who has carried out the determination of the product type concerned or has had it carried out, has expressly accepted to transmit to the manufacturer the results and the test report to be used for the latter's product type determination, as well as information regarding production facilities and the production control process that can be taken into account for FPC;
- the manufacturer using other party results accepts to remain responsible for the product having the declared performances and he also:
 - ensures that the product has the same characteristics relevant for performance as the one that has been subjected to the determination of the product type, and that there are no significant differences with regard to production facilities and the production control process compared to that used for the product that was subjected to the determination of the product type; and
 - keeps available a copy of the determination of the product type report that also contains the information needed for verifying that the product is manufactured according to the same design and with raw materials, constituents and manufacturing methods of the same kind.

7.3 Factory production control (FPC)

7.3.1 General

The manufacturer shall establish, document and maintain an FPC system to ensure that the products placed on the market comply with the declared performance of the essential characteristics.

The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product.

All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures.

This factory production control system documentation shall ensure a common understanding of the evaluation of the constancy of performance and enable the achievement of the required product performances and the effective operation of the production control system to be checked. Factory production control therefore brings together operational techniques and all measures allowing maintenance and control of the compliance of the product with the declared performances of the essential characteristics.

7.3.2 Requirements

7.3.2.1 General

The manufacturer is responsible for organizing the effective implementation of the FPC system in line with the content of this product standard. Tasks and responsibilities in the production control organization shall be documented and this documentation shall be kept up-to-date.

The responsibility, authority and the relationship between personnel that manages, performs or verifies work affecting product constancy, shall be defined. This applies in particular to personnel that need to initiate actions preventing product non-constancies from occurring, actions in case of non-constancies and to identify and register product constancy problems.

Personnel performing work affecting the constancy of performance of the product shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

In each factory the manufacturer may delegate the action to a person having the necessary authority to:

- identify procedures to demonstrate constancy of performance of the product at appropriate stages;

- identify and record any instance of non-constancy;
- identify procedures to correct instances of non-constancy.

The manufacturer shall draw up and keep up-to-date documents defining the factory production control. The manufacturer's documentation and procedures should be appropriate to the product and manufacturing process. The FPC system should achieve an appropriate level of confidence in the constancy of performance of the product. This involves:

- a) the preparation of documented procedures and instructions relating to factory production control operations, in accordance with the requirements of the technical specification to which reference is made;
- b) the effective implementation of these procedures and instructions;
- c) the recording of these operations and their results;
- d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-conformity and, if necessary, revise the FPC to rectify the cause of non-constancy of performance.

Where subcontracting takes place, the manufacturer shall retain the overall control of the product and ensure that he receives all the information that is necessary to fulfil his responsibilities according to this European Standard.

If the manufacturer has part of the product designed, manufactured, assembled, packed, processed and/or labelled by subcontracting, the FPC of the subcontractor may be taken into account, where appropriate for the product in question.

The manufacturer who subcontracts all of his activities may in no circumstances pass the above responsibilities on to a subcontractor.

NOTE Manufacturers having an FPC system, which complies with EN ISO 9001 and which addresses the provisions of the present European Standard are considered as satisfying the FPC requirements of the Regulation (EU) No. 305/2011.

7.3.2.2 Equipment

7.3.2.2.1 Testing

All weighing, measuring and testing equipment shall be calibrated and regularly inspected according to documented procedures, frequencies and criteria.

7.3.2.2.2 Manufacturing

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process. Inspections and maintenance shall be carried out and recorded in accordance with the manufacturer's written procedures and the records retained for the period defined in the manufacturer's FPC procedures.

7.3.2.3 Raw materials and components

The specifications of all incoming raw materials and components shall be documented, as shall the inspection-scheme for ensuring their compliance. In case supplied kit components are used, the constancy of performance system of the component shall be that given in the appropriate harmonized technical specification for that component.

7.3.2.4 Traceability and marking

Individual products shall be identifiable and traceable with regard to their production origin. The manufacturer shall have written procedures ensuring that processes related to affixing traceability codes and/or markings are inspected regularly.

7.3.2.5 Controls during manufacturing process

The manufacturer shall plan and carry out production under controlled conditions.

For components used for the assembly of manhole tops and gully tops, such as cushioning inserts, bolts, etc. not specified in this standard and coating materials, the supplier's documentation shall be checked at every delivery for compliance with the manufacturer's specification. The documents shall be retained for a period of 10 years.

For all materials in accordance with Clause 4, used for the manufacturing process of manhole tops and gully tops, specified in this standard the supplier's documentation shall be checked at every delivery for compliance with the manufacturer's specification.

NOTE For deliveries from suppliers having an established quality management system, the frequency of inspection can be reduced at the discretion of the manufacturer.

Raw materials used for the manufacturing process of manhole tops and gully tops made of steel or aluminium alloys shall be inspected according to Table 3 or Table 4 as applicable.

Table 3 — Material delivery inspection for steel and stainless steel

Aspect of inspection	Method of inspection	Frequency of inspection	Document retention period
Steel	Cert supplier ^a	Every delivery	1 year
Stainless steel	Cert supplier ^a	Every delivery	1 year
^a Certificate of the supplier: — deliveries from suppliers having a certified quality insurance system shall be subject to random control; — deliveries from suppliers having no certified quality insurance system shall be subject to a systematic control for each delivery.			

Table 4 — Material delivery inspection for aluminium alloys

Aspect of inspection	Method of inspection	Frequency of inspection	Document retention period
Raw material storage area	Visually	Regularly ^b	-
Aluminium alloys (4.4)	Cert supplier ^a	Every delivery	1 year
Additives	Refer to the order	Every delivery	1 year
Energy for melting:			
Gas	Cert supplier ^a	Regularly/when changed	1 year
Sand for moulds/cores	Cert supplier ^a and sieve analysis	Regularly ^b	1 year
^a Certificate of the supplier: — deliveries from suppliers having a certified quality insurance system shall be subject to random control; — deliveries from suppliers having no certified quality insurance system shall be subject to a systematic control for each delivery.			
^b FPC – Factory Production Control			

The following relevant process parameters shall be controlled, measured and documented in accordance with the manufacturer's process instructions:

- moulds, cores and pouring temperature of melt in the ladle/furnace, where applicable;
- mechanical properties and dimensions, where applicable.

7.3.2.6 Product testing and evaluation

The manufacturer shall establish procedures to ensure that the stated values of the characteristics for which he declares the performance given in Table 5 in **bold letters** are maintained. The characteristics and the means of control shall be as given in Table 5.

Table 5 — Product testing of finished products

Characteristic	Requirement	Assessment method	Minimum frequency of inspection (units)	Document retention period
for the declared performance:				
Reaction to fire	5.3.1	Classified without testing	-	-
Frame bearing area	5.1	Calculation acc. to EN 124-1:2015, 8.4.14	1:5 000 ^a	10 years
Load bearing capacity	5.1	EN 124-1:2015, 8.3	1:5 000 ^a	10 years
Permanent set	5.1	EN 124-1:2015, 8.2	1:5 000 ^a	10 years
Securing of the cover/ grating within the frame	5.1	EN 124-1:2015, 8.4.6	1:5 000 ^a	10 years
Child safety	5.1	EN 124-1:2015, 8.5	1:5 000 ^a	10 years
Skid resistance	5.1	EN 124-1:2015, 8.4.13	1:5 000 ^a	10 years
Durability of				
– load bearing capacity	5.3.2	EN 124-1:2015, 8.2 EN 124-1:2015, 8.3	1:5000 ^a	10 years
– securing	5.3.2	EN 124-1:2015, 8.4.6	1:5000 ^a	10 years
– skid resistance	5.3.2	EN 124-1:2015, 8.4.13	1:5000 ^a	10 years
for the design:				
Vents in covers	5.1	EN 124-1:2015, 8.4.1 visual inspection	Every cover	5 years
Clear opening of manhole tops for man entry	5.1	EN 124-1:2015, 8.4.2 Measurement	1:5 000 ^a	5 years
Depth of insertion	5.1	EN 124-1:2015, 8.4.3 Measurement	1:5 000 ^a	5 years
Clearance	5.1	EN 124-1:2015, 8.4.4 Measurement	1:5 000 ^a	5 years
Compatibility of seatings	5.1	EN 124-1:2015, 8.4.5 Measurement	1:5 000 ^a	5 years
Handling of covers and gratings	5.1	EN 124-1:2015, 8.4.7	1:5 000 ^a	5 years

Characteristic	Requirement	Assessment method	Minimum frequency of inspection (units)	Document retention period
Slot dimensions of gratings	5.1	EN 124-1:2015, 8.4.8 Measurement	1:5 000 ^a	5 years
Dirt pans and dirt buckets	5.1	EN 124-1:2015, 8.4.9	1:5 000 ^a	5 years
Positioning of covers and gratings	5.1	EN 124-1:2015, 8.4.10	1:5 000 ^a	5 years
Flatness of manhole covers and gratings	5.1	EN 124-1:2015, 8.4.11	1:5 000 ^a	5 years
Concaveness of gratings	5.1	EN 124-1:2015, 8.4.12	1:5 000 ^a	5 years
Surface conditions	5.1	EN 124-1:2015, 8.4.13	1:5 000 ^a	5 years
Manhole tops with sealing feature	5.1	Visual inspection	1:5 000 ^a	5 years
Frame depth	5.1	EN 124-1:2015, 8.4.15 Measurement	1:5 000 ^a	5 years
Opening angle of hinged covers/gratings	5.1	EN 124-1:2015, 8.4.16	1:5 000 ^a	5 years
Appearance	5.1	Visual inspection	1:5 000 ^a	5 years
Marking	9	Visual inspection	Every product	5 years
Deflection under load	5.4.2	EN 124-3:2015, 6.2	1:5 000 ^a	5 years
^a At least every 6 months.				

7.3.2.7 Non-complying products

The manufacturer shall have written procedures which specify how non-complying products shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the manufacturer's written procedures.

Where the product fails to satisfy the acceptance criteria, the provisions for non-complying products shall apply, the necessary corrective action(s) shall immediately be taken and the products or batches not complying shall be isolated and properly identified.

Once the fault has been corrected, the test or verification in question shall be repeated.

The results of controls and tests shall be properly recorded. The product description, date of manufacture, test method adopted, test results and acceptance criteria shall be entered in the records under the signature of the person responsible for the control/test.

With regard to any control result not meeting the requirements of this European Standard, the corrective measures taken to rectify the situation (e.g. a further test carried out, modification of manufacturing process, throwing away or putting right of product) shall be indicated in the records.

7.3.2.8 Corrective action

The manufacturer shall have documented procedures that instigate action to eliminate the cause of non-conformities in order to prevent recurrence.

7.3.2.9 Handling, storage and packaging

The manufacturer shall have procedures providing methods of product handling and shall provide suitable storage areas preventing damage or deterioration.

7.3.3 Product specific requirements

The FPC system shall address this European Standard and ensure that the products placed on the market comply with the declaration of performance.

The FPC system shall include a product specific FPC, which identifies procedures to demonstrate compliance of the product at appropriate stages, i.e.:

- a) the controls and tests to be carried out prior to and/or during manufacture according to a frequency laid down in the FPC test plan;

and/or

- b) the verifications and tests to be carried out on finished products according to a frequency laid down in the FPC test plan.

If the manufacturer uses only finished products, the operations under b) shall lead to an equivalent level of compliance of the product as if FPC had been carried out during the production.

If the manufacturer carries out parts of the production himself, the operations under b) may be reduced and partly replaced by operations under a). Generally, the more parts of the production that are carried out by the manufacturer, the more operations under b) may be replaced by operations under a).

In any case the operation shall lead to an equivalent level of compliance of the product as if FPC had been carried out during the production.

NOTE Depending on the specific case, it can be necessary to carry out the operations referred to under a) and b), only the operations under a) or only those under b).

The operations under a) refer to the intermediate states of the product as on manufacturing machines and their adjustment, and measuring equipment etc. These controls and tests and their frequency shall be chosen based on product type and composition, the manufacturing process and its complexity, the sensitivity of product features to variations in manufacturing parameters, etc.

The manufacturer shall establish and maintain records that provide evidence that the production has been sampled and tested. These records shall show clearly whether the production has satisfied the defined acceptance criteria and shall be available for at least three years.

7.3.4 Initial inspection of factory and of FPC

Initial inspection of factory and of FPC shall be carried out when the production process has been finalized and in operation. The factory and FPC documentation shall be assessed to verify that the requirements of 7.3.2 and 7.3.3 are fulfilled.

During the inspection it shall be verified:

- a) that all resources necessary for the achievement of the product characteristics included in this European Standard are in place and correctly implemented; and
- b) that the FPC-procedures in accordance with the FPC documentation are followed in practice; and

- c) that the product complies with the product type samples, for which compliance of the product performance to the DoP has been verified.

All locations where final assembly or at least final testing of the relevant product is performed shall be assessed to verify that the above conditions a) to c) are in place and implemented. If the FPC system covers more than one product, production line or production process, and it is verified that the general requirements are fulfilled when assessing one product, production line or production process, then the assessment of the general requirements does not need to be repeated when assessing the FPC for another product, production line or production process.

All assessments and their results shall be documented in the initial inspection report.

7.3.5 Continuous surveillance of FPC

Surveillance of the FPC shall be undertaken once per year. The surveillance of the FPC shall include a review of the FPC test plan(s) and production processes(s) for each product to determine if any changes have been made since the last assessment or surveillance. The significance of any changes shall be assessed.

Checks shall be made to ensure that the test plans are still correctly implemented and that the production equipment is still correctly maintained and calibrated at appropriate time intervals.

The records of tests and measurement made during the production process and to finished products shall be reviewed to ensure that the values obtained still correspond with those values for the samples submitted to the determination of the product type and that the correct actions have been taken for non-compliant products.

7.3.6 Procedure for modifications

If modifications are made to the product, production process or FPC system that could affect any of the product characteristics declared according to this standard, then all the characteristics for which the manufacturer declares performance, which may be affected by the modification, shall be subject to the determination of the product type, as described in 7.2.1.

Where relevant, a re-assessment of the factory and of the FPC system shall be performed for those aspects, which may be affected by the modification.

All assessments and their results shall be documented in a report.

7.3.7 One-off products and products produced in very low quantity

The manhole tops and gully tops produced as a one-off, prototypes assessed before full production is established, and products produced in very low quantities maximum 10 per year shall be assessed as follows.

For type assessment, the provisions of 7.2.1, 3rd paragraph apply, together with the following additional provisions:

- in case of prototypes, the test samples shall be representative of the intended future production and shall be selected by the manufacturer;
- on request of the manufacturer, the results of the assessment of prototype samples may be included in a certificate or in test reports issued by the involved third party.

The FPC system of one-off products and products produced in very low quantities shall ensure that raw materials and/or components are sufficient for production of the product. The provisions on raw materials and/or components shall apply only where appropriate. The manufacturer shall maintain records allowing traceability of the product.

For prototypes, where the intention is to move to series production, the initial inspection of the factory and FPC shall be carried out before the production is already running and/or before the FPC is already in practice. The following shall be assessed:

- the FPC-documentation; and
- the factory.

In the initial assessment of the factory and FPC it shall be verified:

- a) that all resources necessary for the achievement of the product characteristics included in this European Standard will be available; and
- b) that the FPC-procedures in accordance with the FPC-documentation will be implemented and followed in practice; and
- c) that procedures are in place to demonstrate that the factory production processes can produce a product complying with the requirements of this European Standard and that the product will be the same as the samples used for the determination of the product type, for which compliance with this European Standard has been verified.

Once series production is fully established, the provisions of 7.3 shall apply.

8 Designation

Where required for specification and documentation purposes, product designation in accordance with this European Standard shall consist of:

- a) name of product (manhole top or gully top);
- b) European Standard number (EN 124-3);
- c) load class (see 5.1);
- d) code of the material for Stainless steel (SS), Galvanized Steel (GS), Aluminium (AL);
- e) code related to the number of the parts of EN 124 series to which the cover and the frame complies according to Table 6;

Table 6 — Designation according to the material of frame and cover/grating

Designation	Cover/grating in accordance with	Frame in accordance with
3/3	EN 124-3	EN 124-3
3/2	EN 124-3	EN 124-2
3/4	EN 124-3	EN 124-4
3/5	EN 124-3	EN 124-5
3/6	EN 124-3	EN 124-6

- f) clear opening (CO in mm), e.g. 600 indicates CO = 600 mm;
- g) securing method:
 - 1) securing feature (F);

- 2) mass per unit area (W);
 - 3) other methods (O);
- h) skid resistance:
- 1) concrete (CR);
 - 2) defined raised pattern (RP);
 - 3) measured value of USRV (e.g. 40);
- i) covers placed on the market unfilled (U);
- j) freeze-thaw resistance (+R) (only in case of covers filled with concrete).

Manhole tops and gully tops consisting of a combination of elements in accordance with EN 124-2, EN 124-3, EN 124-4, EN 124-5 and EN 124-6 shall be designated with the number of the standard for which the cover meets the requirements of the relevant standard.

EXAMPLE 1 Designation of a manhole top according to EN 124-3, class D 400, cover and frame made of galvanized steel (GS) (3/3); with a clear opening CO 600 mm (600), other securing method (O), skid resistance (RP)

Manhole Top EN 124-3 — D 400 – GS – 3/3 – 600 – O – RP

EXAMPLE 2 Designation of a manhole top according to EN 124-3, class A 15, consisting of a combination of a cover made of aluminium (Al) according to EN 124-3 with a frame made of PP according to EN 124-6 (3/6), with a clear opening CO 400 mm (400), securing feature (F), skid resistance (USRV 40)

Manhole Top EN 124-3 — A 15 – Al – 3/6 – 400 – F – 40

EXAMPLE 3 Designation of a manhole top according to EN 124-3, class B 125, cover and frame made of stainless steel (3/3) cover filled with concrete, with a clear opening CO 800 mm (800), securing method mass per unit area (W), skid resistance covered by the concrete surface (CR), freeze-thaw resistant (+R)

Manhole Top EN 124-3 — B 125 – SS – 3/3 – 800 – W – CR – +R

EXAMPLE 4 Designation of a gully top according to EN 124-3, class C 250, cover and frame made of steel (3/3) cover filled with concrete, with a clear opening CO 550 mm (550), securing method mass per unit area (W), skid resistance covered by the raised pattern (RP)

Gully Top EN 124-3 — C 250 – GS – 3/3 – 550 – W – RP

EXAMPLE 5 Designation of a manhole top according to EN 124-3, class B 125, cover and frame made of steel (3/3), with a clear opening CO 600 mm (600), securing feature (F), placed on the market with unfilled cover (U)

Manhole Top EN 124-3 — B 125 – GS – 3/3 – 600 – F – U

NOTE 1 In case of covers placed on the market unfilled, the no performance declared (NPD) option is used for skid resistance (see ZA.1).

NOTE 2 The designation provides a standardized pattern of designation from which a rapid and unequivocal description of an item is communicated.

9 Marking

Covers, gratings and frames of manhole tops and gully tops according to this European Standard shall be marked as follows:

- a) number of this European Standard, i.e. EN 124-3;
- b) appropriate class (e.g. B 125);
- c) name and/or identification mark of the manufacturer;
- d) factory of manufacture which may be in code;
- e) date or week and year of manufacture (coded or not coded);
- f) for covers filled with concrete marking relating to the freeze/thaw resistance (+R), if applicable (see EN 124-4:2015).

In addition gratings, covers and frames of manhole tops and gully tops according to this standard can be marked with:

- g) additional markings relating to the intended application of the user;
- h) product identification (name and/or catalogue number);
- i) nominal mass in kilograms (kg).

Markings a) to f) of covers, gratings and frames shall be clear, permanent and an integral part of it.

All markings shall, where possible, be visible on the upper side (visible from the trafficked area) after the unit is installed. If this is not possible they may be placed on the underside of the cover or grating.

Markings a) and b) shall always be on the upper side of cover/grating.

Where regulatory marking provisions (see ZA.3) require information on some or all items listed in this clause, the provisions of this clause concerning those common items are deemed to be met and the information needs not be repeated for the purpose of this clause.

Annex A (normative)

Test of deflection under load

A.1 Test samples

Gully tops and manhole tops shall be tested as complete units in their condition of service, except for covers delivered unfilled, which shall be tested without filling. Units tested shall be new units that have not been subjected to any other load tests, and shall be randomly selected.

A.2 Deflection test load, F_D

A test load $F_D = 1/3 F_T$ of the test load shown in EN 124-1:2015, 7.2, Table 4, shall be applied for each class for all clear openings.

A.3 Apparatus

A.3.1 Testing machine

The testing machine, preferably a hydraulic test press, shall be capable of applying a load at least 25 % greater than the respective test load for classes A 15 to D 400 and at least 10 % greater than the respective test load for classes E 600 and F 900. A tolerance of ± 3 % of the test load shall be maintained. Except for multiple units, the dimensions of the bed of the testing machine shall be greater than the bearing area of the unit to be tested.

A.3.2 Test blocks

The dimensions and shape of test blocks shall be as shown in EN 124-1:2015, Table A.1.

A.3.3 Deflection measurement device(s)

The deflection measurement device(s) shall have a measurement range of at least 10 mm with a resolution of at least 0,01 mm and have a maximum overall accuracy of ± 5 %.

A.4 Procedure

A.4.1 Procedure for testing rectangular and circular covers/gratings

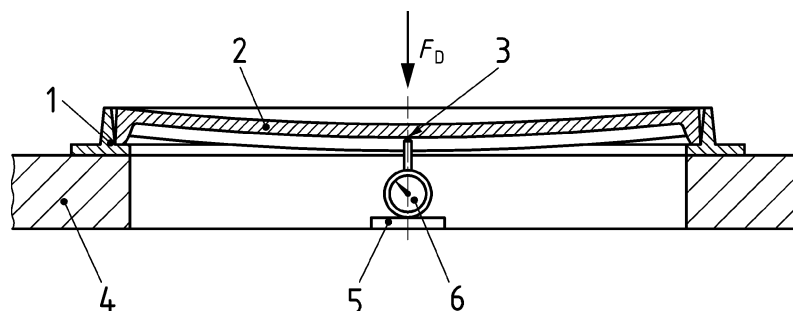
The test sample shall be placed on the test machine bed. The test sample shall be supported on the bed of the test machine in such a way as to ensure that when the cover or grating is deflected under the test load, it shall remain unsupported, and not in contact with the bed of the test machine. The cover or grating of the test sample shall rest normally in its frame.

The test block shall be placed on the geometric centre of the cover/grating with its vertical axis perpendicular to the surface (e.g. see EN 124-1:2015, Figure A.1).

The test load shall be uniformly distributed over the whole surface of the test block and any irregularities compensated for by means of an appropriate intermediate layer, e.g. softwood, fibre board, felt or similar material positioned between the cover or the grating and the test block. The dimensions of this intermediate layer shall not be larger than those of the test block.

When testing gully tops or manhole tops with a non-flat surface, the contact face of the test block shall be shaped to match the grating or cover. Patterns as defined in EN 124-1:2015, 7.4, and small deviations from a flat surface do not require a shaped contact face of the test block.

Measurement of deflection shall be made on the underside of the gully grating or manhole cover as shown in Figure A.1 in the same place as the applied test load. The deflection measurement device(s) shall be positioned within $\pm 5\%$ of the geometrical centre of the clear opening of the cover or grating.



Key

- 1 frame
- 2 cover or grating
- 3 geometric centre
- 4 bed of testing machine
- 5 measuring device support
- 6 measuring device
- F_D deflection test load

Figure A.1 — Measurement of deflection under load

A conditioning load of maximum $1/3$ of F_D shall be applied to bed the system in, and may be held for no more than 5 s and subsequently fully released. After the conditioning load is released and before F_D is applied, the deflection measurement device(s) shall be set such that it is in contact with the underside of the manhole top or gully top and (a) reference reading(s) shall be taken. The load F_D shall be applied at a rate of 1 kN/s to 5 kN/s up to $1/3 F_T$ and maintained for 30 s. The deflection measurement device(s) shall be read again within the next 10 s. The load shall then be released.

A.4.2 Procedure for testing multiple and triangular covers/gratings

In the case of multiple manhole tops or gully tops, each individual unit and each intermediate structural element shall be tested in accordance with the procedure in A.4.1. The location of the test blocks and the deflection measurement device(s) shall be in accordance with EN 124-1:2015, Figure A.1 and Figure A.2. In the case of double triangular covers or gratings, the test block shall be positioned in the geometric centre, as shown in EN 124-1:2015, Figure A.3.

A.5 Observations and reporting

Record shall be made of all deflection gauge readings, and the differences between the “reference readings” and the equivalent “readings under load” shall be determined. A comparison shall be made between these differences and the requirements of this standard, and a report prepared accordingly.

Annex ZA (informative)

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

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under Mandate M/118 “Wastewater engineering products”, as amended, given to CEN by the European Commission and the European Free Trade Association.

If this European Standard is cited in the Official Journal of the European Union (OJEU), the clauses of this standard, shown in this annex, are considered to meet the provisions of the relevant mandate, under the Regulation (EU) No. 305/2011.

This annex deals with the CE marking of gully tops and manhole tops made of steel or aluminium alloys intended for the uses indicated in Table ZA.1 and shows the relevant clauses applicable.

This annex has the same scope as in Clause 1 of this standard related to the aspects covered by the mandate and is defined by Table ZA.1.

Table ZA.1 — Relevant clauses for manhole tops and gully tops made of steel or aluminium alloys

Construction products: Gully tops and manhole tops made of steel or aluminium alloys			
Intended uses: For covering of gullies, manholes and inspection chambers in areas subject to pedestrian and/or vehicular traffic			
Essential characteristics	Clauses in this and other European Standards related to essential characteristics	Regulatory classes	Notes
Reaction to fire	EN 124–3:2015, 5.3.1	A 1 to E	A1, Classified without need for testing (CWT)
Load bearing capacity, as			
— frame bearing area	EN 124–1:2015, 6.15	-	calculation of the frame bearing pressure in N/mm^2 acc. to the requirement clause, expressed as $P_b \leq 7,5 N/mm^2$
— load bearing capacity	EN 124–1:2015, 7.2	-	tested acc. to EN 124–1:2015, 8.3, against the declared load-bearing class and expressed as test load for the declared class
— permanent set	EN 124–1:2015, 7.3	-	tested acc. to EN 124–1:2015, 8.2, and maximum permissible value declared for the load-bearing class and the clear opening as given for the product type
Securing of cover/gratings by either:			
— securing feature or	EN 124–1:2015, 6.6 a)	-	tested for classes C 250 to F 900 according to EN 124–1:2015, Annex E, and declared as h at F_v ; for classes A 15 and B 125 “securing feature” is to be declared after visible inspection

Construction products: Gully tops and manhole tops made of steel or aluminium alloys			
Intended uses: For covering of gullies, manholes and inspection chambers in areas subject to pedestrian and/or vehicular traffic			
Essential characteristics	Clauses in this and other European Standards related to essential characteristics	Regulatory classes	Notes
— mass per unit area or	EN 124-1:2015, 6.6 b)	—	weighing and declared as mass/unit area in kg/m ²
— other method	EN 124-1:2015, 6.6 c)	—	tested for classes C 250 to F 900 according to EN 124-1:2015, Annex E, and declared as h at F_v ; for classes A 15 and B 125 “other method” is to be declared after visible inspection
Child safety , by either			
— mass of the individual cover or grating or	EN 124-1:2015, 8.5	—	weighing and declared as mass in kg/m ²
— securing feature or locking accessory	EN 124-1:2015, 8.5	—	tested for classes C 250 to F 900 according to EN 124-1:2015, Annex E, and declared as h at F_v ; for classes A 15 and B 125 “other method” is to be declared after visible inspection
Skid resistance of			
a) Covers with:			
— concrete surfaces	EN 124-1:2015, 7.4.2 a)	—	visible inspection of concrete surface according to the requirement clause and expressed as “concrete surface”
— raised pattern	EN 124-1:2015, 7.4.2 b)	—	visible inspection of raised pattern measured according to the requirement clause and expressed as “raised pattern”
— other surface	EN 124-1:2015, 7.4.2 c)	—	skid resistance value measured acc. to EN 124-1:2015, Annex C, and USRV declared
b) Gratings:	EN 124-1:2015, 7.4.3	—	measured and declared as “raised pattern” for the specified raised pattern or “slots” for the measured slot dimensions
c) Frames with max. horizontal visible width of: — ≤ 40 mm or — > 40 mm	EN 124-1:2015, 7.4.4	—	EN 124-1:2015, 7.4.4, measured acc. to the requirement clause and expressed as: — “NPD” for ≤ 40 mm or — method or value for > 40 mm
Durability of			
— load bearing capacity against: mechanical failure	EN 124-3:2015, 5.3.2	-	expressed as “Pass” for the material and the test method applied
— securing against: mechanical failure	EN 124-3:2015, 5.3.2	-	expressed as “Pass” for the material and the test method applied
— skid resistance against: surface loss of grip	EN 124-3:2015, 5.3.2	-	expressed as “Pass” for the material (concrete) or the “raised pattern” or the declared value of USRV, if applicable
— effectiveness of child safety	EN 124-3:2015, 5.3.2.5	-	expressed as “Pass” after visual inspection of the performance in accordance with EN 124-1:2015, 6.6

Construction products: Gully tops and manhole tops made of steel or aluminium alloys			
Intended uses: For covering of gullies, manholes and inspection chambers in areas subject to pedestrian and/or vehicular traffic			
Essential characteristics	Clauses in this and other European Standards related to essential characteristics	Regulatory classes	Notes
Dangerous substances	EN 124-3:2015, 5.3.3	-	see 5.3.3

The declaration of the product performance related to certain essential characteristics is not required in those Member States (MS) where there are no regulatory requirements on these essential characteristics for the intended use of the product.

In this case, manufacturers placing their products on the market of these MS are not obliged to determine nor declare the performance of their products with regard to these essential characteristics and the option “No performance determined” (NPD) in the information accompanying the CE marking and in the declaration of performance (see ZA.3) may be used for those essential characteristics.

ZA.2 Procedures for AVCP of gully tops and manhole tops made of steel or aluminium alloys

ZA.2.1 Systems of attestation of conformity

The AVCP systems of gully tops and manhole tops indicated in Table ZA.1 established by EC Decision 97/464/EC of 1997-06-27 (see OJEU L 198 of 1997-07-25), as amended by 2004/663/EC of 2004-09-20 (see OJEU L 302 of 2004-09-29), is shown in Table ZA.2 for the indicated intended use(s) and relevant level(s) or class(es) of performance.

Table ZA.2 — Systems of AVCP

Product	Intended use	Level(s) or class(es) of performance	AVCP systems
Manhole tops and gully tops	For use in vehicular and pedestrian areas	-	1
	For all use(s) when subject to regulations on reaction to fire	A 1*, A 2*, B*, C*	1
		A 1**, A 2**, B**, C**, D, E	3
		(A 1 to E)***, F	4
System 1: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.2 System 3: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.4 System 4: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.5			
* Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material). ** Products/materials not covered by footnote (*). *** Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A 1 according to the Decision 96/603/EC, as amended).			

NOTE The attestation of conformity systems 1 and 3 with regard to installations of the products in areas subject to reaction to fire regulations, given in the table above are not applicable for these products for the reason, that the material used for these products is deemed to satisfy requirements on the material not contributing to fire and which allows the reaction to fire performance of these products may be declared only by system 4 as class A 1 without the need for testing.

The AVCP of the gully tops and manhole tops made of steel or aluminium alloys in Table ZA.1 shall be according to the AVCP procedures indicated in Table ZA.3 resulting from application of the clauses of this or other European Standard indicated therein. The content of tasks of the notified body shall be limited to those essential characteristics as provided for, if any, in Annex III of the relevant mandate and to those that the manufacturer intends to declare.

Table ZA.3 — Assignment of AVCP tasks for gully tops and manhole tops made of steel or aluminium alloys under system 1 and 4

Tasks		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	<ul style="list-style-type: none"> — Parameters related to essential characteristics of Table ZA.1 (except reaction to fire), relevant for the intended use for which performance is declared, — Reaction to fire, relevant for all use(s) when subject to regulations on reaction to fire (for classes A1)^a. 	7.3.1, 7.3.2, 7.3.3, 7.3.5, 7.3.6
	Further testing of samples taken at the factory according to the prescribed test plan	— Essential characteristics of Table ZA.1 (except reaction to fire) relevant for the intended use for which performance is declared.	7.3.4
	Determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	— Reaction to fire, relevant for all use(s) when subject to regulations on reaction to fire (for Class A1) ^a .	7.2
Tasks for the notified certification body	Determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product	— Essential characteristics of Table ZA.1 relevant for the intended use for which performance is declared, (except reaction to fire).	7.2
	Initial inspection of manufacturing plant and of FPC	— Parameters related to essential characteristics of Table ZA.1, (except reaction to fire), relevant for the intended use which is declared. Documentation of the FPC.	7.3.4
	Continuous surveillance, assessment and evaluation of FPC	— Parameters related to essential characteristics of Table ZA.1, (except reaction to fire), relevant for the intended use which is declared. Documentation of FPC.	7.3.5

^a See footnote (***) to Table ZA.2.

ZA.2.2 Declaration of performance (DoP)

ZA.2.2.1 General

The manufacturer draws up the DoP and affixes the CE marking on the basis of the different AVCP systems set out in Annex V of the Regulation (EU) No. 305/2011:

- the factory production control and further testing of samples taken at the factory according to the prescribed test plan, carried out by the manufacturer; and

- the certificate of constancy of performance issued by the notified product certification body on the basis of determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product; initial inspection of the manufacturing plant and of factory production control and continuous surveillance, assessment and evaluation of factory production control.

ZA.2.2.2 Content

The model of the DoP is provided in Annex III of the Regulation (EU) No. 305/2011. According to this Regulation, the DoP shall contain, in particular, the following information:

- the reference of the product-type for which the declaration of performance has been drawn up;
- the AVCP system or systems of the construction product, as set out in Annex V of the CPR;
- the reference number and date of issue of the harmonized standard which has been used for the assessment of each essential characteristic;
- where applicable, the reference number of the Specific Technical Documentation used and the requirements with which the manufacturer claims the product complies.

The DoP shall in addition contain:

- a) the intended use or uses for the construction product, in accordance with the applicable harmonized technical specification;
- b) the list of essential characteristics, as determined in the harmonized technical specification for the declared intended use or uses;
- c) the performance of at least one of the essential characteristics of the construction product, relevant for the declared intended use or uses;
- d) where applicable, the performance of the construction product, by levels or classes, or in a description, if necessary based on a calculation in relation to its essential characteristics determined in accordance with the Commission determination regarding those essential characteristics for which the manufacturer shall declare the performance of the product when it is placed on the market or the Commission determination regarding threshold levels for the performance in relation to the essential characteristics to be declared;
- e) the performance of those essential characteristics of the construction product which are related to the intended use or uses, taking into consideration the provisions in relation to the intended use or uses where the manufacturer intends the product to be made available on the market;
- f) for the listed essential characteristics for which no performance is declared, the letters "NPD" (No Performance Determined).

Regarding the supply of the DoP, Article 7 of the Regulation (EU) No. 305/2011 applies.

The information referred to in Article 31 or, as the case may be, in Article 33 of Regulation (EC) No 1907/2006, (REACH) shall be provided together with the DoP.

ZA.2.2.3 Example of DoP

The following gives an example of a filled-in DoP for a manhole top, made of steel

DECLARATION OF PERFORMANCE
No. 00001 – CPR–2015/05/14

1. Unique identification code of the product-type:

Manhole Top EN 124-3 — D 400 – GS – 3/3 – 600 – F – RP

2. Intended use or uses:

For covering of manholes and inspection chambers in areas subjected to pedestrian and/or vehicular traffic

3. Manufacturer:

**AnyCo SA, PO Box 21
B-1050 Brussels, Belgium
Tel.: +32987654321
Fax: +32123456789
e-mail: anyco.sa@provider.be**

4. Authorized representative:

**Anyone Ltd
Flower Str. 24
West Hamfordshire
UK-589645 United Kingdom
Tel. +44987654321
Fax: +44123456789
e-mail: anyone.ltd@provider.uk**

5. System of AVCP:

System 1 for the intended use under item 2

6. Harmonized standard: EN 124-3

Notified product certification body (name), with No. 5678, performed the determination of the product-type on the basis of type testing, the initial inspection of the manufacturing plant and of factory production control and the continuous surveillance, assessment and evaluation of factory production control under system 1 and issued a certificate of constancy of performance of the product.

7. Declared performance

Essential characteristics	Performance	Harmonized technical specification
Reaction to fire	A 1	EN 124-3:2015
Load-bearing capacity, as:		
— frame bearing area	$P_b \leq 7,5 \text{ N/mm}^2$	
— load-bearing capacity	400 kN	
— permanent set	$\leq 2 \text{ mm}$	
Securing of covers		
— by securing feature	0 mm at 1 100 N	
Child safety	Locking accessory	
Skid resistance	Raised pattern	

Essential characteristics	Performance	Harmonized technical specification
Durability of load bearing capacity , against:		
— mechanical failure	Pass	
Durability of securing , against:		
— mechanical failure	Pass	
Durability of skid resistance , against:		
— loss of grip	Pass	
Durability of effectiveness of child safety	Pass	
Dangerous substances	NPD	

8. Appropriate Technical Documentation and/or Specific Technical Documentation, if appropriate (see Articles 36 to 38 of Regulation (EU) No. 305/2011)

- not appropriate -

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued in accordance with regulation (EU) No. 305/2011 under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

(name)

at (place) on (date of issue)

(signature)

ZA.3 CE marking and labelling

The CE marking symbol shall be in accordance with the general principles set out in Article 30 of Regulation (EC) No 765/2008 and shall be affixed visibly, legibly and indelibly to the manhole top or gully top.

The CE marking and the accompanying information shall be placed on a label attached to it, or on the packaging or on the accompanying documents.

The CE marking shall be followed by:

- a) the last two digits of the year in which it was first affixed;
- b) the name and the registered address of the manufacturer, or the identifying mark allowing identification of the name and address of the manufacturer easily and without any ambiguity;
- c) the unique identification code of the product-type;
- d) the reference number of the declaration of performance (see example of DoP);
- e) the level or class of the performance declared;
- f) the dated reference to the harmonized technical specification applied;
- g) the identification number of the notified body;

h) the intended use as laid down in the harmonized technical specification applied.

The CE marking shall be affixed before the construction product is placed on the market. It may be followed by a pictogram or any other mark notably indicating a special risk or use.

Figure ZA.1 gives an example of such complete CE marking given in the commercial documents, accompanying the manhole top or gully top.


 01234		<p><i>“CE” marking consisting of the “CE”- symbol</i></p>
AnyCo Ltd 15 No. 00001 – CPR–2015/05/14		<p><i>Identification number of the notified certification body</i></p> <p><i>Name and registered address or identifying mark of the manufacturer</i></p> <p><i>Last two digits of the year in which the marking was first affixed</i></p> <p><i>Reference number of the DoP</i></p>
EN 124–3:2015 Manhole Top EN 124–3 — D 400 – GS – 3/3 – 600 – F – RP for use in areas for pedestrian and/or vehicular traffic		<p><i>Number of the European Standard, and the year of its publication</i></p> <p><i>Unique identification code of the product type</i></p> <p><i>Intended use of the product as laid down in the European Standard applied</i></p>
Reaction to fire	A1	<p><i>Levels or classes of the performance declared</i></p>
Load-bearing capacity, as:		
— frame bearing area	$P_b \leq 7,5 \text{ N/mm}^2$	
— load-bearing capacity	400 kN	
— permanent set	$\leq 2 \text{ mm}$	
Securing of cover		
— securing feature	0 mm at 1 100 N	
Child safety	Locking accessory	
Skid resistance	Raised pattern	
Durability of load bearing capacity against		
— mechanical failure	Pass	
Durability of securing, against		
— unintended lifting	Pass	
Durability of skid resistance against		
— loss of grip	Pass	
Durability of effectiveness of child safety characteristics	NPD	
Dangerous substances	NPD	

Figure ZA.1 — Example for CE marking given in the commercial documents, accompanying a manhole top class D 400, made of steel and secured by securing feature

Bibliography

- [1] EN 1253 (all parts), *Gullies for buildings*
- [2] EN 1433, *Drainage channels for vehicular and pedestrian areas — Classification, design and testing requirements, marking and evaluation of conformity*
- [3] EN ISO 7599, *Anodizing of aluminium and its alloys — General specifications for anodic oxidation coatings on aluminium (ISO 7599)*
- [4] EN ISO 9001, *Quality management systems — Requirements (ISO 9001)*

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