

Plastics piping systems for non-pressure underground drainage and sewerage — Polypropylene with mineral modifier(s) (PP-MD) —

Part 2: Guidance for the assessment of conformity

ICS 23.040.01; 93.030

National foreword

This Draft for Development is the UK implementation of CEN/TS 14758-2:2007.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application can be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the European organization responsible for its conversion to a European standard. A review of this publication will be initiated not later than 3 years after its publication by the European organization so that a decision can be taken on its status. Notification of the start of the review period will be made in an announcement in the appropriate issue of *Update Standards*.

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into a European Standard, to extend the life of the Technical Specification or to withdraw it. Comments should be sent to the Secretary of the responsible BSI Technical Committee at British Standards House, 389 Chiswick High Road, London W4 4AL.

The UK participation in its preparation was entrusted by Technical Committee PRI/88, Plastics piping systems, to Subcommittee PRI/88/1, Plastics piping for non-pressure applications.

A list of organizations represented on this committee 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

**Plastics piping systems for non-pressure underground drainage
and sewerage - Polypropylene with mineral modifier(s) (PP-MD)
- Part 2: Guidance for the assessment of conformity**

Systèmes de canalisations en plastique pour les
branchements et les collecteurs d'assainissement enterrés
sans pression - Polypropylène avec modificateurs minéraux
(PP-MD) - Partie 2 : Guide d'évaluation de la conformité

Kunststoff-Rohrleitungssysteme für erdverlegte drucklose
Abwasserkanäle und -leitungen - Polypropylen mit
mineralischen Additiven (PP-MD) - Teil 2: Empfehlungen
für die Beurteilung der Konformität

This Technical Specification (CEN/TS) was approved by CEN on 23 June 2007 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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Foreword

This document (CEN/TS 14758-2:2007) has been prepared by Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems", the secretariat of which is held by NEN.

System Standards are based on the results of the work undertaken in ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids", which is a Technical Committee of the International Organization for Standardization (ISO).

They are supported by separate standards on test methods to which references are made throughout the System Standard.

The System Standards are consistent with general standards on functional requirements and on recommended practice for installation.

EN 14758 consists of the following Parts, under the general title *Plastics piping systems for non-pressure underground drainage and sewerage — Polypropylene with mineral modifier(s) (PP-MD)*

- *Part 1: Specifications for pipes, fittings and the system* ¹⁾ (amended in 2007)
- *Part 2: Guidance for the assessment of conformity* (this Technical Specification)
- *Part 3: Guidance for installation* (Technical Specification)

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

¹⁾ An amendment is under preparation.

1 Scope

This European Technical Specification gives guidance for the assessment of conformity to be included in the manufacturer's quality plan as part of the quality system.

This Technical Specification includes:

- a) requirements for materials, components, joints and assemblies given in EN 14758-1;
- b) requirements for the manufacturer's quality system;

NOTE 1 It is recommended that the quality system conforms to EN ISO 9001 [1].

- c) definitions and procedures to be applied if third party certification is involved.

NOTE 2 If third party certification is involved, it is recommended that the certification body is accredited to EN 45011 [2] or EN 45012 [3], as applicable.

This Technical Specification is applicable to piping systems made of polypropylene (PP-MD) intended to be used for

- non-pressure underground drainage and sewerage outside building structures (application area code "U"), reflected in the marking of products by "U"; and
- non-pressure underground drainage and sewerage for both buried in the ground within the building structure (application area code "D") and outside the building structure (application area code "U"), reflected in the marking of products by "UD".

2 Normative references

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

EN 14758-1:2005², *Plastics piping systems for non-pressure underground drainage and sewerage — Polypropylene with mineral modifiers (PP-MD) — Part 1: Specifications for pipes, fittings and the system*

EN ISO 472:2001, *Plastics — Vocabulary (ISO 472:1999)*

EN ISO 1043-1:2001, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics (ISO 1043-1:2001)*

3 Terms, definitions, symbols and abbreviations

For the purposes of this document, the terms, definitions, symbols and abbreviations given in EN 14758-1:2005 and the following apply.

3.1 Terms and definitions

For the purposes of this document, the terms, definitions, symbols given in EN ISO 472:2001, and EN ISO 1043-1:2001 and the following apply.

² The reference will include an amendment, which is under preparation.

3.1.1**certification body**

impartial body, governmental or non-governmental, possessing the necessary competence and responsibility to carry out certification of conformity according to given rules of procedure and management

3.1.2**inspection body**

impartial organisation or company, approved by the certification body as possessing the necessary competence to verify and/to carry out initial type testing, audit testing and inspection of the manufacturer's factory production control ³⁾ in accordance with the relevant European Standard

3.1.3**testing laboratory**

laboratory which measures, tests, calibrates or otherwise determines the characteristics of the performance of materials and products

3.1.4**quality system**

organisational structure, responsibilities, procedures, processes and resources for implementing quality management (see EN ISO 9000 [4])

3.1.5**quality plan**

document setting out the specific quality practices, resources and sequence of activities relevant to a particular product or range of products

3.1.6**type testing (TT)**

testing performed to prove that the material, component, joint or assembly is capable of conforming to the requirements given in the relevant standard

3.1.6.1**preliminary type testing (PTT)**

type testing carried out by or on behalf of the manufacturer

3.1.6.2**initial type testing (ITT)**

type testing carried out by or on behalf of the certification body for certification purposes

3.1.7**batch release test (BRT)**

test performed by the manufacturer on a batch of components, which has to be satisfactory completed before the batch can be released

3.1.8**process verification test (PVT)**

test performed by the manufacturer on materials, components, joints or assemblies at specific intervals to confirm that the process continues to be capable of producing components conforming to the requirements given in the relevant standard

NOTE Such tests are not required to release batches of components and are carried out as a measure of process control.

³⁾ Guidance Paper B (concerning the Construction Products Directive 89/106/EC): *The definition of factory production control and technical specifications for construction products*

3.1.9

audit test (AT)

test performed by or on behalf of a certification body to confirm that the material, component, joint or assembly continues to conform with the requirements given in the relevant standard and to provide information to assess the effectiveness of the quality system

3.1.10

indirect test (IT)

test performed by the manufacturer different from that specified for that particular characteristic, having verified its correlation with the specified test

3.1.11

witness testing (WT)

testing accepted by a certification body for initial type testing and/or audit testing, which is carried out by, or on behalf of the manufacturer and supervised by a representative of the certification body, qualified in testing

3.1.12

material

defined type of polymer or additive or constituent thereof

3.1.13

compound (blend)

recipe which defines types of polymer, additives and constituents at specified dosage levels

3.1.14

material batch or compound batch

clearly identifiable quantity of a particular material or compound

3.1.15

production batch

clearly identifiable collection of units, manufactured consecutively under the same conditions, using material or compound conforming to the same specification

3.1.16

lot

clearly identifiable sub-division of a batch for inspection purposes

3.1.17

sample

one or more units of product drawn from a batch or lot, selected at random without regard to quality

NOTE The number of units of product in the sample is the sample size.

3.1.18

group

collection of similar components from which samples are selected for testing purposes

3.2 Abbreviations

NOTE For reasons of avoiding misunderstanding the following abbreviations are kept the same in each of the languages. For the same reason the terms are given in the three languages ("en" for English, "fr" for French and "de" for German).

AT	en	:	audit test
	fr	:	essai d'audit
	de	:	Überwachungsprüfung

BRT	en	:	batch release test
	fr	:	essai de libération de campagne de fabrication
	de	:	Freigabeproofung einer Charge
IT	en	:	indirect test
	fr	:	essai indirect
	de	:	indirekte Prüfung
ITT	en	:	initial type testing
	fr	:	essais de type initiaux
	de	:	Erst-Typproofung
PTT	en	:	preliminary type testing
	fr	:	essais de type préliminaires
	de	:	vorausgehende Typproofung
PVT	en	:	process verification testing
	fr	:	essai de vérification du procédé de fabrication
	de	:	Prozessüberprüfung
TT	en	:	type test
	fr	:	essai de type
	de	:	Typproofung
WT	en	:	witness testing
	fr	:	essais de témoins
	de	:	Prüfung unter Aufsicht

4 Requirements

4.1 General

4.1.1 Materials, components, joints and assemblies shall conform to the requirements given in EN 14758-1:2005.

4.1.2 Components and/or assemblies shall be produced by the manufacturer under a quality system which includes a quality plan.

4.2 Testing and inspection

4.2.1 Material specification

For the purpose of this Technical Specification the material specification consists of a recipe/compound having a polypropylene base material to which are added mineral modifier(s) of known specification and containing additives with known dosage level.

4.2.2 Grouping

For the purposes of this Technical Specification the following groups shall apply.

4.2.2.1 Size group

A group of nominal sizes DN. Four size groups are designated as follows:

Size group 1: 110, 125, 160, 200;

Size group 2: 250, 315, 355, 400, 450, 500;

Size group 3: 630, 800, 1 000;

Size group 4: 1 200, 1 400, 1 600.

4.2.2.2 Fitting group

A group of fitting types having a similar design. Three fitting groups are designated as follows:

Fitting group 1: Bends;

Fitting group 2: Branches;

Fitting group 3: Other fittings.

Push fit fittings and fusion fittings shall be considered separately for each group.

4.2.3 Type tests (TT)

4.2.3.1 General

Type tests shall demonstrate that products conform to all requirements for the characteristics given in Tables 1, 2 and 3, as applicable.

In addition relevant type tests shall be carried out whenever there is a change in design, material and/or in the production method, other than routine in-process adjustments and to extensions of the product range as indicated in the same tables.

In case of change of material the type testing (TT) can be carried out by the manufacturer on the characteristics specified for such occasions in column M of the Tables 1, 2 and 3. If a third party is involved, an AT should be made within 6 months to verify the result of the TT.

Table 1 — Characteristics of pipes that require type testing

Characteristic	Reference to clauses and tables of EN 14758—1:2005	Testing relevant to ^a				Sampling procedure (minimum sampling)
		N	D	M	E	
Melt mass-flow rate (MFR-value)	4.3	+	–	+	–	One sample/material
Resistance to internal pressure ^b	4.5.1 – Table 1	+	–	+	–	One sample/material
Long term durability	4.5.2	+	–	+ ^c	–	One sample/material
Appearance	5.1	+	–	–	+	One sample/size group
Colour	5.2	+	–	–	+	One sample/size group
Dimensions	6.2 and 6.5 – Tables 2, 3, 4 and 5 as appropriate	+	+	–	+	One sample/size
Impact resistance (round-the-clock method)	7.1.1 – Table 6	+	–	–	+	One sample/size group/material
		–	–	+	–	One sample/material
Ring stiffness	7.1 – Table 6	+	–	+	+	One sample/SN class and for each material
Ring flexibility	7.1.2	+	–	+	+	One sample/SN class and for each material
Impact resistance (staircase method) ^d	7.1.3 – Table 7	+	–	–	+	One sample/size group/material
		–	–	+	–	One sample/material
Longitudinal reversion	8.1 – Table 9	+	–	–	+	One sample/size group
Marking	11.2 – Table 12	+	–	–	+	Present a model of the intended marking

^a N: new system;
D: change of design (only for characteristics affected by the change);
M: change of material;
E: extension of the product range (except the products already covered by the scheme of the minimum sampling procedure);
"+" denotes relevant; "–" denotes not relevant.

^b On the smallest diameter produced.

^c Only at change of mineral modifier.

^d Only for pipes intended to be installed at temperatures below –10 °C, using a test temperature of –10 °C. When the staircase method is used, then the round-the-clock method is not necessary.

Table 2 — Characteristics of fittings that require type testing

Characteristic	Reference to clauses and tables of EN 14758-1:2005	Testing relevant to ^a					Sampling procedure (minimum sampling)
		N	D	M	P	E	
Melt mass-flow rate (MFR-value) ^b	4.3	+	-	+	-	-	One sample/material
Resistance to internal pressure ^b	4.5.1 – Table 1	+	-	+	-	-	One sample/material with one optional dimension
Long term durability ^b	4.5.2	+	-	+ ^c	-	-	One sample/material
Appearance	5.1	+	-	-	+	+	One sample/size group/fitting group
Colour	5.2	+	-	-	+	+	One sample/size group/fitting group
Dimensions	6.2 and 6.5 – Tables 2 to 5 as appropriate	+	+	-	+	+	One sample of each fitting
Stiffness	7.2 – Table 8	+	+	+	+	+	One sample/size group/fitting group
Flexibility or mechanical strength	7.2 – Table 8	+	+	-	+	+	One sample/size group/fitting group
Drop test	7.2 – Table 8	+	+	+	+	-	One sample/size group/fitting group
Effect of heating ^d	8.2 – Table 10	+	+	+	+	+	One sample/size group/fitting group
Marking	11.3 – Table 13	+	-	-	+	+	One sample of each fitting

^a N: new system;
D: change of design (only for characteristics affected by the change);
M: change of material;
P: change of production method;
E: extension of the product range (except the products already covered by the scheme of the minimum sampling procedure).
"+" denotes relevant; "-" denotes not relevant.

^b Not to be repeated for fittings material when the material is the same as for pipes and already tested for that purpose.

^c Only at change of mineral modifier.

^d Only for injection-moulded parts.

Table 3 — Characteristics of fitness for purpose of the system that require type testing

Characteristic	Reference to clauses and tables of EN 14758-1:2005	Testing relevant to ^a					Sampling procedure (minimum sampling)
		N	D	M	P	E	
Tightness of elastomeric sealing ring joints	9 – Table 11	+	+	-	-	+	One sample/size group/joint design/stiffness class ^b
Elevated temperature cycling	9 – Table 11	+	+	+	-	-	One sample/joint design on the smallest used stiffness ^b

^a N: new system;
D: change of design (only for characteristics affected by the change);
M: change of material;
P: change of production method;
E: extension of the product range (except the products already covered by the scheme of the minimum sampling procedure).
"+" denotes relevant; "-" denotes not relevant.

^b Joint design at least includes: seal design, groove geometry and seal hardness (± 5 IHRD).

4.2.3.2 Preliminary type testing (PTT)

The manufacturer shall demonstrate that the products conform to all requirements for all the characteristics given in Tables 1, 2 and 3, as applicable.

4.2.3.3 Initial type testing (ITT)

If third party certification is involved, the certification body shall assess the conformity of a product to all requirements of the characteristics given in Tables 1, 2 and 3, as applicable.

The assessment shall be performed by validation or testing, using the sampling procedure in Tables 1, 2 and 3, as applicable and grouping according to 4.2.2, in an approved testing laboratory or by witness testing.

Preliminary test data including long-term characteristics, supplied by the manufacturer and traceable to material or compound and process, validated by the certification body, shall be taken into account for initial type testing.

4.2.4 Batch release tests (BRT)

Those characteristics specified in EN 14758-1:2005 and listed in Tables 4 and 5, as applicable shall be batch release tested with the minimum sampling frequency as given in these tables.

The manufacturer shall specify a batch or lot size in his quality plan.

A batch or lot shall only be released for supply when all relevant tests and inspections have been carried out at least once at the specified frequencies and the requirements have been conformed to.

If a product fails in respect of any characteristic given in Tables 4 and 5, the batch or lot shall be rejected or the retest procedures shall be performed for the characteristic on which the product failed. Then the following procedures shall be followed.

- Find the last product which conforms to the requirements as specified in EN 14758-1:2005. Release all products before that point and reject the products produced after that point.
- Procedures for dealing with rejected products shall be detailed in the manufacturer's quality plan.

Table 4 — Characteristics of pipes and minimum sampling frequencies for BRT

Characteristic	Reference to clauses and tables of EN 14758-1:2005	Sampling procedure (minimum sampling)
Appearance/colour	5.1 and 5.2	At start up and once/8 h
Mean outside diameter	6.2.1 – Tables 2 and 3 as appropriate	Once/8 h and start-up
Wall thickness	6.2.6 – Table 4	Once/8 h and start-up
Length of pipe and chamfer ^a	6.2.4 and 6.2.5	Once/8 h and start-up
Socket dimensions ^b	6.5 – Table 5	At start-up
Impact resistance (round-the-clock method)	7.1.1 – Table 6	Once/week and start-up
Longitudinal reversion	8.1 – Table 9	Once/week and start-up
Marking	11.2 – Table 12	Each piece at start-up and once/8 h
^a	If a chamfer is required.	
^b	For dimensions which are influenced by the process.	

Table 5 — Characteristics of fittings and minimum sampling frequencies for BRT

Characteristic	Reference to clauses and tables of EN 14758-1:2005	Minimum sampling frequency
Appearance/colour	5.1 and 5.2	One sample/cavity/8 h
Dimensions and spigots ^a	6.5	One sample/cavity/8 h
Marking	11.3 – Table 13	Once/production run/cavity
^a For dimensions which are influenced by the process.		

4.2.5 Process verification tests (PVT)

Those characteristics specified in EN 14758-1:2005 and listed in Table 6 shall be process verification tested with the minimum sampling frequency as given in this table if not type tested in the same period.

If a product does not conform to the requirements in respect of any characteristic given in Table 6, the retest procedures detailed in the manufacturer's quality plan shall be performed. If third party certification is involved, the certification body shall be informed.

If the retest procedure does not confirm conformity of the product with the requirements, then the process shall be investigated and corrected in accordance with the procedures given in the manufacturer's quality plan, until the characteristics given in Table 6 are satisfied.

Table 6 — Characteristics and minimum sampling frequencies for PVT

Characteristic	Reference to clauses and tables of EN 14758-1:2005	Minimum sampling frequency
Pipes		
Resistance to internal pressure ^a	4.5.1 – Table 1	Once/year/material
Ring stiffness	7.1.1 – Table 6	Once/year/size group and each material of SN classes in manufacturer's range
Impact resistance (staircase method) ^b	7.1.3 – Table 7	Once/month/size and material
Fittings		
Resistance to internal pressure ^{a c}	4.5.1 – Table 1	Once/year/material
Flexibility or mechanical strength	7.2 – Table 8	Once/year/size group/socket design
The system		
Tightness	9 – Table 11	Once/2 years/size group/joint design ^d
Elevated temperature cycling	9 – Table 11	Once/2 years/joint design and material currently used/applicable series with lowest wall thickness
^a To be tested in pipe form on an optional diameter. ^b Only for pipes intended to be installed at temperatures below –10 °C, using a test temperature of –10 °C. When the staircase method is used, then the round-the-clock method is not necessary. ^c Not to be repeated for fittings material when the material is the same as for pipes and already tested for that purpose. ^d Joint design at least includes: seal design, groove geometry and seal hardness (± 5 IHRD).		

4.2.6 Audit tests (AT)

If third party certification is involved, those characteristics specified in EN 14758-1:2005 and listed in Table 7 shall be audit tested with the minimum sampling frequency as given in this table.

Table 7 — Characteristics and minimum sampling frequencies for AT

Characteristic	Reference to clauses and tables of EN 14758-1:2005	Minimum sampling frequency
Pipes		
Melt mass-flow rate (MFR-value)	4.3	Once/year
Resistance to internal pressure ^a	4.5.1 – Table 1	Once/year
Appearance/colour	5.1 and 5.2	Once/year/size group/SN class
Dimensions	6.2, Tables 2 to 5 as appropriate	Once/year/size group/SN class
Impact resistance (round-the-clock method) ^b	7.1.1 – Table 6	Once/year/size group/SN class
Impact resistance (staircase method) ^c	7.1 – Table 6	Once/year/size group/SN class
Ring stiffness	7.1.1 – Table 6	Once/year/size group/SN class
Ring flexibility	7.1.2	Once/year/size group/SN class
Longitudinal reversion	8.1 – Table 9	Once/year/size group/SN class
Marking	11.2 – Table 12	Once/year/size group/SN class
Fittings		
Melt mass-flow rate (MFR-value) ^d	4.3	Once/year
Resistance to internal pressure ^{a d}	4.5.1 – Table 1	Once/2 years
Appearance/colour	5.1 and 5.2	Once/year/size group/fitting group and S-series
Dimensions	6.3, Tables 2 to 5, as appropriate	Once/year/size group/fitting group and S-series
Drop test	7.2 – Table 8	Once 2 years/size group/fitting group/SN class/joint design
Effect of heating ^e	8.2 – Table 10	Once/year/size group/fitting group
Marking	11.3 – Table 13	Once/year/size group/fitting group
The system		
Tightness of elastomeric sealing ring joints	9 – Table 11	Once/year - one size/S-series
Elevated temperature cycling	9 – Table 11	Once/2 years/joint type/applicable series with lowest wall thickness
^a To be tested in pipe form on the smallest diameter produced. ^b Not to be tested if the staircase method is performed. ^c Only for pipes intended to be installed at temperatures below –10 °C, using a test temperature of –10 °C. When the staircase method is used, then the round-the-clock method is not necessary. ^d Not to be repeated for fittings material when the material is the same as for pipes and already tested for that purpose. ^e Only for injection moulded parts.		

NOTE 1 The sizes, types and classes selected for tests should primarily be those which have not previously been selected for audit testing. Samples should preferably be taken from the largest volume of production per group.

NOTE 2 It is expected that the audit testing is carried out over at least two visits every year.

NOTE 3 PVT and AT can be combined, in that case indirect testing is not permitted.

4.2.7 Indirect tests (IT)

Generally testing shall be performed according to the test methods referred to in EN 14758-1:2005. Indirect testing may be used for BRT characteristics as given in Tables 4 and 5. Indirect testing shall not be applied to TT, PVT and AT.

The indirect test method used and the correlation or safe relationship of the indirect testing to the specified testing shall be documented in the manufacturer's quality plan. The continuing validity of the indirect testing shall be checked at regular intervals.

In case of dispute the BRT specified in Tables 4 and 5 shall be used.

If third party certification is involved, the IT shall be acceptable to the certification body.

NOTE Indirect testing can be used to reduce the frequency of use of the specified BRT, but it is not intended to replace these tests completely.

4.2.8 Inspection records and test records

Unless otherwise specified all records of BRT shall be maintained for a minimum of 2 years and all other records for a minimum of 4 years.

Bibliography

- [1] EN ISO 9001, *Quality management systems — Requirements (ISO 9001:2000)*
- [2] EN 45011, *General requirements for bodies operating product certification systems (ISO/IEC Guide 65:1996)*
- [3] EN 45012, *General requirements for bodies operating assessment and certification/registration of quality systems (ISO/IEC Guide 62:1996)*
- [4] EN ISO 9000, *Quality management systems — Fundamentals and vocabulary (ISO 9000:2005)*

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