



BSI Standards Publication

Copper and copper alloys — Plumbing fittings

Part 3: Compression fittings for use with plastics and multilayer pipes

National foreword

This British Standard is the UK implementation of EN 1254-3:2021+A1:2025. It supersedes BS EN 1254-3:2021, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee NFE/34, Copper and copper alloys.

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

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Published by BSI Standards Limited 2025

ISBN 978 0 539 31958 3

ICS 23.040.40

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 June 2021.

Amendments/corrigenda issued since publication

Date	Text affected
28 February 2025	Implementation of CEN amendment A1:2025

English Version

Copper and copper alloys - Plumbing fittings - Part 3: Compression fittings for use with plastics and multilayer pipes

Cuivre et alliages de cuivre - Raccords - Partie 3 :
Raccords à compression pour tubes en matières
plastiques et multicouches

Kupfer und Kupferlegierungen - Fittings - Teil 3:
Klemmverbinder für Kunststoffrohre und
Mehrschichtverbundrohre

This European Standard was approved by CEN on 23 November 2020 and includes Amendment 1 approved by CEN on 5 December 2024.

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European foreword

This document (EN 1254-3:2021+A1:2025) has been prepared by Technical Committee CEN/TC 133 “Copper and copper alloys”, 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of an identical text or by endorsement, at the latest by August 2025, and conflicting national standards shall be withdrawn at the latest by August 2025.

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

This document includes Amendment 1 approved by CEN on 5 December 2024.

This document supersedes A1 EN 1254-3:2021 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

The main changes compared to EN 1254-3:1998 are:

- improved alignment with plastics and multilayer pipe standards for hot and cold water applications;
- separation of test methods into part 20.

A1 The need for an amendment was based on the following points:

- update normative references;
- include a wall thickness requirement for copper alloy fittings used in systems according to EN ISO 15874, EN ISO 15875, EN ISO 15876, EN ISO 15877, EN ISO 21003 and EN ISO 22391. A1

This part of the standard (EN 1254-3) should be read in conjunction with A1 EN 1254-20:2021+A1:2025 A1.

EN 1254 comprises the following parts under the general title “Copper and copper alloys — Plumbing fittings”:

- *Part 1: Capillary fittings for soldering or brazing to copper tubes*
- *Part 2: Compression fittings for use with copper tubes*
- *Part 3: Compression fittings for use with plastics and multilayer pipes*
- *Part 4: Threaded fittings*
- *Part 5: Capillary fittings with short ends for brazing to copper tubes*
- *Part 6: Push-fit fittings for use with metallic tubes, plastics and multilayer pipes*
- *Part 7: Press fittings for use with metallic tubes*
- *Part 8: Press fittings for use with plastics and multilayer pipes*

— *Part 20: Definitions, thread dimensions, test methods, reference data and supporting information*

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

Introduction

Products complying with this document may be used for several fluids including the transport of water intended for human consumption if they comply with the relevant national, regional or local regulatory provisions applicable in the place of use.

1 Scope

This document specifies product characteristics, assessment methods, compliance criteria of test results and a designation system for fittings with compression ends for use with plastics and multilayer pipes which are defined in the applicable pipe standard. For the purposes of joining plastics pipes, the fitting ends have a nominal diameter from 6 mm to 160 mm. The fittings are designed for a service lifetime up to fifty years.

The compression fittings are used up to the operating temperatures and corresponding maximum operating pressures as indicated in Annex A.

This document applies to copper alloy fittings. A non-exhaustive list of these copper alloys is given in CEN/TS 13388.

Adaptor fittings for use with plastics and multilayer pipes may combine compression ends with fitting ends defined in the other parts of EN 1254.

Compression fittings for use with plastics and multilayer pipes may also have flanged end connections according to EN 1092-3.

Compression fittings for use with plastics and multilayer pipes may also have a plated or other decorative surface coating.

Fittings can be produced by machining, metal forming, casting, or fabrication.

Products covered by this document are intended to be used in:

a) liquid applications:

- hot, cold or combined hot and cold water, including systems according to EN 806;
- closed heating systems according to EN 12828;
- cooling systems;
- drainage systems;
- fire protection systems including sprinkler systems according to EN 12845.

b) gas applications (not valid for multilayer pipes):

- natural gas and liquefied petroleum gas systems with a maximum operating pressure less than or equal to 5 bar according to EN 1775;
- compressed air systems.

2 Normative references

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

EN 549:2019+A2:2024, *Rubber materials for seals and diaphragms for gas appliances and gas equipment* ^{A1}

EN 681-1:1996, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber*

EN 682, *Elastomeric Seals — Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids*

EN 1254-20:2021+A1:2025, *Copper and copper alloys — Plumbing fittings — Part 20: Definitions, thread dimensions, test methods, reference data and supporting information* ^{A1}

EN 1555-2, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 2: Pipes*

EN 10226-3, *Pipes threads where pressure tight joint are made on the threads — Part 3: Verification by means of limit gauges*

EN 12201-2, *Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) — Part 2: Pipes*

EN 12201-5, *Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) — Part 5: Fitness for purpose of the system*

EN 12502-2, *Protection of metallic materials against corrosion — Guidance on the assessment of corrosion likelihood in water distribution and storage systems — Part 2: Influencing factors for copper and copper alloys*

EN ISO 3501, *Plastics piping systems — Mechanical joints between fittings and pressure pipes — Test method for resistance to pull-out under constant longitudinal force (ISO 3501)*

EN ISO 3503, *Plastics piping systems — Mechanical joints between fittings and pressure pipes - Test method for leaktightness under internal pressure of assemblies subjected to bending (ISO 3503)*

EN ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method (ISO 6506-1)*

EN ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method (ISO 6507-1)*

EN ISO 1167 (all parts), *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure (ISO 1167)*

EN ISO 13056, *Plastics piping systems — Pressure systems for hot and cold water — Test method for leaktightness under vacuum (ISO 13056)*

EN ISO 15874-2, *Plastics piping systems for hot and cold water installations — Polypropylene (PP) — Part 2: Pipes (ISO 15874-2)*

EN ISO 15874-5, *Plastics piping systems for hot and cold water installations — Polypropylene (PP) — Part 5: Fitness for purpose of the system (ISO 15874-5)*

EN ISO 15875-2, *Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X) - Part 2: Pipes (ISO 15875-2)*

EN ISO 15875-5, *Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X) - Part 5: Fitness for purpose of the system (ISO 15875-5)*

EN ISO 15876-2, *Plastics piping systems for hot and cold water installations — Polybutene (PB) — Part 2: Pipes (ISO 15876-2)*

EN ISO 15876-5, *Plastics piping systems for hot and cold water installations — Polybutene (PB) — Part 5: Fitness for purpose of the system (ISO 15876-5)*

EN ISO 15877-2, *Plastics piping systems for hot and cold water installations — Chlorinated poly(vinyl chloride) (PVC-C) — Part 2: Pipes (ISO 15877-2)*

EN ISO 15877-5, *Plastics piping systems for hot and cold water installations — Chlorinated poly(vinyl chloride) (PVC-C) — Part 5: Fitness for purpose of the system (ISO 15877-5)*

EN ISO 19892, *Plastics piping systems — Thermoplastics pipes and fittings for hot and cold water — Test method for the resistance of joints to pressure cycling (ISO 19892)*

EN ISO 19893, *Plastics piping systems — Thermoplastics pipes and fittings for hot and cold water — Test method for the resistance of mounted assemblies to temperature cycling (ISO 19893)*

EN ISO 21003-2, *Multilayer piping systems for hot and cold water installations inside buildings — Part 2: Pipes (ISO 21003-2)*

EN ISO 21003-5, *Multilayer piping systems for hot and cold water installations inside buildings — Part 5: Fitness for purpose of the system (ISO 21003-5)*

EN ISO 22391-2, *Plastics piping systems for hot and cold water installations — Polyethylene of raised temperature resistance (PE-RT) — Part 2: Pipes (ISO 22391-2)*

EN ISO 22391-5, *Plastics piping systems for hot and cold water installations — Polyethylene of raised temperature resistance (PE-RT) — Part 5: Fitness for purpose of the system (ISO 22391-5)*

ISO 7-2, *Pipe threads where pressure-tight joints are made on the threads — Part 2: Verification by means of limit gauges*

ISO 228-2, *Pipe threads where pressure-tight joints are not made on the threads — Part 2: Verification by means of limit gauges*

ISO 2859-1:1999, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 9080, *Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation*

ISO 9924-1, *Rubber and rubber products — Determination of the composition of vulcanizates and uncured compounds by thermogravimetry — Part 1: Butadiene, ethylene-propylene copolymer and terpolymer, isobutene-isoprene, isoprene and styrene-butadiene rubbers*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in **EN 1254-20:2021+A1:2025** apply.

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

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

4 Product characteristics

4.1 Internal pressure

4.1.1 For liquid applications

When tested according to the method in 5.2.1 fittings shall show no signs of leakage or permanent distortion.

4.1.2 For fuel gas applications

When tested according to the method in 5.2.2 fittings shall show no signs of leakage or permanent distortion.

4.1.3 For compressed air applications

When tested according to the method in 5.2.3 fittings shall show no signs of leakage or permanent distortion.

4.2 Tightness

4.2.1 Integrity of fabricated fitting bodies or having an 'as cast' microstructure

This requirement only applies to fitting bodies with an 'as cast' microstructure (excluding continuously cast materials) or fabricated by welding or brazing.

When tested according to the method in 5.3.1.1 fitting bodies shall show no visual indication of leakage.

4.2.2 Requirements for liquid applications

4.2.2.1 Leak tightness under internal hydrostatic pressure

Fittings assessed as indicated in 4.1.1 are considered to be leak tight under internal hydrostatic pressure.

4.2.2.2 Leak tightness under vacuum

When tested according to the method in 5.3.2.1 the change in pressure shall not be greater than 0,05 bar at the conclusion of the test.

4.2.2.3 Leak tightness under temperature cycling (for heating networks)

When tested according to the method in 5.3.2.2 fittings shall show no signs of leakage or permanent distortion.