SLOVENSKI STANDARD
SIST EN 1254-7:2021

01-julij-2021

Baker in bakrove zlitine - Fitingi - 7. del: Fitingi s stiskalnimi priključki za spajanje s kovinskimi cevmi

Copper and copper alloys - Plumbing fittings - Part 7: Press fittings for use with metallic tubes

Kupfer und Kupferlegierungen - Fittings - Teil 7: Pressfittings für den Einsatz mit metallischen Rohren

Cuivre et alliages de cuivre - Raccords - Partie 7 : Raccords à sertir pour tubes métalliques

SIST Preview
(https://ecommerce.sist.si)
SIST EN 1254-7:2021
https://ecommerce.sist.si/catalog/standards/sist/fbc7deda-3ed9-4cc8-8829-07f57eb1427f/sist-en-1254-7-2021

Ta slovenski standard je istoveten z: **EN 1254-7:2021**

ICS:

23.040.40	Kovinski fitingi	Metal fittings
77.150.30	Bakreni izdelki	Copper products

SIST EN 1254-7:2021 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

SIST EN 1254-7:2021

SIST Preview
(https://ecommerce.sist.si)

SIST EN 1254-7:2021
https://ecommerce.sist.si/catalog/standards/sist/fbc7deda-3ed9-4cc8-8829-07f57eb1427f/sist-en-1254-7-2021

SIST EN 1254-7:2021

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1254-7

May 2021

ICS 23.040.40

English Version

Copper and copper alloys - Plumbing fittings - Part 7: Press fittings for use with metallic tubes

Cuivre et alliages de cuivre - Raccords - Partie 7 : Raccords à sertir pour tubes métalliques

Kupfer und Kupferlegierungen - Fittings - Teil 7: Pressfittings für den Einsatz mit metallischen Rohren

This European Standard was approved by CEN on 23 November 2020.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

SIST Preview
(https://standards.iteh.ai)
SIST EN 1254-7:2021
https://ecommerce.sist.si/catalog/standards/sist/fbc7deda-3ed9-4cc8-8829-07f57eb1427f/sist-en-1254-7-2021



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2021 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 1254-7:2021 E

SIST EN 1254-7:2021

Contents

Page

European foreword ... 4

Introduction ... 5

1 Scope ... 6

2 Normative references ... 7

3 Terms and definitions ... 8

4 Product characteristics ... 8
4.1 Internal pressure ... 8
4.2 Tightness ... 8
4.3 Resistance to high temperature (for heating networks) ... 10
4.4 Release of dangerous substances ... 10
4.5 Durability ... 10
4.6 Wall thickness at threaded portions of adaptor fittings ... 11
4.7 Dimensions of tail pipe ends for swivel fittings ... 11
4.8 Dimensions of gas union connectors ... 11
4.9 Threaded end dimensions ... 11
4.10 Other adapter ends (not defined in EN 1254-20:2021) ... 11
4.11 Bore dimensions ... 12
4.12 Identity of elastomeric sealing material for liquid applications ... 12
4.13 Identity of elastomeric sealing material for gas applications ... 12
4.14 Tube abutment ... 12
4.15 Alignment of the fitting ends ... 12
4.16 Shapes for tightening systems ... 12
4.17 Surface condition ... 12
4.18 Plated or coated surfaces ... 13

5 Testing, assessment and sampling methods ... 13
5.1 General ... 13
5.2 Internal pressure ... 13
5.3 Tightness ... 14
5.4 Durability ... 16
5.5 Wall thickness at threaded portions of adaptor fittings ... 17
5.6 Dimensions of tail pipe ends for swivel fittings ... 17
5.7 Dimensions of gas union connectors ... 17
5.8 Threaded end dimensions ... 18
5.9 Bore dimensions ... 18
5.10 Identity of elastomeric sealing material for liquid applications ... 18
5.11 Identity of elastomeric sealing material for gas applications ... 18
5.12 Alignment of the fitting ends ... 18

6 Evaluation of conformity ... 18
6.1 General ... 18
6.2 Type testing ... 19
6.3 Factory production control (FPC) ... 25

7 Designation ... 29

SIST EN 1254-7:2021
(https://ecommerce.sist.si)
SIST EN 1254-7:2021
https://standards.iteh.ai/catalog/standards/sist/fbc7dada-3ad9-4ee8-8829-07f57eb1427f/sist-en-1254-7-2021

SIST EN 1254-7:2021

8 Marking, labelling and packaging 29
8.1 General 29
8.2 Additional marking 29
8.3 Dezincification resistant copper zinc alloys 30
Annex A (normative) Maximum operating temperatures and corresponding maximum operating pressures 31
Annex B (normative) Minimum nominal wall thicknesses of copper tube with R220, R250 and R290 temper conforming to EN 1057 suitable for jointing by press fittings 32
Bibliography 34

SIST Preview
(https://ecommerce.sist.si)

SIST EN 1254-7:2021
https://ecommerce.sist.si/catalog/standards/sist/fbc7deda-3ed9-4cc8-8829-07f57eb1427f/sist-en-1254-7-2021

SIST EN 1254-7:2021

European foreword

This document (EN 1254-7:2021) 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 November 2021, and conflicting national standards shall be withdrawn at the latest by November 2021.

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 part of the standard (EN 1254-7) should be read in conjunction with EN 1254-20:2021.

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.

SIST Preview
(https://ecommerce.sist.si)
SIST EN 1254-7:2021
https://standards.iteh.ai/catalog/standards/sist/be7deda-3ed9-4cc8-8829-07f57eb1427f/sist-en-1254-7-2021

SIST EN 1254-7:2021

Introduction

Products complying with this document may be used several fluids including for 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.

SIST Preview
(https://ecommerce.sist.si)

SIST EN 1254-7:2021
https://ecommerce.sist.si/catalog/standards/sist/fbc7deda-3ed9-4cc8-8829-07f57eb1427f/sist-en-1254-7-2021

SIST EN 1254-7:2021

1 Scope

This document specifies product characteristics, assessment methods, compliance criteria of test results and a designation system for press fittings including their elastomeric seals, for connecting with metallic tubes. The fitting ends have a nominal diameter from 6 mm to 108 mm. The press fittings are designed for a service lifetime up to fifty years.

This document is applicable to press fittings for joining one or more of the following tubes:

— copper tubes to EN 1057; and

— stainless steel tubes to EN 10312;

with wall thicknesses and tempers as specified by the manufacturer.

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

Press fittings are used with tubes with wall thicknesses greater than or equal to the wall thickness given in Annex B, to ensure that tubes can withstand the radial pressing forces involved.

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 copper tubes may combine press ends with fitting ends defined in the other parts of EN 1254.

Press fittings for use with metallic tubes may also have flanged end connections according to EN 1092-3.

SIST Preview
(https://ecommerce.sist.si)

Press fittings for use with metallic tubes 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:

SIST EN 1254-7:2021
https://ecommerce.sist.si/catalog/standards/sist/fbc7deda-3ed9-4cc8-8829-07f57eb1427f/sist-en-1254-7-2021

a) liquid applications:

   — hot or 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;

   — supply systems for points of consumption with liquid fuels according to EN 12514.

b) gas applications:

   — 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.

SIST EN 1254-7:2021

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, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

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 1057, *Copper and copper alloys — Seamless, round copper tubes for water and gas in sanitary and heating applications*

EN 1254-4:2021, *Copper and copper alloys — Plumbing fittings — Part 4: Threaded fittings*

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

EN 1775:2007, *Gas supply — Gas pipework for buildings — Maximum operating pressure less than or equal to 5 bar - Functional recommendations*

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

SIST Preview
(https://ecommerce.sist.si)

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*

SIST EN 1254-7:2021
https://ecommerce.sist.si/catalog/standards/sist/fbc7deda-3ed9-4cc8-8829-07f57eb1427f/sist-en-1254-7-2021

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)*

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 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*

SIST EN 1254-7:2021

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1254-20:2021 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.

SIST Preview
(https://ecommerce.sist.si)

4.2 Tightness

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

SIST EN 1254-7:2021

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 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 Resistance to pull-out

When tested according to the method in 5.3.2.1 the joint assemblies shall withstand the pull-out force without being separated and shall show no signs of leakage when subjected to the subsequent leak tightness under internal hydrostatic pressure test as described in 5.2.1.

4.2.2.3 Leak tightness under vibration

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

4.2.2.4 Leak tightness under vacuum

When tested according to the method in 5.3.2.3 the change in pressure shall not be greater than 0,05 bar at the conclusion of the test.

SIST EN 1254-7:2021

4.2.2.5 Leak tightness under temperature cycling

When tested according to the method in 5.3.2.4 fittings shall show no signs of leakage.

4.2.2.6 Leak before press

If the manufacturer claims this feature, then when tested according to the method in 5.3.2.5 fittings shall leak at least one drop per second when tested with water or at least one bubble per second when tested pneumatically.

4.2.3 Requirements for gas applications

4.2.3.1 Leak tightness under internal pneumatic pressure

Fittings assessed as indicated in 4.1.2 and 4.1.3 are considered to be leak tight under internal pneumatic pressure.

4.2.3.2 Resistance to pull-out

When tested according to the method in 5.3.3.1 the joint assemblies shall withstand the pull-out force without being separated and shall show no signs of leakage when subsequently tested according to the method in 5.2.2 and/or 5.2.3 according to the application, fittings shall show no signs of leakage or permanent distortion.

4.2.3.3 Leak tightness under vibration

When tested according to the method in 5.3.3.2 fittings shall show no signs of leakage.

4.2.3.4 Leak tightness under static flexural force

This requirement is not applicable on threaded ends.

When tested according to the method in 5.3.3.3 fittings shall show no signs of leakage or permanent distortion.

SIST Preview
(https://ecommerce.sist.si)
SIST EN 1254-7:2021
https://standards.iteh.ai/catalog/standards/sist/fbe7dede-3ed8-4e58-8829-05f57e1427f/sist-en-1254-7-2021

4.2.3.5 Leak tightness under temperature cycling for fuel gas applications

When tested according to the method in 5.3.3.4 fittings shall show no signs of leakage.

4.2.3.6 Leak before press

If the manufacturer claims this feature, then when tested according to the method in 5.3.3.5 fittings shall leak at least one air bubble per second when tested pneumatically.

4.2.3.7 Press fitting with elastomeric seals for fuel gas application inside buildings

The main aspect for the durability of tightness for fuel gas application inside buildings is the ozone behaviour of the elastomer. Therefore the elastomer shall be ozone resistant and comply with the requirements of EN 549 class B2 or higher.

4.2.3.8 Press fitting with elastomeric seals for fuel gas application outside buildings

The main aspect for the durability of tightness for fuel gas application outside buildings depends on the elastomeric sealing element. Therefore the elastomer shall comply with the requirements of EN 682 types GAL or GBL.

SIST EN 1254-7:2021

4.2.3.9 Leak tightness at high temperature

Only applies for fuel gas applications, to fittings with only press ends.

When tested according to the method in 5.3.3.6, at any point during the test period the nitrogen leakage rate shall not exceed 150 dm^3/h per fitting.

Adaptor fittings with press- and threaded ends shall comply with the requirements of EN 1254-4:2021.

4.3 Resistance to high temperature (for heating networks)

The main aspect for the resistance to high temperature depends on the elastomeric sealing element. Therefore, the elastomer shall have the appropriate characteristics as specified in EN 681-1. The elastomeric sealing elements shall conform to the requirements of EN 681-1:1996, Table 3 for continuous hot water supply up to 110 °C except for Isoprene-Isobutylene Copolymer (IIR) where a volume change in water up to and including 15 % is permitted.

4.4 Release of dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this document 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.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction website on EUROPA accessed through: http://ec.europa.eu/growth/tools-databases/cp-ds.

SIST Preview
(https://ecommerce.sist.si)

4.5 Durability

4.5.1 Durability of internal pressure: Resistance to stress corrosion

Fittings manufactured from copper and copper-tin-zinc alloys (CuSnZnPb) shall be considered to be resistant to stress corrosion according to EN 12502-2 and copper-zinc-silicon alloys containing ≥ 2 % Si are also considered to be resistant.

https://ecommerce.sist.si/catalog/standards/sist/fdbc7dcda-3cd1-4ec8-8829-6715fcf142f1/sist-en-1254-7-2021

Fittings manufactured from CuZn-alloys shall be considered to be resistant to stress corrosion when the product has a hardness HBW_{10} 2,5/62,5 ≤ 110 measured according to EN ISO 6506-1 or a hardness $HV_5 \leq 134$ measured according to EN ISO 6507-1.

Fittings manufactured from copper alloys with a zinc content of 10 % or greater not mentioned above shall be tested and assessed according to 5.4.1, and shall show no evidence of cracking.

4.5.2 Durability of tightness

4.5.2.1 Resistance to dezincification

This requirement only applies where a fitting is declared to be resistant to dezincification.

The resistance to dezincification of alloy fittings can be obtained by the correct material selection and processing of that material.

Alloys containing 15 % or less zinc provide a good resistance to dezincification and don't need to be tested.