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English Version

Plastics piping systems for the supply of gaseous fuels -
Unplasticized polyamide (PA-U) piping systems with
fusion jointing and mechanical jointing - Part 7:
Assessment of conformity (ISO/TS 16486-7:2023)

Systèmes de canalisations en matières plastiques pour
la distribution de combustibles gazeux - Systèmes de
canalisations en polyamide non plastifié (PA-U) avec
assemblages par soudage et assemblages mécaniques -
Partie 7: Evaluation de la conformité (ISO/TS 16486-
7:2023)

Kunststoff-Rohrleitungssysteme für die Gasversorgung
- Rohrleitungssysteme aus weichmacherfreiem
Polyamid (PA-U) mit Schweißverbindungen und
mechanischen Verbindungen - Teil 7: Beurteilung der
Konformität (ISO/TS 16486-7:2023)

This Technical Specification (CEN/TS) was approved by CEN on 6 July 2023 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.

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

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European foreword

This document (CEN ISO/TS 16486-7:2023) has been prepared by Technical Committee ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids" in collaboration with Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems" the secretariat of which is held by NEN.

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.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: 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, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO/TS 16486-7:2023 has been approved by CEN as CEN ISO/TS 16486-7:2023 without any modification.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 4, *Plastics pipes and fittings for the supply of gaseous fuels*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 155, *Plastics piping systems and ducting systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 16486 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document specifies requirements and guidance for the assessment of conformity (AoC) for a piping system and its components made from unplasticized polyamide (PA-U), and which is intended to be used for the supply of gaseous fuels.

Requirements and test methods for material and components of the piping system are specified in ISO 16486-1, ISO 16486-2, ISO 16486-3 and ISO 16486-4.

Characteristics for fitness for purpose of the system and generic fusion parameters are covered in ISO 16486-5.

Recommended practice for installation is provided in ISO 16486-6, which will not be implemented as European Standard under the Vienna Agreement.

Recommended practice for installation is also provided in CEN/TS 12007-6,^[1] prepared by Technical Committee CEN/TC 234, *Gas infrastructure*.

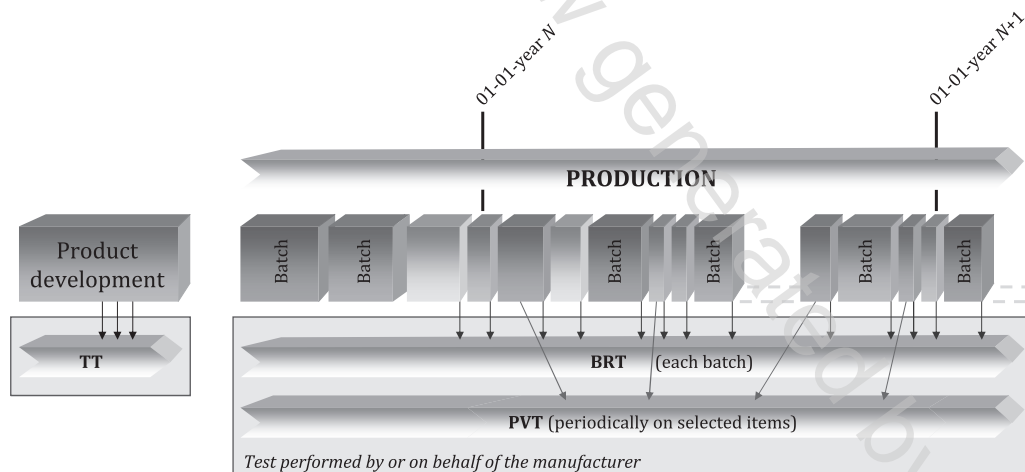
Training and assessment of fusion operators is given in ISO/TS 16486-8.

NOTE While ISO 16486-1, ISO 16486-2, ISO 16486-3, ISO 16486-5, ISO 16486-6 and ISO/TS 16486-7 (this document) and ISO/TS 16486-8 have been prepared by ISO/TC 138, SC 4, ISO 16486-4 has been prepared by ISO/TC 138, SC 7.

This document details the applicable characteristics to be assessed for type testing (TT), batch release testing (BRT), process verification testing (PVT) and audit testing (AT), as well as the frequency and sampling for testing.

The concept of testing and organization of those tests used for the AoC is shown, without or with certification, in [Figures 1](#) and [2](#).

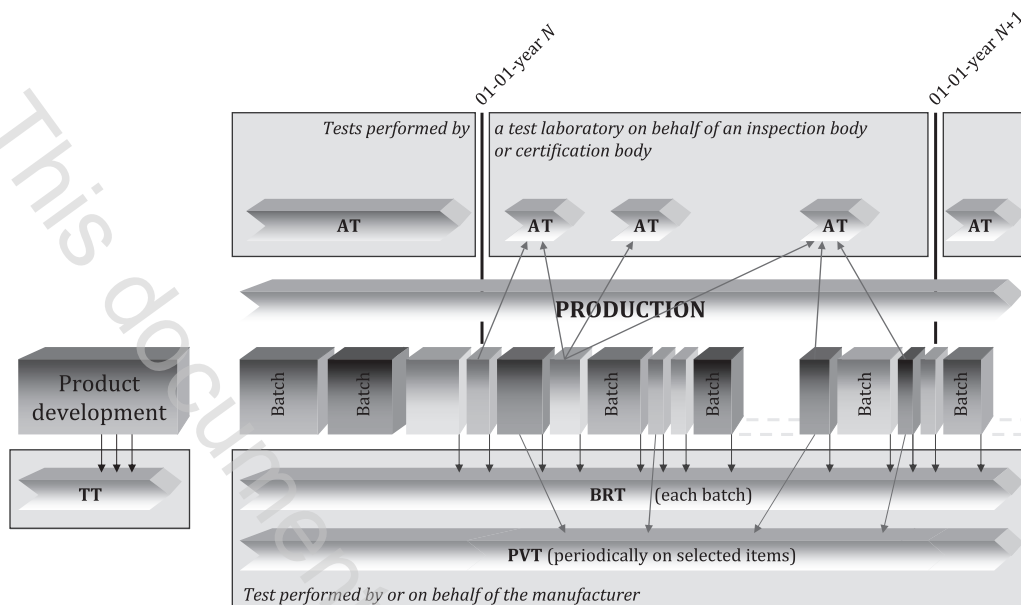
A typical scheme for the assessment of conformity of materials, compounds, pipes, fittings, valves, joints or assemblies by product manufacturers is given in [Figure 1](#).



SOURCE ISO/TS 15874-7:2018.

Figure 1 — Typical scheme for the AoC by a manufacturer, without certification

A typical scheme for the assessment of conformity of compounds, pipes, fittings, valves, joints or assemblies by manufacturers, including certification, is given in [Figure 2](#).



SOURCE ISO/TS 15874-7:2018.

Figure 2 — Typical scheme for the AoC by a manufacturer, including certification

Plastics piping systems for the supply of gaseous fuels — Unplasticized polyamide (PA-U) piping systems with fusion jointing and mechanical jointing —

Part 7: Assessment of conformity

1 Scope

This document gives guidance and requirements for the assessment of conformity of compounds, products, joints and assemblies in accordance with the applicable part(s) of the ISO 16486 series which are intended to be included in the manufacturer's quality plan as part of the quality management system and for the establishment of certification procedures.

NOTE 1 A basic test matrix in [Annex B](#) provides an overview of the testing scheme.

It is recommended for the manufacturer to have a management system such as ISO 9001^[4] or equivalent.

NOTE 2 If certification is involved, certification bodies and inspection bodies operating according to ISO/IEC 17065 and ISO/IEC 17020 are considered to be competent.

In conjunction with the other parts of the ISO 16486 series (see [Clause 2](#)), this document is applicable to unplasticized polyamide (PA-U) piping systems intended to be buried and used for the supply of gaseous fuels. It is applicable to PA-U pipes, fittings and valves, as well as to their joints and to joints with components of other materials intended to be used under the following conditions:

- a) a maximum operating pressure (MOP) up to and including 18 bar¹⁾ (the MOP is limited to 16 bar for CEN member countries, where ISO 16486-6 is replaced by CEN/TS 12007-6^[1]);
- b) an operating temperature of 20 °C as the reference temperature.

NOTE 3 For operating temperatures different to 20 °C, derating coefficients can be used (see ISO 16486-6). CEN member countries use CEN/TS 12007-6^[1] and ISO/TS 16486-7 (this document) as a basis, but they can also request additional requirements. For non-CEN member countries, information for dealing with special cases for PA-U can be found in ISO/TS 16486-7 (this document) and PPI TR-3.^[2]

For mechanical fittings conforming to ISO 17885, guidance for assessment of conformity is not given in this document. When requested, a quality plan based on the tests mentioned can be set up in agreement between user and manufacturer.

The ISO 16486 series covers a range of maximum operating pressures and gives requirements concerning colours.

NOTE 4 It is the responsibility of the purchaser or specifier to make the appropriate selections from these aspects, taking into account their particular requirements and any relevant national regulations and installation practices or codes.

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.

1) 1 bar = 0,1 MPa = 10⁵ Pa; 1 MPa = 1 N/mm².

ISO 12162, *Thermoplastics materials for pipes and fittings for pressure applications — Classification, designation and design coefficient*

ISO 13477, *Thermoplastics pipes for the conveyance of fluids — Determination of resistance to rapid crack propagation (RCP) — Small-scale steady-state test (S4 test)*

ISO 16486-1:2020, *Plastics piping systems for the supply of gaseous fuels — Unplasticized polyamide (PA-U) piping systems with fusion jointing and mechanical jointing — Part 1: General*

ISO 16486-2:2020, *Plastics piping systems for the supply of gaseous fuels — Unplasticized polyamide (PA-U) piping systems with fusion jointing and mechanical jointing — Part 2: Pipes*

ISO 16486-3:2020, *Plastics piping systems for the supply of gaseous fuels — Unplasticized polyamide (PA-U) piping systems with fusion jointing and mechanical jointing — Part 3: Fittings*

ISO 16486-4:2022, *Plastics piping systems for the supply of gaseous fuels — Unplasticized polyamide (PA-U) piping systems with fusion jointing and mechanical jointing — Part 4: Valves*

ISO 16486-5:2021, *Plastics piping systems for the supply of gaseous fuels — Unplasticized polyamide (PA-U) piping systems with fusion jointing and mechanical jointing — Part 5: Fitness for purpose of the system*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 16486-1, ISO 16486-2, ISO 16486-3, ISO 16486-4 and ISO 16486-5 and the following apply.

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

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

3.1 certification body

third-party conformity assessment body operating certification schemes

Note 1 to entry: A certification body can be non-governmental or governmental (with or without regulatory authority).

3.2 laboratory

body that performs one or more of the following activities:

- testing;
- calibration;
- sampling, associated with subsequent testing or calibration

Note 1 to entry: Within the context of this document, the materials and products can be subjected to type testing, batch release testing, process verification testing and audit testing, as applicable.

3.3 quality management system

part of a management system with regard to quality

Note 1 to entry: Requirements for quality management systems are given in ISO 9001.

[SOURCE: ISO 9000:2015, 3.5.4, modified — Note 1 to entry added.]