

---

---

**Plastics piping systems for renovation of  
underground gas supply networks**

**Part 1:  
General**

*Systèmes de canalisations en plastique pour la rénovation des réseaux  
de gaz enterrés — Partie 1: Généralités*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 11299-1:2011

<https://standards.iteh.ai/catalog/standards/sist/6a5d97fb-2b92-4e4c-9c4d-d3a8cb84af79/iso-11299-1-2011>



## iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO 11299-1:2011

<https://standards.iteh.ai/catalog/standards/sist/6a5d97fb-2b92-4e4c-9c4d-d3a8cb84af79/iso-11299-1-2011>



### **COPYRIGHT PROTECTED DOCUMENT**

© ISO 2011

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

Foreword .....	v
Introduction .....	vi
<b>1</b> <b>Scope</b> .....	<b>1</b>
<b>2</b> <b>Normative references</b> .....	<b>1</b>
<b>3</b> <b>Terms and definitions</b> .....	<b>1</b>
<b>3.1</b> <b>General</b> .....	<b>1</b>
<b>3.2</b> <b>Techniques</b> .....	<b>3</b>
<b>3.3</b> <b>Characteristics</b> .....	<b>4</b>
<b>3.4</b> <b>Materials</b> .....	<b>5</b>
<b>3.5</b> <b>Product stages</b> .....	<b>5</b>
<b>3.6</b> <b>Service conditions</b> .....	<b>6</b>
<b>4</b> <b>Symbols and abbreviated terms</b> .....	<b>6</b>
<b>4.1</b> <b>Symbols</b> .....	<b>6</b>
<b>4.2</b> <b>Abbreviated terms</b> .....	<b>6</b>
<b>5</b> <b>Pipes at the “M” stage</b> .....	<b>6</b>
<b>5.1</b> <b>Materials</b> .....	<b>6</b>
<b>5.2</b> <b>General characteristics</b> .....	<b>6</b>
<b>5.3</b> <b>Material characteristics</b> .....	<b>7</b>
<b>5.4</b> <b>Geometric characteristics</b> .....	<b>7</b>
<b>5.5</b> <b>Mechanical characteristics</b> .....	<b>7</b>
<b>5.6</b> <b>Physical characteristics</b> .....	<b>7</b>
<b>5.7</b> <b>Joining</b> .....	<b>7</b>
<b>5.8</b> <b>Marking</b> .....	<b>7</b>
<b>6</b> <b>Fittings at the “M” stage</b> .....	<b>7</b>
<b>6.1</b> <b>Materials</b> .....	<b>7</b>
<b>6.2</b> <b>General characteristics</b> .....	<b>8</b>
<b>6.3</b> <b>Material characteristics</b> .....	<b>8</b>
<b>6.4</b> <b>Geometric characteristics</b> .....	<b>8</b>
<b>6.5</b> <b>Mechanical characteristics</b> .....	<b>8</b>
<b>6.6</b> <b>Physical characteristics</b> .....	<b>8</b>
<b>6.7</b> <b>Joining</b> .....	<b>8</b>
<b>6.8</b> <b>Marking</b> .....	<b>8</b>
<b>7</b> <b>Ancillary components</b> .....	<b>8</b>
<b>8</b> <b>Fitness for purpose of the installed lining system at the “I” stage</b> .....	<b>9</b>
<b>8.1</b> <b>Materials</b> .....	<b>9</b>
<b>8.2</b> <b>General characteristics</b> .....	<b>9</b>
<b>8.3</b> <b>Material characteristics</b> .....	<b>9</b>
<b>8.4</b> <b>Geometric characteristics</b> .....	<b>9</b>
<b>8.5</b> <b>Mechanical characteristics</b> .....	<b>9</b>
<b>8.6</b> <b>Physical characteristics</b> .....	<b>10</b>
<b>8.7</b> <b>Additional characteristics</b> .....	<b>10</b>
<b>8.8</b> <b>Sampling</b> .....	<b>10</b>
<b>9</b> <b>Installation practice</b> .....	<b>10</b>
<b>9.1</b> <b>Preparatory work</b> .....	<b>10</b>
<b>9.2</b> <b>Storage, handling and transport of pipes and fittings</b> .....	<b>10</b>
<b>9.3</b> <b>Equipment</b> .....	<b>10</b>
<b>9.4</b> <b>Installation</b> .....	<b>11</b>
<b>9.5</b> <b>Process-related inspection and testing</b> .....	<b>11</b>
<b>9.6</b> <b>Lining termination</b> .....	<b>11</b>
<b>9.7</b> <b>Reconnecting to the existing pipeline system</b> .....	<b>12</b>
<b>9.8</b> <b>Transfer of service lines</b> .....	<b>12</b>

9.9	Final inspection and testing .....	12
9.10	Documentation .....	12
	Bibliography .....	13

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 11299-1:2011

<https://standards.iteh.ai/catalog/standards/sist/6a5d97fb-2b92-4e4c-9c4d-d3a8cb84af79/iso-11299-1-2011>

## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 11299-1 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*.

ISO 11299 consists of the following parts, under the general title *Plastics piping systems for renovation of underground gas supply networks*:

— Part 1: General

— Part 3: Lining with close-fit pipes

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 11299-1:2011

<https://standards.iteh.ai/catalog/standards/sist/6a5d97fb-2b92-4e4c-9c4d-d3a8cb84af79/iso-11299-1-2011>

## Introduction

This part of ISO 11299 is a part of a system standard for plastics piping systems of various materials used for the renovation of existing pipelines in a specified application area. System standards for renovation deal with the following applications:

- plastics piping systems for renovation of underground non-pressure drainage and sewerage networks;
- plastics piping systems for renovation of underground drainage and sewerage networks under pressure;
- plastics piping systems for renovation of underground water supply networks;
- plastics piping systems for renovation of underground gas supply networks (this application).

These system standards are distinguished from those for conventionally installed plastics piping systems because they set requirements for certain characteristics in the as-installed condition, after site processing. This is in addition to specifying requirements for system components, as manufactured.

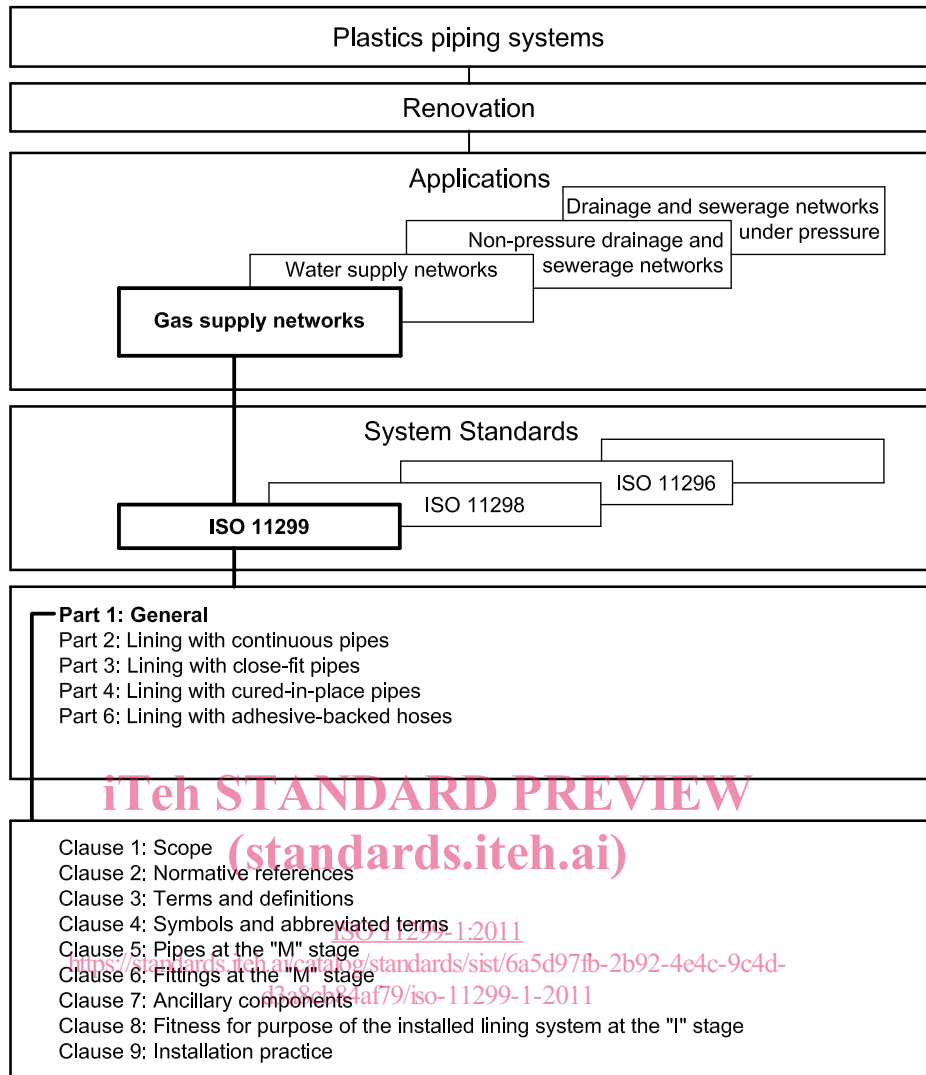
Each of the system standards comprises a Part 1: General (this document) and all applicable parts relating to the renovation technique family, from the following:

- *Part 2: Lining with continuous pipes*
- *Part 3: Lining with close-fit pipes*
- *Part 4: Lining with cured-in-place pipes*
- *Part 6: Lining with adhesive-backed hoses*

The requirements for any given renovation technique family are specified in this part of ISO 11299 and are applied in conjunction with the other relevant parts. For example, both this part of ISO 11299 and ISO 11299-3 specify the requirements relating to lining with close-fit pipes. For complementary information, see ISO 11295. Not all technique families are pertinent to every area of application and this is reflected in the part numbers included in each system standard.

A consistent structure of clause headings has been adopted for all parts in ISO 11299, in order to facilitate direct comparisons across renovation technique families.

Figure 1 illustrates the common part and clause structure and the relationship between ISO 11299 and the system standards for other application areas.



**Figure 1 — Format of the renovation system standards**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 11299-1:2011

<https://standards.iteh.ai/catalog/standards/sist/6a5d97fb-2b92-4e4c-9c4d-d3a8cb84af79/iso-11299-1-2011>



# Plastics piping systems for renovation of underground gas supply networks

## Part 1: General

### 1 Scope

This part of ISO 11299 specifies the requirements and test methods for plastics piping systems for use in the renovation of underground gas supply networks. It is applicable to pipes and fittings as manufactured, as well as to the installed lining system. It is not applicable to sprayed coatings, the existing pipeline or any annular filler.

This part of ISO 11299 establishes the general requirements common to all relevant renovation techniques.

### 2 Normative references

There are no general normative references.

NOTE See other parts of ISO 11299 for the normative references applicable to specific renovation technique families.

### 3 Terms and definitions [standards.iteh.ai](https://standards.iteh.ai)

For the purposes of this document, the following terms and definitions apply.

<https://standards.iteh.ai/catalog/standards/sist/6a5d97fb-2b92-4e4c-9c4d-d3a8cb84af79/iso-11299-1-2011>

#### 3.1 General

##### 3.1.1

##### **pipeline system**

interconnecting pipe network for the conveyance of fluids

##### 3.1.2

##### **rehabilitation**

all measures for restoring or upgrading the performance of an existing pipeline system

##### 3.1.3

##### **renovation**

work incorporating all or part of the original fabric of the pipeline by means of which its current performance is improved

##### 3.1.4

##### **replacement**

rehabilitation of an existing pipeline system by the installation of a new pipeline system, without incorporating the original fabric

##### 3.1.5

##### **maintenance**

keeping an existing pipeline system operational without the installation of additional fabric

##### 3.1.6

##### **repair**

rectification of local damage

**3.1.7**

**lining pipe**

pipe inserted for renovation purposes

**3.1.8**

**liner**

lining pipe after installation

**3.1.9**

**lining system**

lining pipe and all relevant fittings for insertion into an existing pipeline for the purposes of renovation

**3.1.10**

**renovated pipeline system**

existing pipeline system plus the installed lining system used to renovate it, plus any grout or other annular filling material used

**3.1.11**

**characteristic**

property, dimension or other feature of a material or component

**3.1.12**

**declared value**

limiting value of a characteristic declared in advance by the lining system supplier, which becomes the requirement for the purposes of assessment of conformity

**3.1.13**

**annular filler**

material for grouting annular space between existing pipeline and lining system

**3.1.14**

**grouting**

process of filling voids around the lining system

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)  
<https://standards.iteh.ai/catalog/standards/sist/6a5d97fb-2b92-4e4c-9c4d-c5a8cb84af79/iso-11299-1-2011>

**3.1.15**

**system test pressure**

**STP**

hydrostatic pressure applied to the installed pipeline system in order to ensure its integrity and leak tightness

NOTE Expressed in bar. 1 bar = 0,1 MPa = 10<sup>5</sup> Pa; 1 MPa = 1 N/mm<sup>2</sup>.

**3.1.16**

**simulated installation**

installation of a lining system into a simulated host pipeline, using representative equipment and processes, in order to provide samples for testing which are representative of an actual installation

**3.1.17**

**simulated host pipeline**

section of pipeline which is not part of an operational network but which replicates the environment of an operational network

**3.1.18**

**technique family**

group of renovation techniques which are considered to have common characteristics for standardization purposes

**3.1.19**

**independent pressure pipe liner**

liner which is capable on its own of resisting without failure all applicable internal loads throughout its design life

**3.1.20****interactive pressure pipe liner**

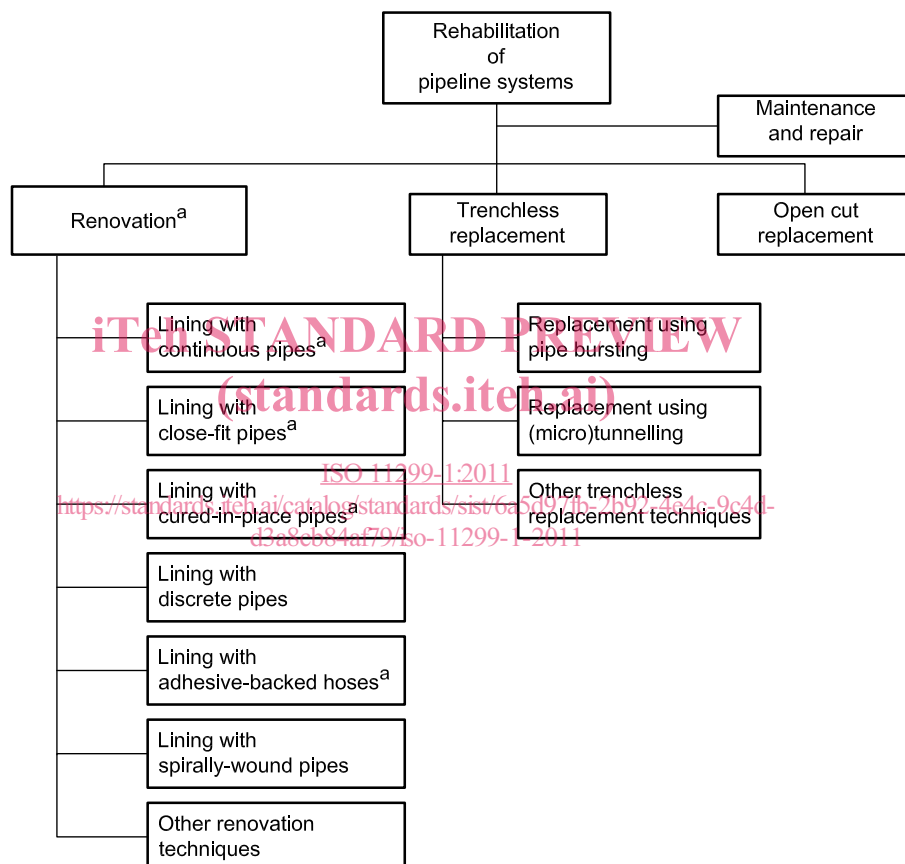
liner which relies on the host pipe for some measure of radial support in order to resist without failure all applicable internal loads throughout its design life

**3.1.21****service line**

pipework from the mains to the point of delivery of the gas into the installation pipework

**3.2 Techniques**

The various techniques for renovation of underground gas supply networks, within the scope of pipeline rehabilitation techniques generally, are shown schematically in Figure 2. For definitions of standardized renovation techniques shown in Figure 2 but outside the scope of this part of ISO 11299, see ISO 11295<sup>[1]</sup>.



<sup>a</sup> This part of ISO 11299 is applicable.

**Figure 2 — Technique families for renovation of underground gas supply networks using plastics pipes within the scope of pipeline rehabilitation techniques**

The technique families within the scope of this part of ISO 11299 are defined as follows.

**3.2.1****lining with continuous pipes**

lining with pipe made continuous prior to insertion, and which has not been shaped to give it a cross-sectional diameter smaller than its final diameter after installation