
Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Thermoplastics - Recommended practice for installation

Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Thermoplastics - Recommended practice for installation

Kunststoff-Rohrleitungssysteme zum Ableiten von Abwasser (niedriger und hoher Temperatur) innerhalb der Gebäudestruktur - Thermoplaste - Empfehlungen für die Verlegung

Systemes de canalisations en plastique pour l'évacuation des eaux-vannes et des eaux usées (a basse et a haute température) a l'intérieur de la structure des bâtiments - Thermoplastiques - Pratiques recommandées pour la pose

Ta slovenski standard je istoveten z: ENV 13801:2000

ICS:

23.040.20	Cevi iz polimernih materialov	Plastics pipes
91.140.80	Drenažni sistemi	Drainage systems

SIST ENV 13801:2001**en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST ENV 13801:2001

<https://standards.iteh.ai/catalog/standards/sist/05f46888-30b5-43c8-b141-05c125aace53/sist-env-13801-2001>

EUROPEAN PRESTANDARD
PRÉNORME EUROPÉENNE
EUROPÄISCHE VORNORM

ENV 13801

November 2000

ICS 91.140.80

English version

Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Thermoplastics - Recommended practice for installation

Systèmes de canalisations en plastique pour l'évacuation des eaux-vannes et des eaux usées (à basse et à haute température) à l'intérieur de la structure des bâtiments - Thermoplastiques - Pratiques recommandées pour la pose

This European Prestandard (ENV) was approved by CEN on 10 August 2000 as a prospective standard for provisional application.

The period of validity of this ENV 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 ENV can be converted into a European Standard.

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

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

<https://standards.iteh.ai/catalog/standards/sist/05146888-30b5-43c8-b141-05c125aace53/sist-env-13801-2001>



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	Page
Foreword.....	4
Introduction.....	5
1 Scope.....	6
2 Normative references.....	7
3 Terminology, definitions, symbols and abbreviations.....	7
3.1 General terminology.....	7
3.2 Definitions.....	8
3.3 Symbols.....	9
3.3.1 Symbols for installation.....	9
3.3.2 Symbol for sockets for solvent cement jointing.....	9
3.3.3 Symbols for sockets for ring seal jointing.....	9
3.3.4 Symbol for butt-fusion joint.....	10
3.3.5 Symbol for electrofusion sleeve coupling.....	10
3.3.6 Symbol for flange and backing ring joint.....	11
3.3.7 Symbol for compression joint.....	11
3.3.8 Symbols for brackets.....	11
3.4 Abbreviations.....	11
4 Design limits of the system.....	12
5 Storage, transport and handling.....	12
5.1 General.....	12
5.2 Transport.....	12
5.3 Storage.....	13
5.4 Handling on site.....	14
6 Installation.....	15
6.1 General recommendations for installation.....	15
6.1.1 Cutting of pipe.....	15
6.1.2 Chamfering of pipe.....	16
6.1.3 Fabricating.....	16
6.2 Recommendations for above-ground installation.....	16
6.2.1 General.....	16
6.2.2 Installation of PE and PP pipeworks with non-removable rigid joints.....	17
6.2.3 Installation with joint design taking account of thermal movement.....	18
6.2.4 Supports.....	22
6.3 Recommendations for installation in buried conditions.....	27
6.3.1 General.....	27
6.3.2 Installation for BD application.....	28
6.3.3 Differential movement - Flexible joints.....	29
6.4 Jointing procedure.....	30
6.4.1 Jointing with solvent cement joints.....	30
6.4.2 Jointing with ring seal joints.....	32
6.4.3 Jointing with butt fusion.....	34
6.4.4 Jointing with electrofusion sleeve couplings.....	36

6.4.5	Jointing with flanges and backing rings.....	37
6.4.6	Jointing with compression joints.....	37
7	Special precautions	37
7.1	Concreting of thermoplastics systems within the building structure.....	37
7.1.1	General.....	37
7.1.2	Inserting systems in concrete setting at ambient temperature.....	39
7.1.3	Inserting systems into post-heated concrete.....	43
7.2	Foaming of thermoplastics systems.....	43
7.3	Prevention of additional stresses in pipework	43
8	Jointing to other materials or other constructions.....	43
8.1	General.....	43
8.2	Solvent-cement joints	44
8.3	Ring seal joints	44
8.4	Jointing to non-thermoplastics components.....	44
8.5	Adaptors	45
9	Environmental aspects	46
10	Fire resistance of pipework.....	46
11	Testing and inspection of installations.....	46
11.1	Testing.....	46
11.2	General inspection	46
12	Maintenance and cleaning of installations	47
12.1	General.....	47
12.2	Cleaning and descaling techniques.....	47
13	Chemical resistance of thermoplastics materials.....	47
	Bibliography.....	48

iTeh STANDARD PREVIEW

(standards.iteh.ai)

SIST ENV 13801:2001

[https://standards.iteh.ai/catalog/standards/sist/05f46888-30b5-43c8-b141-](https://standards.iteh.ai/catalog/standards/sist/05f46888-30b5-43c8-b141-05c125aacc53/sist-env-13801-2001)[05c125aacc53/sist-env-13801-2001](https://standards.iteh.ai/catalog/standards/sist/05f46888-30b5-43c8-b141-05c125aacc53/sist-env-13801-2001)

Foreword

This European Prestandard has been prepared by Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems", the secretariat of which is held by NEN

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This Prestandard is a guidance document only, to be mainly used as a basis for preparing more specific manufacturer's instructions. It is associated with Standards for piping systems covering a particular thermoplastic material for a specified application. There are a number of such Standards.

It is 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).

This Prestandard is consistent with general standards on functional requirements and on recommended practice for installation.

This prestandard contains a bibliography.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST ENV 13801:2001](#)

<https://standards.iteh.ai/catalog/standards/sist/05f46888-30b5-43c8-b141-05c125aace53/sist-env-13801-2001>

Introduction

This Prestandard covers the recommended practice for installation of the thermoplastics piping systems for soil and waste discharge. The most important recommendations are expressed by the use of the imperative. These are strongly recommended.

Guidance for installation is presented, e.g. by the use of "may" or "is recommended", for consideration as a matter of judgement in each case.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST ENV 13801:2001](https://standards.iteh.ai/catalog/standards/sist/05f46888-30b5-43c8-b141-05c125aace53/sist-env-13801-2001)

<https://standards.iteh.ai/catalog/standards/sist/05f46888-30b5-43c8-b141-05c125aace53/sist-env-13801-2001>

1 Scope

This Prestandard gives the recommended practice for installation of thermoplastics piping systems in the field of soil and waste discharge (low and high temperature) inside buildings (marked with "B") and of soil and waste discharge systems for both inside buildings and buried in ground within the building structure (marked with "BD").

This Prestandard provides for material dependent installation techniques but it is important that the general installation practice as given in the relevant parts of EN 12056 for B application are taken into account in manufacturer's instructions, subject to any applicable national and/or local regulations.

This Prestandard is applicable to thermoplastics pipes and fittings as specified in the associated standards EN 1329-1 (PVC-U), EN 1451-1 (PP), EN 1453-1 (PVC-U with structured-wall pipes), EN 1455-1 (ABS), EN 1519-1 (PE), EN 1565-1 (SAN+PVC) and EN 1566-1 (PVC-C), their joints and to joints with components of other plastics and non-plastics materials intended to be used for the following purposes:

- a) soil and waste discharge pipework for the conveyance of domestic waste waters (low and high temperature);

NOTE 1 See clause 4 for waste discharge temperature limits.

- b) ventilating pipework associated with a);
- c) rainwater pipework within the building structure (see Figure 1, key 16).

It is applicable to pipes and fittings, marked with "B", which are intended to be used above ground only, and to pipes and fittings, marked "BD", which are intended to be used above and buried in ground within the building structure.

NOTE 2 Only those components as specified in the relevant associated standard with nominal outside diameters equal to or greater than 75 mm (marked with "BD") are intended for use buried in ground within the building structure. The term "within building structure" covers all gravity discharge pipework within a building, including the elements installed below the slab and buried in the ground.

If specified in the relevant associated standard, this prestandard also covers soil and waste discharge pipework fixed externally onto the building (see Figure 1, key 17). It is not applicable to pipework that passes under the building without any connection from the discharge system.

NOTE 3 According to the associated standards, for external above ground soil and waste discharge, additional requirements depending on the climate, are to be agreed between the manufacturer and the user.

NOTE 4 According to the associated standards, components conforming to other Standards on plastic piping systems may be used with pipes and fittings conforming to a given associated standard, if they conform to the requirements for joint dimensions and functional requirements of the given associated standard.

2 Normative references

This European Prestandard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Prestandard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 12056-1:2000, *Gravity drainage systems inside buildings — Part 1: General and performance requirements*

EN 12056-2:2000, *Gravity drainage systems inside buildings — Part 2: Sanitary pipework, layout and calculation*

EN 12056-3:2000, *Gravity drainage systems inside buildings — Part 3: Roof drainage, layout and calculation*

EN 12056-5:2000, *Gravity drainage systems inside buildings — Part 5: Installation and testing, instructions for operation, maintenance and use*

prEN 12056-6:1995, *Gravity drainage systems inside buildings — Part 6: Inspection and testing*

3 Terminology, definitions, symbols and abbreviations

For the purposes of this Prestandard, the following terminology, definitions, symbols and abbreviations apply.

3.1 General terminology

For the general terminology refer to EN 12056-1:2000, EN 12056-2:2000 or EN 12056-3:2000, where applicable, and see Figure 1 (the figure is schematic only).

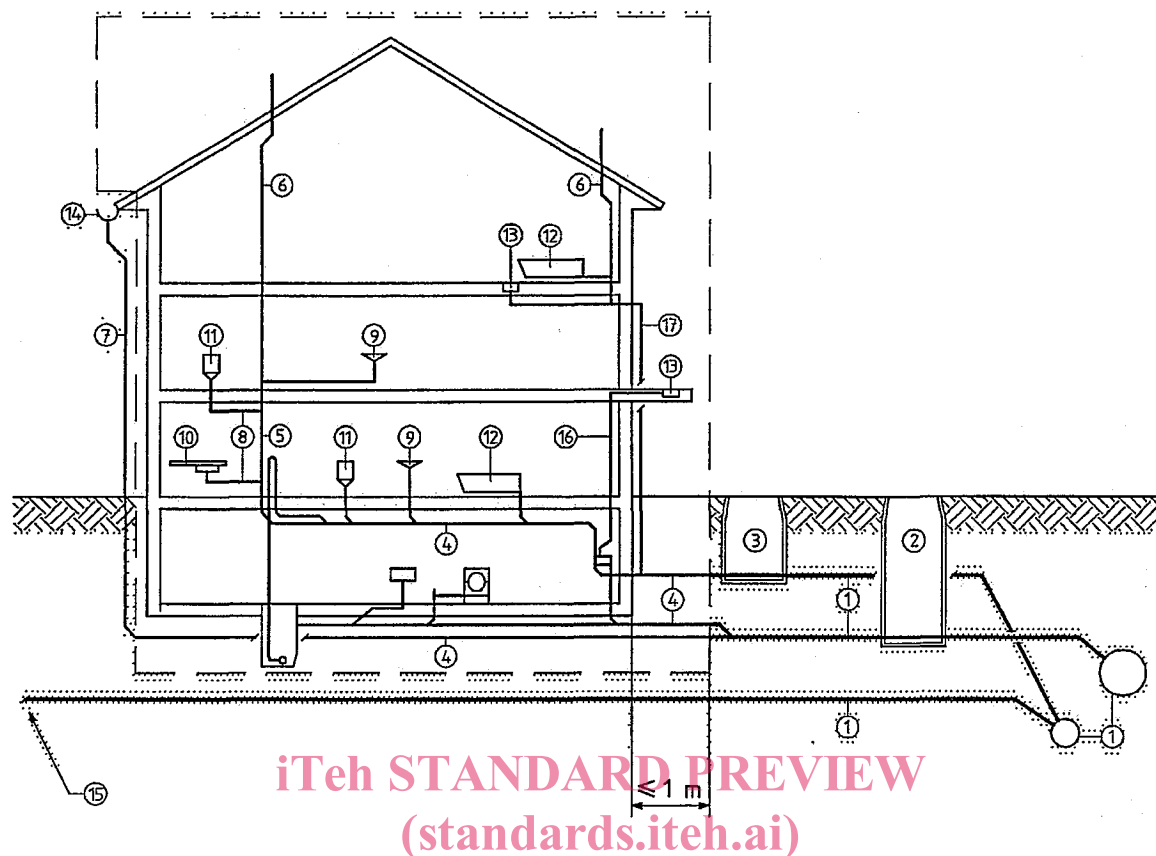
Local and/or national regulations may require separate drainpipe systems for foul and rainwater.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

SIST ENV 13801:2001

05c125aace53/sist-env-13801-2001

**Key**

1 Sewer	7 Rainwater downpipe	13 Floor gully/trap
2 Manhole	8 Branch discharge pipe	14 Gutter
3 Inspection chamber	9 Wash basin	15 Pipework from other buildings
4 Drain	10 Sink	16 Internal rainwater downpipe
5 Discharge stack	11 Water closet	17 External discharge stack
6 Stack vent	12 Bath	

NOTE Key 1, 2, 7 and 14 are not covered by this prestandard. Key 3 is covered if the distance to the building wall is smaller than or equal to 1 m.

Figure 1 — Terminology for a soil and waste discharge system

3.2 Definitions

For the purposes of this prestandard, the definitions given in the relevant associated standard apply, together with the following.

3.2.1

associated standard

standard which specifies all requirements applicable to pipes, fittings and joints made of a particular material to be installed according to the recommendations of this prestandard

3.2.2

ring seal socket length (Type S, type N or M, or type L)

length of a ring seal socket, which is designated as short (type S), normal or medium (type N or type M), or long (type L) in the relevant associated standards

NOTE In EN 1329-1, EN 1453-1 and in ISO 8283-4, type N sockets are designated by type M (medium).

3.2.3**flexible leg (L_1 and L_2)**

free length between two fixed points either sides of a bend of a solvent cement system. The two lengths are designated L_1 and L_2

3.2.4**bedding zone (c)**

thickness of the compacted zone below the pipe when buried within the building structure

3.2.5**expansion gap (E, E_1, E_2)**

distance left during installation between the bottom of a socket and the spigot of the inserted component, allowing expansion of the system

3.3 Symbols**3.3.1 Symbols for installation**

c : bedding zone (see 6.3.2)

D_{\max} : recommended maximum distance between support centres in above-ground installation (see 6.2.4.2)

$L_{c,\max}$: maximum recommended distance between anchored brackets in concreted-in installation (see 7.1.2.7)

L_F : free length between fixed points in above-ground installation (see 6.2.3.1)

Y : effective sealing length (see 6.2.3.2)

3.3.2 Symbol for sockets for solvent cement jointing

The design symbol (square-shaped) given in Figure 2 signifies a rigid, non-removable connection of two pipes and/or fittings made by means of a solvent cement socket.

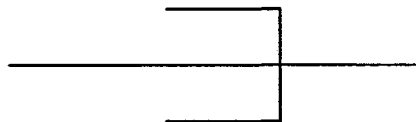


Figure 2 — Design symbol for solvent cement joint

3.3.3 Symbols for sockets for ring seal jointing

The design symbols (cup-shaped) given in Figure 3 signify a non-rigid, removable connection of two pipes and/or fittings made by means of a rubber seal in a type S, type N, type M or type L socket, respectively.

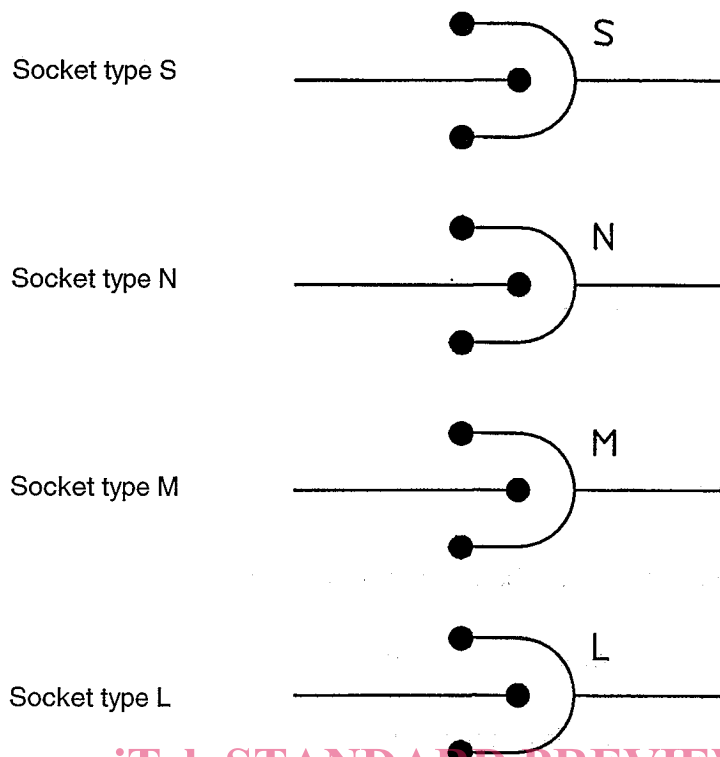


Figure 3 — Design symbols for ring seal joint

3.3.4 Symbol for butt-fusion joint

SIST ENV 13801:2001

<https://standards.iteh.ai/catalog/standards/sist/0546888-30b5-43c8-b141-059229aacc53/sist-env-13801-2001>

The design symbol given in Figure 4 signifies a rigid, non-removable connection of two pipes and/or fittings made after fusion by means of a heating plate.



Figure 4 — Design symbol for butt-fusion joint

3.3.5 Symbol for electrofusion sleeve coupling

The design symbol given in Figure 5 signifies a rigid, non-removable connection of two pipes and/or fittings made by means of integral electrically powered fusion.



Figure 5 — Design symbol for electrofusion sleeve coupling

3.3.6 Symbol for flange and backing ring joint

The design symbol given in Figure 6 signifies a rigid connection of two pipes and/or fittings made by means of bolts and nuts.

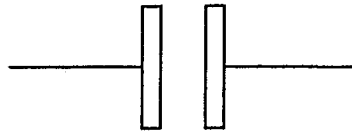


Figure 6 — Design symbol for flange and backing ring joint

3.3.7 Symbol for compression joint

The design symbol given in Figure 7 signifies a rigid connection of two pipes and/or fittings made by means of thread, rubber ring and screw.



Figure 7 — Design symbol for compression joint

3.3.8 Symbols for brackets

The design symbols for brackets given in Figure 8 signify an anchor bracket or a guide bracket, respectively.



Anchor bracket for fixed point

Guide bracket for free movement of pipe

Figure 8 — Design symbols for brackets

3.4 Abbreviations

For the thermoplastics materials the following abbreviations apply :

ABS	Acrylonitrile-butadiene-styrene
PE	Polyethylene
PP	Polypropylene
PP-H	Polypropylene homopolymer
PVC-C	Chlorinated poly(vinyl chloride)
PVC-U	Unplasticized poly(vinyl chloride)
SAN+PVC	Styrene copolymer blend

4 Design limits of the system

Discharge systems of thermoplastics are primarily designed for intermittent waste discharges from domestic origin including from washing and dishwashing machines. Discharge systems of PE, PP, and PVC-C are also designed for discharges from public laundries, launderettes or other installations where long periods of high temperature discharge occur. For the design of systems for other discharges than domestic waste, see clause 13 and manufacturer's recommendations.

Apply the requirements for the calculation of the flow capacity of plumbing installations, as specified in relevant European Standards, subject to any applicable national and/or local regulations.

NOTE Among European Standards, EN 12056-2:2000 and EN 12056-3:2000 are primarily applicable for flow capacity calculation.

5 Storage, transport and handling

5.1 General

Attention is drawn to any relevant local and/or national safety regulations.

Avoid damage to the surfaces and ends of pipe and fittings.

Loading and handling of components made of PP-homopolymers (marked PP-H), for which performance impact testing is carried out at 23 °C (see EN 1451-1) is not recommended at ambient temperatures lower than +5 °C. For components made of other materials, follow the manufacturer's instructions regarding installation at low temperature.

Support pipes with sockets and with pre-assembled fittings, in such a way that they are protected from damage and that the ends are free from loading, e.g. by alternating the socket and non-socket ends in given or adjacent layers..

5.2 Transport

Load pipes and fittings in such a way that no damage occurs during transport (see Figure 9).

Stack the pipes at a maximum stacking height of 1,5 m unless otherwise specified in the manufacturer's instructions, for example when transporting caged bundles.

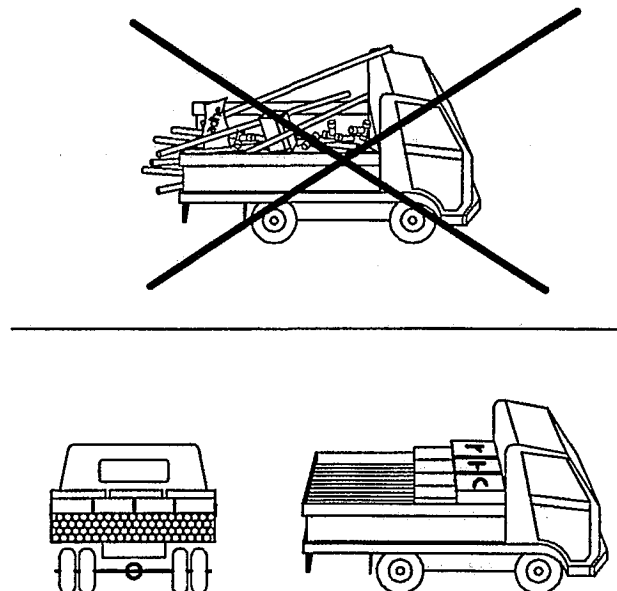


Figure 9 — Loading for transport

5.3 Storage

Do not carelessly unload pipes and fittings (see Figure 10).

Provide a storage area free from substances harmful to the relevant thermoplastics (see clause 13), comprising smooth and level ground or a flat timber base to avoid the risk of bent or damaged pipes. Where PE pipes are supplied in coils, store them either stacked flat one on top of the other, or (chiefly for sizes greater than DN 90) vertically in purpose-built racks or cradles.

Avoid storage in direct sunlight over a period longer than one year. Where long-term storage and/or strong sunlight is expected, screening from the direct rays of the sun is recommended, except for black-coloured PE components.

Recommended maximum stacking height is 1,5 m [see Figure 10, detail a)] unless otherwise stated in the manufacturer's instructions, for example when stacking caged bundles (see Figure 10, detail b)].

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST ENV 13801:2001

<https://standards.iteh.ai/catalog/standards/sist/05f46888-30b5-43c8-b141-05c125aace53/sist-env-13801-2001>