
Vzdolžno varjene jeklene cevi in spojniki, vroče pocinkani, z obojko, za sisteme za odpadno vodo – 3. del: Mere in posebne zahteve za podtlačne sisteme za odvodnjavanje in za sisteme za odvodnjavanje v ladjedelništvu

Pipes and fittings of longitudinally welded hot-dip galvanized steel pipes with spigot and socket for waste water systems - Part 3: Dimensions and special requirements for vacuum drainage systems and for drainage systems in ship-building

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Rohre und Formstücke aus längsnahtgeschweißtem, feuerverzinktem Stahlrohr mit Steckmuffe für Abwasserleitungen - Teil 3: Maße und spezielle Anforderungen für Unterdruckentwässerungssysteme sowie für Entwässerungssysteme im Schiffbau

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Tubes et raccords de tube soudés longitudinalement en acier galvanisé a chaude, a manchon enfichable pour réseaux d'assainissement - Partie 3: Dimensions et prescriptions particulieres pour les réseaux d'évacuation sous vide ainsi que pour les réseaux d'évacuation dans la construction navale

Ta slovenski standard je istoveten z: EN 1123-3:2004

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47.020.30	Sistemi cevi	Piping systems
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93.030	Zunanji sistemi za odpadno vodo	External sewage systems

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Pipes and fittings of longitudinally welded hot-dip galvanized steel pipes with spigot and socket for waste water systems - Part 3: Dimensions and special requirements for vacuum drainage systems and for drainage systems in ship-building

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This European Standard was approved by CEN on 23 September 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This document (EN 1123-3:2004) has been prepared by Technical Committee CEN/TC 165 "Waste water engineering", 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 May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

This document on pipes and fittings of longitudinally welded hot-dip galvanized steel pipe with spigot and socket for waste water systems consists of the following Parts:

- Part 1: Requirements, testing, quality control;
- Part 2: Dimensions
- Part 3: Dimensions and special requirements for vacuum drainage systems and for drainage systems in shipbuilding

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

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Introduction

Pipes and fittings of longitudinally welded hot-dip galvanized steel pipes with spigot and socket for waste water systems as specified in EN 1123-2 are used in gravity drainage systems in buildings. For vacuum drainage systems and for drainage systems in shipbuilding, it was necessary to specify additional requirements and further dimensional specifications for components and joints used in these systems. Components specified in this document are used for vacuum drainage systems and for drainage systems in shipbuilding.

1 Scope

This document specifies requirements, dimensions and tolerances for pipes and fittings of longitudinally welded, hot-dip galvanized steel pipe with spigot and socket used for vacuum drainage systems inside and outside buildings and for gravity and vacuum drainage systems on ships and floating maritime structures¹⁾:

- above freeboard deck as long as the heeling is taken into account in the event of damage when installed above freeboard deck on passenger ships;
- inside a watertight compartment below freeboard deck;
- with direct connection to the outboard (not permitted below freeboard deck);
- inside tanks as long as these are not filled with foreign media and are not cargo tanks.

On well-anchored maritime structures, this standard applies to pipes and fittings of longitudinally welded hot-dip galvanized steel pipe with spigot and socket used in drainage systems in the living area.

NOTE Pipes and fittings according to this document may also be used in central vacuum cleaning installations, in vacuum suction lifting installations, in chip transporting installations and in other waste water and process pipes as long as the media to be discharged do not damage the components or the health and safety of the personnel.

For other pipes, this document only applies if agreed with the relevant operators and following prior consultation with the manufacturer.

This document contains a designation system for the different types of pipes and fittings for easy identification of each component.

This document is only applicable in conjunction with EN 1123-1. It does not apply to the marking of products for which EN 1123-1/A1 is applicable.

2 Normative references

The following referenced documents are indispensable for the application 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⁾ In shipbuilding, the terms "Gravity and vacuum system" are used for this.

EN 1123-1:1999, *Pipes and fittings of longitudinally welded hot-dip galvanized steel pipes with spigot and socket for waste water systems - Part 1: Requirements, testing, quality control.*

EN 1123-2:1999, *Pipes and fittings of longitudinally welded hot-dip galvanized steel pipes with spigot and socket for waste water systems – Part 2: Dimensions.*

EN 10025, *Hot rolled products of non-alloy structural steels — Technical delivery conditions.*

EN 10226-1, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation..*

EN 12109, *Vacuum drainage systems inside buildings.*

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation.*

EN ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods (ISO 1461:1999).*

EN ISO 15749-2, *Ships and marine technology — Drainage systems on ships and marine structures — Part 2: Sanitary drainage, drain piping for gravity system (ISO 15749-2:2004).*

EN ISO 15749-3, *Ships and marine technology — Drainage systems on ships and marine structures. Part 3. Sanitary drainage, drain piping for vacuum system (ISO 15749-3:2004).*

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3 Terms and definitions (standards.iteh.ai)

For the purposes of this document, the terms and definitions given in EN 1123-1:1999 apply.

[SIST EN 1123-3:2005](#)

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4 Symbols and abbreviations

DN/ID	nominal size with regard to the inside diameter
DN/OD	nominal size with regard to the outside diameter
d	diameter
t	socket depth
s	wall thickness
s_2	wall thickness of weld-in sleeve
l	effective length
r	radius
α	angle
m_{10}	thread dimension
k	diameter of row of holes

EN 1123-3:2004 (E)**5 Pipes and fittings requirements****5.1 General**

Components covered by this document shall meet the requirements of EN 1123-1 They shall have a suitable corrosion protection coating as specified in EN ISO 1461 for use in drainage systems for the discharge of black water, gray water and waste water from process pipe systems.

For weld-in sleeves and flanges, weldable material, e.g. S235 JRG2 as specified in EN 10025 or the specifications of the classification societies valid at the place of use of the product shall be used

The suitability of these pipes and fittings for other media shall be agreed with the manufacturer.

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5.2 Operating pressure, operating temperature and tightness

The components shall be dimensioned so that they are reliably tight under the operating conditions given in Table 1 with the indicated type of socket and design being used.

Table 1 — Type of socket joint according to operating data for the pipe system

Pipe system for	Operating pressure	Operating temperature	Socket joint		
			Seal ^a	Type	Socket shape ^b
Deck drainage	up to 0,5 bar	Up to 90 °C in cyclical duty ^c	M 1, M 2, M 3, M 5	inserted	1 A, 2 A, 3 A
Sanitary drain line in gravity system					
Sanitary drain line in vacuum system	- 0,3 bar to – 0,6 bar (corresponding to 0,7 bar to 0,4 bar absolute pressure)		M 1	inserted and bonded	1 A, 2 A, 3 A
	up to – 0,8 bar (corresponding to 0,2 bar absolute pressure)		M 5	inserted	1 A, 2 A, 3 A
			M 4	inserted	1 V or 3 V
Vent line	Following agreement with the relevant supervisory bodies and discussion with the manufacturer.		M 1, M 6	inserted and bonded with shear protection	1 A, 2 A, 3 A
<p>^a Requirements as specified in clause 7</p> <p>^b Socket shapes A according to EN 1123-2; socket shape V according to 6.2</p> <p>^c For higher temperatures, the manufacturer is to be consulted.</p>					

6 Dimensions

6.1 General and tolerances

The figures in this document are simplified drawings. The dimensions given shall be followed.

Where no tolerances are given in this document, the requirements of EN 1123-2 shall be met.

6.2 Sockets

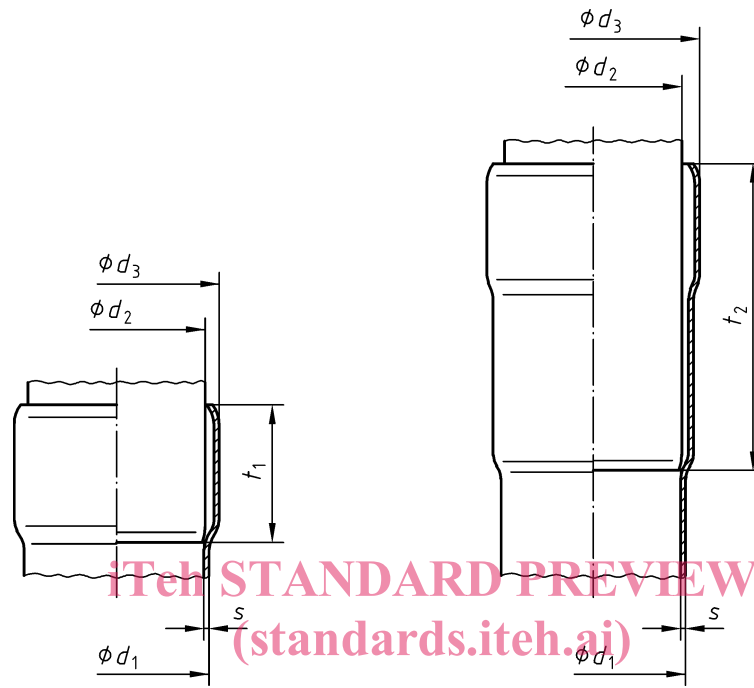
6.2.1 Sockets for gravity drainage systems

The socket shapes and socket dimensions shall conform to type A of EN 1123-2. If the designation of the fittings does not specify the socket shape, they are of socket shape 1 A. Dimensions not specified shall be chosen accordingly.

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6.2.2 Sockets for vacuum operation (vacuum system)

The socket shapes and socket dimensions shall conform to shape A as specified in EN 1123-2 in conjunction with seals of shape M 1 and M 5 or the socket shape shown in Figure 1 and the socket dimensions in Table 2. If the designation of the fittings does not specify the socket shape, they are of shape 1 A and 1 V. Dimensions not specified shall be selected accordingly.



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 Socket shape 1 V Vacuum socket Socket shape 3 V Long vacuum socket

Figure 1 — Socket shapes

Table 2 — Socket dimensions

Dimensions in millimetres

Nominal size DN/ID	Socket dimensions							
	d_1^a	s^b	D_2	d_3	Tolerances for d_1 to d_3	t_1	t_2	Tolerances for t_1 and t_2
40	42	$1,5 \pm 0,15$	45	50	$\pm 0,6$	70		+4 -2
50	53	$1,5 \pm 0,15$	56	62	$\pm 0,6$	90		+4 -2
70	73	$1,6 \pm 0,16$	76	84,5	$\pm 0,7$	120		+4 -2

^a Pipe ends slightly retracted.
^b The indications on wall thickness refer to the ungalvanized pipe.

6.3 Pipes

6.3.1 Pipes for gravity drainage systems (gravity systems)

For gravity systems conforming to EN ISO 15749-2, pipes as specified in EN 1123-2 shall be used.

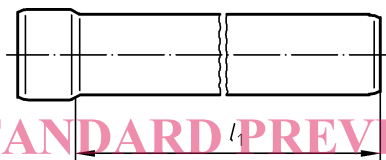
6.3.2 Pipes for vacuum operation (vacuum systems)

6.3.2.1 General

For vacuum systems for building drainage or in ships and marine structures as specified in EN ISO 15749-3, pipes conforming to EN 1123-2 with socket shapes 1 A, 2 A or 3 A with seals of shapes M 1 and M 5 or pipes of shapes B 1 and B 2 as shown in Table 3 shall be used. For sockets of shape 1 V or 3 V as shown in Figure 2, the seals shall be of shape M 4.

The effective length of the pipes shall be as shown in Table 3. If pipes are provided with additional corrosion protection (P) according to clause 9 of EN 1123-1:1999, this shall be added to the designation.

6.3.2.2 Pipe with a 1 V socket — shape B 1



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Figure 2 — Shape B 1

Designation of a drainage steel pipe (B 1) with vacuum socket (1 V) of nominal size DN/ID 50 with an effective length $l_1 = 1\ 000$ mm

Pipe EN 1123-3 — B 1 — 1 V — 50 — 1000

6.3.2.3 Pipe with two 1 V sockets — shape B 2

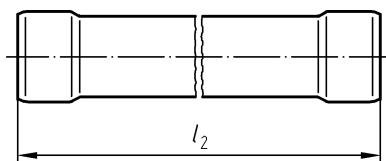


Figure 3 — Shape B 2

Designation of a drainage steel pipe (B 2) with vacuum socket (1 V) of nominal size DN/ID 50 with an effective length $l_1 = 1\ 000$ mm

Pipe EN 1123-3 — B 2 — 1 V — 50 — 1000

Table 3 — Effective lengths of pipes

Dimensions in millimetres

Nominal size DN/ID	$l_1 \pm 5$						$l_2 \pm 5$			
	40	250	500	1 000	1 500	2 000	3 000	500	1 000	2 000
50										
70										

6.4 Fittings

6.4.1 Fittings for gravity systems

6.4.1.1 General

For gravity systems conforming to EN ISO 15749-2, fittings as specified in Table 4 shall be used. For gravity systems and for vacuum operation, the socket shapes 1 A, 2 A, 3 A and 0,5 A as specified in EN 1123-2 shall be used. Seals shall correspond to one of the shapes M 1, M 2 or M 3 as specified in EN 1123-2.

Table 4 — Examples of fittings for gravity systems
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Designation	Shape	Subclause or number of EN
Bend	C 1 and C 2	EN 1123-2
Branch	D 1 and D 11	
Single transition branch	D 12	
Angular bend	E 1	
Transition pipes	F 2	
Access pipes	H 1	
Short connecting piece with weld-in sleeve	R 1 A and R 1 B	6.4.1 and 6.4.2
Long connecting piece with weld-in sleeve	T 1 and T 1 S	
Connecting piece for WC	J 1 to J 4	
Transition pieces	E 1 and E 2	
Connector	L 1 and L 3	
Flange connecting piece	M 1 and M 2	6.4.4
Other fittings	—	