



TYPE APPROVAL CERTIFICATE

Certificate no.:
TAK00001A1
Revision No:
1

This is to certify:

that the **Plastic Piping System, Thermoplastic**

with type designation(s)
HENCO STANDARD multilayer pipe PE-Xc/Al/PE-Xc

issued to

Henco Industries N.V.
HERENTALS, Belgium

is found to comply with

DNV class programme DNV-CP-0072 – Type approval – Thermoplastic piping systems
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems

Application:

For use in non-essential systems up to 10 bar and 70°C. The piping system is not tested with respect to Fire Endurance and Flame Spread characteristics.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Hamburg** on **2024-05-16**

This Certificate is valid until **2029-05-15**.

for **DNV**

DNV local unit: **Belgium CMC**

Approval Engineer: **Joachim Rehbein**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

The HENCO STANDARD plastic piping system consist of:

- Polyethylene crosslinked multilayer pipes of type HENCO STANDARD-PE-Xc/Al/PE-Xc
- Press fittings made of Polyvinylidenfluoride (PVDF)
- Press and screw joints/fittings made from brass
- Pressing machines and tools released by HENCO

Overview

Pipe types	HENCO STANDARD PE-Xc/Al/PE-Xc									
Outer diameter (O.D.) mm	16	18	20	26	32	40	50	63	75	90
Wall thickness (s) mm	2.0	2.0	2.0	3.0	3.0	3.5	4.0	4.5	6.0	7.0
Fittings/Couplings										
Materials	Body		PVDF							
	Insert		brass							
Types ¹	Couplings, T-pieces, Bends, Adapters/-bends and connecting fittings (press fitting - screwed connection), Socket plugs, Caps.									
Service temperature range ²	0°C up to + 70°C (short periods up to 95 °C)									
Maximum internal service pressure ²	10 bar									
External pressure rating	none									
Joining techniques ¹	Press/screw									

Notes:

¹ Refer to HENCO Technical Manual DO03-0005EN03 - HENCO PRESS – STANDARD

² The maximum long-term working pressure is set to 10 bar for all temperatures up to 70°C (continuous service) and is based on the long-term internal tests carried out. A safety factor >1,8 has been applied w.r.t. the submitted regression curves.

Application/Limitation

The HENCO STANDARD plastic piping system is type approved for application in piping systems as listed in “Table 1- Fire endurance requirements matrix” of DNV Rules Pt.4 Ch.6 Sec.2 as follows:

Item	Piping system ¹	
22	Freshwater - Non-essential systems	- Potable and wash water systems (internal) - Hot water heating systems.
29	Miscellaneous	- Service air (non-essential systems)

Notes

¹ Approved installation locations where “0” is specified in “Table 1 - Fire endurance requirements matrix”.
 Appropriate footnotes are to be observed.

The HENCO STANDARD piping system is not approved for installation in gas hazardous area.

The HENCO STANDARD piping system is not suitable for vacuum conditions or liquid acting on the outside.

Extent of Type Tests applicable to piping system dependent on application

Fire endurance level

The HENCO STANDARD piping system is not tested with respect to Fire Endurance characteristics.

Flame spread

The HENCO STANDARD piping system is not tested with respect to flame spread characteristics.

Smoke and toxicity

The HENCO STANDARD piping system is not tested with respect to smoke and toxicity characteristics.

Electrical conductivity

Not applicable.

Passenger vessels

For application on passenger vessels additional requirements specified in the Rules and Regulations of the appropriate flag state authority may have to be observed.

Installation

For installation of the piping system the instructions and list of released pressing tools specified in the HENCO TECHNICAL MANUAL are to be observed.

In addition, the installation requirements to be observed specific to the ship as specified by the shipyard as well as DNV Rules Pt.4 Ch.6 Sec.2 - 1.7 Plastic piping systems and Section 10 – 4 Joining of plastic pipes.

Bulkhead and deck Penetration

Pipe penetration through watertight bulkheads or decks as well as through fire divisions shall be type approved unless the pipe is welded into the bulkhead/deck.

When plastic pipes pass through watertight bulkheads or decks which are also a fire division and a fire may cause flooding of watertight compartments, the watertight integrity of the bulkhead or deck is to be maintained by a metallic shut-off valve fitted at the bulkhead or deck. The operation of this valve shall be provided from above the freeboard deck.

Refer to DNV Rules Pt.4 Ch.6 Sec.3 [1.4 Fittings on watertight bulkheads].

On passenger vessels, where the watertight bulkhead is also a fire division, the requirements of the SOLAS Chapter II - 1, Regulation 13.2.3. are to be observed.

Type Approval documentation

Tests carried out

According to Type Approval documentation

Production Testing

Each batch of pipes and fittings shall be subjected to product tests as specified in DNV-CP-0072, Table 1 "Requirements for manufacturers quality control".

Marking of product

	Scope	Example
Pipes	<ul style="list-style-type: none"> - Manufacturer name and or trade mark - Nominal outside diameter - Nominal wall thickness - Material designation - Nominal working pressure / max. temperature - Application class with design pressure - Manufacturer information 	<ul style="list-style-type: none"> - HN - 16 - 2 - PE-Xc/Al/PE-Xc - 10bar / 70°C - Klasse 1,2,4,5/10bar - batch no. / production date
Fittings	<ul style="list-style-type: none"> - Manufacturer name and or trade mark - Nominal outside diameter - Manufacturer information 	<ul style="list-style-type: none"> - HN - 16 - batch no. / production date

Periodical assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Periodical assessments (for Certificate Retention / Certificate Renewal) shall be performed according to DNV-CP-0338.

This certificate is only valid if required Periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

END OF CERTIFICATE