



CERTIFICATE NUMBER 18-LD1755105-PDA

EFFECTIVE DATE 13-Jul-2018

EXPIRATION DATE 12-Jul-2023

ABS TECHNICAL OFFICE London

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

SANHA GMBH & CO. KG

located at

**HAUPTSTRASSE 76, D-01909 GROSSHARTHAU-SCHMIEDEFELD,
Germany**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product Piping System, Mechanical Joint

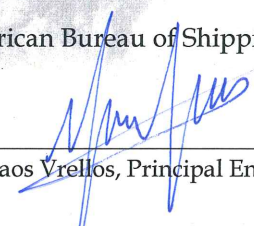
Model Fittings: NiroSan series 9000, NiroSan Gas series 17000, NiroSan Industry series 18000
Pipes: NiroSan series 9000, NiroSan F series 9700, NiroSan ECO series 9600, NiroTherm series 9100

This Product Design Assessment (PDA) Certificate remains valid until 12-Jul-2023 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau of Shipping


Nikolaos Vrellos, Principal Engineer

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

SANHA GMBH & CO. KG
HAUPTSTRASSE 76
D-01909 GROSSHARTHAU-SCHMIEDEFELD
Germany
Telephone: +49 2054 9250
Fax: +493595458925
Email: info@sanha.com
Web: http://www.sanha.com

Tier: 3 - Type Approved, unit certification not required

Product: Piping System, Mechanical Joint

Model: Fittings: NiroSan series 9000, NiroSan Gas series 17000, NiroSan Industry series 18000
Pipes: NiroSan series 9000, NiroSan F series 9700, NiroSan ECO series 9600, NiroTherm series 9100

Intended Service:

Fresh water: cooling water system, condensate return, potable water, dry and wet sprinkler system and non-essential systems [swimming pool, whirlpool and so forth].

Sanitary / drains / scuppers: deck and pool drains [internal], sanitary drains, scuppers and discharge [overboard].

Sounding / vent: water tanks, dry spaces, oil tanks [flash point >60 Deg C].

Inert gas: water seal effluent lines, scrubber effluent lines, main lines, distributions lines.

Miscellaneous: brine, control air, service air [non-essential], air conditioning systems, [media: condensed water, ethylene glycol], chilled water

Description:

Stainless steel press fitting system Pipe tube system: Press fittings of austenitic stainless steel (316L/1.4404 and 1.4408) and stainless steel tube system made of austenitic stainless steel (316L/1.4404 with smoothening of the weld seam, 444/1.4521, 304/1.4301), produced by TIG welding process with annealing.

Range of diameter: 15mm up to 108mm

All these pipes can be combined with three types of fittings – NiroSan Series 9000 (with EPDM sealing ring), NiroSan Gas Series 17000 (with HNBR sealing ring), and NiroSan Industry Series 18000 (with FKM sealing ring)

Rating:

Maximum Working Pressure

NiroSan and NiroSan F pipes: 16 bar up to 108 mm

NiroSan ECO and NiroTherm pipes: 16 bar up to 88.9mm and 12 bar up to 108mm

Temperature Range

EPDM sealing ring: -30 Deg C to +120 Deg C

HNBR sealing ring: -20 Deg C to +70 Deg C

FKM sealing ring: -20 Deg C to +200 Deg C

Pipe Sizes: see Attachment.

Service Restriction:

- Unit Certification is not required for these products.
- Only EPDM/HNBR/FKM sealing rings are approved to be used on ABS classed, vessels, MODU or facilities.
- NiroSan Press joints are not to be used on CO₂, Starting and control air systems.
- The tube system may not be used in piping systems of Class I and Class II.
- The tube system approved herein is not to be used on lines carrying toxic and flammable fluids.
- NiroSan Press joints, which in the event of damage could cause fire or flooding, are not to be used in piping sections directly connected to the sea openings or tanks containing toxic and flammable fluids.

Comments:

- The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
- The selection of the fittings and pipes for the corresponding application and the right mounting with the stipulated pressing tool is to be in accordance with the instructions of the manufacturer.

Notes/Drawing/Documentation:

Drawing No. Declaration PDA, Confirmation No Changes

Supporting Documentation (Previous task T1372137 - Extension):

Drawing No. ABS Test Proposal, Test Proposal for Extension of Approval

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Drawing No. Asbestos free declaration, Asbestos Free Form

Drawing No. IMA Test Report K042_14, Test results for Extension of Approval

Drawing No. Pressure Calculations NiroSan, Pressure Calculations

Drawing No. SANHA NiroSan System Approval Range, PDA Range of Approval

Supporting Documentation (Initial task T1089318- Extension):

Drawing No. 060327 Test report_C67_05, IACS Test Report 15 mm to 89 mm

Drawing No. 060502 Test report_C67_1_05, IACS Test Report 108 mm

Drawing No. 2012-12-18 certificate nirosan industry id_3043402, FM Global Certificate - S18000,

Drawing No. 2012-12-18 certificate nirosan press id_3043402, FM Global Certificate - S9000

Drawing No. ABS Data for Application 2013 08, NiroSan Applications

Drawing No. Declaration of no Asbestos, Declaration of no Asbestos

Drawing No. GL Certificate 40 454-01 HH Serie 9000 bis 2016-06-07 stainless steel (2), GL Certificate

Drawing No. Pressure Calculations NiroSan, NiroSan Pressure Calculations

Drawing No. Prüfbericht S9000 S18000 v 2009, Vds Test report

Drawing No. Series 10000 en 11000 folder, Gas Installations - Series 10000 and 11000

Drawing No. Series 12000 en 13000 folder, Solar and Compressed Air Installations - Series 12000 and 13000,

Revision: -, Pages: -

Drawing No. Series 17000 folder, Gas Installations - Series 17000

Drawing No. Series 18000 folder, Applications for Industry - Series 18000

Drawing No. Series 24000 folder, Heating Installations - Series 24000

Drawing No. Series 28000 folder, Industrial Installations - Series 28000

Drawing No. Series 6000 - 8000, Drinking Water & Heating Installations - Series 6000 and 8000

Drawing No. Series 9000, Drinking Water Installations

Drawing No. VdS Zert G4040057 S9000 bis 2014-11-17 de+en + Anlagen, Vds Certificate -S9000,

Drawing No. VdS Zert G4090010 S18000 bis 2014-11-17 de+en + Anlagen, Vds Certificate -S18000,

Drawing No. Zertifikat_mit_Anhang_de_20150528, ISO 9001 Certificate

Drawing No. bureauveritas_pressfit, BV Certificate

Drawing No. mechanical joining process, NiroSan Press Fitting Procedure

Drawing No. reference drawings series 24000 and 28000, Reference Drawings Series 24000 and 28000

Drawing No. reference drawings series 6000, 10000 and 12000, Reference Drawings Series 6000, 10000 and 12000

Drawing No. reference drawings series 8000, 11000 and 13000, Reference Drawings Series 8000, 11000 and 13000

Drawing No. reference drawings series 9000, 17000 and 18000, Reference Drawings Series 9000, 17000 and 18000

Terms of Validity:

This Product Design Assessment (PDA) Certificate 18-LD1755105-PDA, dated 13/Jul/2018 remains valid until 12/Jul/2023 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

STANDARDS

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ABS Rules:

2018 Rules for Condition of Classification 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:
2018 Rules for Materials and Welding 2-3-12, 2-4-4/17,
2018 Steel Vessels Rules 4-6-1, 4-6-2/5.9, 4-6-2/5.15
2018 Steel Vessels Under 90 Meters (295 Feet) in Length 4-4-2
2018 Offshore Support Vessels 4-6-1, 4-6-2/5.9, 4-6-2/5.15
2018 Steel Vessels for Service on Rivers and Intracoastal Waterways 4-1-1/ 3.3
2018 Guide for Building and Classing Yachts 4-1-1/3.3, 4-1-1/Table 3, 4-4-2/13.7

2018 Rules for Condition of Classification – Offshore Units and Structures 1-1-4/ 9.7, 1-1-A2, 1-1-A3, which covers the following:

2018 Mobile Offshore Drilling Units Rules 4-2-2/5
2017 Guide for the Classification of Drilling Systems 1-7, 3-2/3.1, 3-2/7.1, and 3-2/Tables 1, 3, 5, 7, 9

2018 Rules for Building and Classing High Speed Crafts 1-1-4/11.9, 1-1-A2, 1-1-A3, 4-4-2/13.7

National:

NA

International:

Material No. 1.4404/316L, 1.4521/444, 1.4301/304, according to DIN EN 10088 (2014) and fabricated according to DIN EN 10312 (2005) and DVGW - W 541 (1996)

Government:

NA

EUMED:

NA

OTHERS:

NA