



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

18-GE1766080-1-PDA
10-Sep-2018
09-Sep-2023
Genoa Engineering Department

CERTIFICATE OF Product Design Assessment

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

DISTRIBUIDORA INTERNACIONAL CARMEN, S.A. **- DICSA**

located at

**POLIGONO INDUSTRIAL ALCALDE CABALLERO, C/ VIRGEN DEL
BUEN ACUERDO, S/N, ZARAGOZA, Spain, 50014**

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 Non-Metallic Flexible Hoses with End Fittings

**Model TRIAGLE EN 853 1SN / TRALE EN 853 1SN
TRIAGLE EN 853 2SN / TRALE EN 853 2SN
TRIAGLE EN 856 4SP / TRALE EN 856 4SP
TRIAGLE EN 856 4SH / TRALE EN 856 4SH
TRALE-NL EN 857 1SC
TRALE-NL...**

This Product Design Assessment (PDA) Certificate remains valid until 09/Sep/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

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 General Engineering Department 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)

DISTRIBUIDORA INTERNACIONAL CARMEN
POLIGONO INDUSTRIAL ALCALDE CABALLERO
C/ VIRGEN DEL BUEN ACUERDO, S/N
ZARAGOZA
Spain 50014
Telephone: 0034976464100
Fax: 0034976464104
Email: export@dicsaes.com
Web: www.dicsaes.com

Tier: 3 - Type Approved, unit certification not required

Product: Non-Metallic Flexible Hoses with End Fittings
Model: TRIAGLE EN 853 1SN / TRALE EN 853 1SN
TRIAGLE EN 853 2SN / TRALE EN 853 2SN
TRIAGLE EN 856 4SP / TRALE EN 856 4SP
TRIAGLE EN 856 4SH / TRALE EN 856 4SH
TRALE-NL EN 857 1SC
TRALE-NL EN 857 2SC

Intended Service:

Hydraulic fluids in accordance with ISO 6743-4 with the exception of HFD R, HFD S and HFD T at temperatures ranging from -40 °C + 100°C;
Water based fluids at temperatures ranging from -40 °C to +70°C.
Water at temperatures ranging from 0 °C to +70°C.

Description:

TRIAGLE EN 853 1SN / TRALE EN 853 1SN: Synthetic rubber with one steel braid wire, covered with synthetic rubber.

Standard fittings: crimping ferrules DI22120xxxx, 810xxxxxx and ZPF22120xxxx; BSP Swivel female 60° cone 24100xxxx and 84100xxxx; BSP Swivel female 60° with O-ring 24110xxxx and 84110xxxx.

TRIAGLE EN 853 2SN / TRALE EN 853 2SN: Synthetic rubber with two steel braids wire, covered with synthetic rubber.

Standard fittings: crimping ferrules DI22120xxxx, 810xxxxxx and ZPF22120xxxx; BSP Swivel female 60° cone 24100xxxx and 84100xxxx; BSP Swivel female 60° with O-ring 24110xxxx and 84110xxxx.

TRIAGLE EN 856 4SP / TRALE EN 856 4SP: Synthetic rubber with four steel braids wire, covered with synthetic rubber.

Standard fittings: Crimping ferrules DI12240xxxx, 820060300 and ZPF12240xxxx; BSP Swivel female 60° cone 24100xxxx and 84100xxxx; BSP Swivel female 60° with O-ring 24110xxxx and 84110xxxx

TRIAGLE EN 856 4SH / TRALE EN 856 4SH: Synthetic rubber with four steel braids wire, covered with synthetic rubber.

Standard fittings: crimping ferrules A61010xxxx; BSP 60° cone Swivel female Interlock 60° with O-ring Z64100xxxx; Interlocking crimping ferrules ZA61010xxxx; BSP Swivel female 60° cone with O-ring 64100xxxx

TRALE-NL EN 857 1SC: Synthetic rubber with one steel braid wire, covered with synthetic rubber.

Standard fittings: crimping ferrules SC2112xxxx and ZSC2112xxxx; BSP Swivel female 60° cone; BSP Swivel female 60° with O-ring.

TRALE-NL EN 857 2SC: Synthetic rubber with two steel braids wire, covered with synthetic rubber.

Standard fittings: crimping ferrules DI22120xxxx, 810xxxxxx and ZPF22120xxxx; BSP Swivel female 60° cone 24100xxxx and 84100xxxx; BSP Swivel female 60° with O-ring 24110xxxx and 84110xxxx.

Rating:

TRIAGLE EN 853 1SN / TRALE EN 853 1SN: from DN6 to DN51, pressure from 225 bar to 40 bar, temperature range from -40°C to +100°C.

TRIAGLE EN 853 2SN / TRALE EN 853 2SN: from DN6 to DN51, pressure from 400 bar to 80 bar, temperature range from -40°C to +100°C.

TRIAGLE EN 856 4SP / TRALE EN 856 4SP: from DN6 to DN51, pressure from 450 bar to 165 bar, temperature range from -40°C to +100°C.

TRIAGLE EN 856 4SH / TRALE EN 856 4SH: from DN19 to DN51, pressure from 420 bar to 250 bar, temperature range from -40°C to +100°C.

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ZARAGOZA
Spain 50014
Telephone: 0034976464100
Fax: 0034976464104
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Tier: 3 - Type Approved, unit certification not required

TRALE-NL EN 857 1SC: from DN6 to DN25, pressure from 225 bar to 88 bar, temperature range from -40°C to +100°C.
TRALE-NL EN 857 2SC: from DN6 to DN25, pressure from 400 bar to 165 bar, temperature range from -40°C to +100°C.
For additional details refer to attachment.

Service Restriction:

- 1) Unit Certification is not required for this product. If the manufacturer or purchaser requests an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
- 2) Hoses are to be complete with factory assembled end fittings or factory supplied end fittings installed in accordance with manufacturer's specifications.
- 3) End connections are to comply with applicable requirements and limitation of ABS Steel Vessels Rules (4-6-2/5.5.4, 4-6-2/5.5.5, 4-6-7/3.5.1, 4-6-7/5.3.2).
- 4) Hose assemblies are to be installed only where flexibility is required, in clearly visible and readily accessible locations, and are not to be subject to torsional deflection under normal conditions; hose length is to be limited to that required by flexibility only.
- 5) Not to be used in high pressure fuel oil injection systems, steam systems or oil supply lines to boilers.
- 6) Not to be used for installations where repeated and/or frequent flexing is expected.
- 7) Marking for Flexible hoses are to be permanently marked by the manufacturer with the following details as per 4-6-2/5.7.6 of the ABS Steel Vessel Rules:
 - a) Hose manufacturer's name or trademark.
 - b) Date of manufacture (month/year).
 - c) Designation type reference.
 - d) Nominal diameter.
 - e) Pressure rating.
 - f) Temperature rating.
 - g) Only hoses with code 01 before the date (quarter/year) are approved under the present PDA.

The scope of Type Approval is to comply with MSC.1/Circ.1221 dated 11 December 2006

Comments:

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Hoses are made by Semperflex Hydraulics

Fittings are made by Distribuidora Internacional Carmen, S.A –DICSA, Spain.

Manufacturer (assembling) location: Distribuidora Internacional Carmen, S.A –DICSA, Spain.

Notes/Drawing/Documentation:

Drawing No. 1 SC Hose Type, Booklet 1SC including test reports at DICSA Plant dated from 23 Jul 2015 to 21 March 2016 and at LAPI Laboratory dated 28 Apr 2016, Revision: 1, Pages: 1
Drawing No. 1SN Hose Type, Booklet 1SN including test reports at DICSA Plant dated from 14 Jan 2014 to 01 Feb 2016 and LAPI laboratory dated 18 March 2014 and 24 June 2016, Revision: 1, Pages: 1
Drawing No. 2SC Hose Type, Booklet 2SC including test reports at DICSA Plant dated from 22 May 2015 to 3 March 2016 and LAPI Laboratory dated 28 April 2016, 17 May 2016 and 24 June 2016, Revision: 1, Pages: 1
Drawing No. 2SN Hose Type, Booklet 2SN including test reports at DICSA Plant dated from 16 Oct 2013 to 1 Apr 2016 and LAPI Laboratory dated 13 Jan 2014, 20 March 2014, 08 July 2014 and 24 June 2016, Revision: 1, Pages: 1
Drawing No. 4SP Hose Type, Booklet 4SP including test reports at DICSA Plant dated from 06 Nov 2013 to 12 May 2016 and LAPI Laboratory dated 12 Feb 2014, 7 Jul 2014 and 25 Aug 2016, Revision: 1, Pages: 1
Drawing No. 4SH Hose Type, Booklet 4SH including test reports at DICSA Plant dated from 15 Nov 2013 to 24 March 2016 and LAPI Laboratory dated 13 Feb 2014, 20 March 2014 and 25 Aug 2016, Revision: 1, Pages: 1
Drawing No. LAPI Semperit letter, Bestätigung Diccsa LAPI Trale Triagle, Revision: 1, Pages: 1

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Drawing No. TrAle Semperit letter, Diccsa_Confirmation_Trale_update 042018tterDiccsa_Confirmation_Trale_update 0420181, Revision: 1, Pages: 1
Drawing No. TrigAle Semperit letter, Diccsa_Confirmation_Triagle_032016, Revision: 1, Pages: 1

Terms of Validity:

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STANDARDS

ABS Rules:

2018 Rules for Conditions 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 Unit Rules 4-2-1/11.29

2018 Rules for Conditions of Classification, 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:

2018 Steel Vessel Rules 4-6-2/5.7, 4-6-7/3.5.2
2018 Steel Vessel Rules Under 90 Meters 4-4-1/9.19
2018 Offshore Supply Vessel Rules 4-6-2/5.7

2018 High Speed Craft Rules 1-1-4/11.9, 1-1-A2, 1-1-A3, 4-4-1/9.19

2018 Guide for Building and Classing Yachts 1-1-3/3.3, 1-1-A3, 1-1-A5 and 4-1-1/Table 3, 4-4-1/9.19

National:

NA

International:

NA

Government:

NA

EUMED:

NA

OTHERS:

NA