Certificate No.: 2507291139073740

TÜRK LOYDU

TYPE APPROVAL CERTIFICATE

This is to certify that the

Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

TL Project No	**25-0956**
Manufacturer	**Hansa-Flex AG**
Address	**Hansa-Flex AG, Zum Gewerbepark 4, 37691 Boffzen / Germany**
Product Type	**HANSA-FLEX TFW / TFS**
Reference Rule	**TL Rules, Part E, Chapter 103 - Metallic Materials, Special Materials for Naval Ships, 01.01.2022** **TL Rules, Part E, Chapter 107 - Naval Ship Technology, Ship Operation Installations and Auxiliary System, 01.01.2022** **TL Rules, Part A, Chapter 2, Material, 01.07.2024** **TL Rules, Part B, Chapter 4, Machinery, 01.07.2024**
Expire Date of Previous Certificate	-
Place and Date	**İSTANBUL / 29.07.2025**

This certificate supersedes 2507211325313740 numbered certificate.

Subject to the conditions referred to in the following pages, this certificate is valid until 12.06.2030.

Emrah SÖĞÜTÇÜ

New Building Division Manager

135575

This certificate is subject to terms and conditions described below:

- Any significant change in design or construction may render this Certificate invalid. Type Approval Certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. This certificate is not valid for products without marking above mentioned. The manufacturer should notify TÜRK LOYDU of any modifications or changes to equipment in order to obtain valid certificate. This certificate shows that tested specimens as representative of the product complies of the TÜRK LOYDU rules, and revelant international instruments that apply to it.

Product Description	: TFW/TFS: Wet fire tested, flexible, single or double walled hose assemblies of non-metallic material with permanently fitted couplings consisting of corrugated PTFE hose with fibre- glass covering, stainless steel braiding and couplings optional in carbon steel or stainless steel. TFS with anti-static design; FBSB: Optional with an additional retardant / protective hose; TGF ISO protective hose: extremely abrasion resistant, flame retardant for personal protection against oil jet injuries; Coupling types: with or without welding or soldering, cutting rings DIN 3861 and metric nut thread DIN 3870, flanges according to DIN EN 1092, ASME B16.5, fittings according to DIN 3865, DIN 2353, ISO 8434-1 to 3 & 6, ISO 6162, ISO 6162-2, DIN 7642, further TL / IACS approved fittings.
Approval No / Date	: PAE-EPAS/021585/25-0956/FP; 12.06.2025
Performed Tests	: -Quality Audit -Dimensional control -Visual inspection -Pressure test -Burst test -IACS type test reports review
Test Place	: HANSA-FLEX AG, Zum Gewerbepark 4, 37691 Boffzen/ Germany
Last Inspection Date	: 12.06.2025
Surveyor Remarks	: -
Application/Limitation	: -Fuel oil (including bio fuels / bio diesel FAME / Methanol), lubrication, hydraulic and thermal oil systems, ballast, fresh- and sea cooling water systems, auxiliary steam and non-essential systems like aqueous urea solution (AdBlue) for exhaust gas after treatment of diesel engines on ships classed or intended for Classification with Türk Loydu. Temperature Range: TFS: -50°C (min.) / 250 °C (max.) TFW: -55 °C (min) / 250 °C (max.) * For continuous use at temperatures over 50°C the product performance must be reduced by following factors: Temp.: 50°C / 100°C / 150°C / 200°C / 250°C Factor: 0.97 / 0.93 / 0.89 / 0.85 / 0.80 (The pressure values listed apply to hoses only.) -For continuous use in presence of frequent pressure pulses, the maximum operation pressure must be 50% reduced. The thermal pressure reduction factor is then to be neglected. -Hose assemblies shall only be used to compensate for vibration or relative movement, and shall not replace permanent piping. -Hose assemblies are allowed in Class I - III piping system according to TL Rules, Part B, Chapter 4, Section 16.A, Table 16.1 -Operating temperature range shall be -50°C to + 250°C. -Hose assemblies shall be routed away from hot surfaces (e.g., boiler fronts), or be adequately protected with thermal shielding. -The hoses are not designed for use in cryogenic systems and shall not be applied in such installations. -The hoses have been fire-tested in accordance with ISO 15540; however, their use near A-60 fire-rated divisions is only acceptable following class approval and with the implementation of appropriate thermal insulation and protective measures. -Hose line length max. 2 meters, or long enough to allow relative movement between fixed and flexibly mounted machine/device parts or systems. The installation of flexible hose assemblies is to be in accordance with the manufacturer's instructions and use limitations with particular attention to the following:

Surveyor Name : Onur KOCABEY

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*Orientation
*End connection support (where necessary)
*Avoidance of hose contact that could cause rubbing and abrasion
*Minimum bending radius.
-Each hose shall be permanently marked with manufacturer name, nominal size, pressure rating, date/batch number and type approval reference.

Others : ---

	Type	Nominal Diameter	Nominal Pressure	Test Pressure
1	TFW / TFS 010	DN10	125 Bar	187,5 Bar
2	TFW / TFS 013	DN15	105 Bar	157,5 Bar
3	TFW / TFS 016	DN16	100 Bar	150 Bar
4	TFW / TFS 020	DN20	90 Bar	135 Bar
5	TFW / TFS 025	DN25	80 Bar	120 Bar
6	TFW / TFS 032	DN32	64 Bar	96 Bar
7	TFW / TFS 040	DN40	53 Bar	79,5 Bar
8	TFW / TFS 050	DN50	35 Bar	52,5 Bar
9	TFW / TFS 065	DN65	25 Bar	37,5 Bar
10	TFW / TFS 080	DN80	20 Bar	30 Bar

Approval Conditions : -

Surveyor Name : Onur KOCABEY

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