

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings**

with type designation(s)
LPG hose 659AA EN1762 Type D - M

issued to

Alfagomma Industrial S.p.A.
Industrial Hose Division - Alfagomma Group
Zona Industriale - 64100 Sant'Atto TE, Italy

is found to comply with

EN 1762:2018 Rubber hoses and hose assemblies for liquefied petroleum gas, LPG (liquid or gaseous phase), and natural gas up to 25 bar (2,5 MPa) – Specification

Application:

Non-metallic flexible tube type LPG 659AA 25bar (LPG tube black with high tensile textile cords and antistatic wires) without couplings, according to EN1762:2018 - Size 13, 16, 19, 25, 32, 38 and 51

Temperature range: -30 °C to +70 °C (-22 °F to +158 °F)
Max. working press.: 25 bar
Sizes: 13, 16, 19, 25, 32, 38 and 51


Issued at **Milan** on **2024-01-23**

This Certificate is valid until **2029-01-22**.

DNV local unit: **Milan Verification**

Approval Engineer: **Gaetano Ricci**



for DNV


Bartłomiej Z. Kolosowski
Head of Section Offshore and Mid/Downstream, Southern Europe

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

- LPG DELIVERY 25 bar (375 psi)
- BLACK NBR
- Reinforcement: HIGH TENSILE TEXTILE CORDS - ANTISTATIC WIRES
- Cover: BLACK CR - ABRASION, OZONE, HYDROCARBON AND FIRE - RESISTANT - PIN PRICKED

Application/Limitation

- LPG DELIVERY IN HEAVY DUTY REELING APPLICATIONS
- Size: 13, 16, 19, 25, 32, 38 and 51
- Max Working Pressure: 25 bar
- Temperature Range: -30 °C to +70 °C (-22 °F to +158 °F)
- Please consider that this certificate is not valid for products (materials, component or equipment) subjected to DNV classification.

Type Approval documentation

- Technical Data Sheet – LPG DELIVERY 25 bar (375 psi) – code: 659 AA
- *Test plan for components*
- *Test plan for hose*
- *Alfagomma Test Report No. 659AA1323 for hose type 659 AA 13 x 23*
- *Alfagomma Test Report No. 659AA1626 for hose type 659 AA 16 x 26*
- *Alfagomma Test Report No. 659AA2538 for hose type 659 AA 25 x 38*
- *Alfagomma Test Report No. 659AA5167 for hose type 659 AA 51 x 67*
- *Calibration certificates*
- *Gap Analysis requirements EN1762:2017 and EN1762:2018*

Tests carried out

According with EN1762:2017:

(Tests on components)

- Tensile strength (Table 3 – Item 1)
- Elongation at break (Table 3 – Item 2)
- Abrasion resistance (Table 3 – Item 3)
- Harness change after ageing in air (Table 3 – Item 4)
- Tensile strength change after ageing in air (Table 3 – Item 4)
- Elongation at break change after ageing in air (Table 3 – Item 4)
- Mass increase after ageing in n-pentane (Table 3 – Item 5.1)
- Hardness after ageing in n-pentane (Table 3 – Item 5.2)
- Mass reduction after ageing in n-pentane and drying in air (Table 3 – Item 5.2)
- Ozone resistance (Table 4 – Item 7)

(Tests on hoses)

- Tolerance on inside diameter (Table 1)
- Tolerance on outside diameter (Table 1)
- Minimum lining thickness (Par. 6.2)
- Minimum cover thickness (Par. 6.2)
- Concentricity (Par. 6.3)
- Proof pressure (Table 4 – Item 1)
- Change in length at proof pressure (Table 4 – Item 2)
- Change in twist at proof pressure (Table 4 – Item 3)
- Burst test (Table 4 – Item 5)
- Adhesion (Table 4 – Item 6)
- Low temperature flexibility (Table 4 – Item 8)
- Electrical resistance (Table 4 – Item 9)
- Flammability test (Table 4 – Item 10)
- Max deformation of external diameter at min bend radius (Table 4 – Item 11)



Job ID: **262.1-041069-1**
Certificate no.: **TAP00002UA**

Marking of product

Marking of products shall be as a minimum:

- (Brand Text) AG-ITALY-659 LPG DELIVERY + AG-25BAR (375PSI) LPG-EN1762:2017-TYPE D-M-_____mm
QQ/yy
- (Brand Type) ORANGE LETTERS + EMBOSSED

Certificate Retention Survey

The current DNV Type approval TAP0002UA represents the renewal of the expired DNV type approval TAP00001KR issued on the 2018-11-06. For retention of the Type Approval/Examination, DNV Surveyor shall perform a survey every second year, to verify that the conditions for the type examination are complied with unless the hoses are regularly certified by DNV.