

● F1 COMPOSITES

PULTRUDED FRP PIPE · MINING & OILFIELD SERIES

Pultruded FRP Pipe for Oilfield & Mine Service.

Two pultruded pipe systems in serial production: onshore oilfield surface gathering rated for continuous service to +140 °C, and underground coal-mine methane (CMM) drainage. Qualified to API 15LR, ISO 14692 and MT 558.2 on a vertically integrated E-CR glass and vinyl-ester / epoxy / polyurethane resin supply chain.

**6**

PULTRUSION PLANTS

370

PULTRUSION LINES

150,000 t

ANNUAL CAPACITY

DN25–300

PULTRUSION DN RANGE

01 Oilfield Surface Gathering

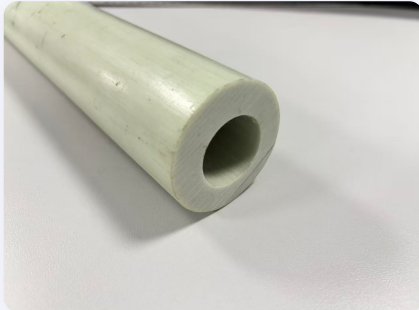
API 15LR · DN50 – DN300 · 0.7 – 3.5 MPa · ≥
140 °C continuous

02 Mine Methane Drainage

MT 558.2 · DN25 – DN300 · 0.6 – 1.6
MPa · UL 94 V-0 · LOI ≥ 28 %

Oilfield Surface Gathering Pipe

Pultruded GRE / GRVE straight-line pipe for onshore oilfield gathering and water-flood injection. Vinyl-ester, epoxy and polyurethane matrices with a corrosion-resistant resin-rich liner give continuous service to +140 °C without cathodic protection, and cut artificial-lift pumping energy by up to 15 % versus a carbon-steel reference through a hydraulically smoother bore.



F1 pultruded GRE oilfield pipe — high-temperature grade with resin-rich liner

KEY SPECIFICATIONS

Diameter Range	DN50 — DN300 mm
Working Pressure	0.7 — 3.5 MPa • ≤ 500 psi
Working Temperature	−40 °C to +140 °C • short-term peak +160 °C
Resin Systems	VE • EP • PUR
Surface Enhancement	Glass veil • Biaxial fabric • Carbon veil
Resin-Rich Liner	0.5 — 2.5 mm • Novolac VE for sour
Service Life	≥ 25 years
Joining	API 8-round • Adhesive • Flanged
Process	Pultrusion • 0.6 — 1.2 m/min

+140 °C

Continuous Service Temperature

−15 %

Pumping Energy vs. Carbon-Steel Reference

Nil

Cathodic Protection • No External Coating

−75 %

Weight vs. Equivalent Steel Pipe

MULTI-RESIN LIBRARY • OILFIELD SERVICE

VE • EP • PUR + Glass / Fabric / Carbon Veil

Epoxy-novolac vinyl-ester for sour produced-water and H₂S / CO₂ service (per ISO 14692-2 and NORSOK M-622), anhydride- or aromatic-amine-cured epoxy for continuous +140 °C steam-flood and high-temperature gathering, and polyurethane for cost-optimised neutral pipelines. The bore is finished with glass veil, biaxial woven fabric or carbon non-woven veil to meet abrasion, permeation and conductivity targets.

TYPICAL APPLICATIONS

- Crude-oil surface gathering & high-temperature flowlines
- Water-flood & steam-flood injection (to +140 °C)
- Produced-water transfer & saltwater disposal
- Sour H₂S / CO₂ produced-water lines (ISO 14692-2)
- Geothermal fluid transport
- Low-pressure onshore gas gathering

STANDARDS

API 15LR Low-pressure FRP line pipe

ISO 14692 Petroleum & gas GRP piping

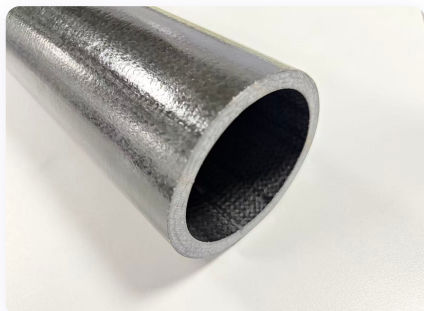
NORSOK M-622 GRP piping qualification

ASTM D2992 HDB long-term regression

SY / T 6266 Petroleum FRP line pipe (CN)

Mine Methane Drainage Pipe

Flame-retardant, anti-static and weather-resistant pultruded GFRP pipe qualified to MT 558.2 for underground coal-mine methane (CMM) drainage. Vinyl-ester, epoxy and polyurethane matrices, finished with glass veil, biaxial fabric or carbon veil — a low-maintenance, 50-year-design-life replacement for carbon steel (which corrodes) and standard polyolefins (which fail the MT 558.2 flame-retardant and anti-static limits).



F1 pultruded GFRP mine pipe — wall section showing biaxial glass reinforcement

KEY SPECIFICATIONS

Diameter Range	DN25 — DN300 mm
Working Pressure	0.6 — 1.6 MPa
Working Temperature	−20 °C to +80 °C
Surface Resistance	$\leq 3 \times 10^8 \Omega$ (MT 558.2)
LOI / Flame Class	$\geq 28 \%$ · UL 94 V-0
Resin Systems	VE · EP · PUR
Surface Enhancement	Glass veil · Biaxial fabric · Carbon veil
Service Life	≥ 50 years · Maintenance-free
Joining	Bell & spigot · Quick-lock
Process	Pultrusion · 0.8 — 1.4 m/min

50 yr

Design Service Life

V-0

UL 94 · LOI $\geq 28 \%$ Flame Class

$\leq 3 \cdot 10^8 \Omega$

Anti-Static Surface Resistance

Nil

Corrosion · UV-Stable Outdoors

MULTI-RESIN LIBRARY · MINE SAFETY

VE · EP · PUR + ATH 50 / APP 8 / AOM 3 + Carbon Veil

Brominated bisphenol-A (or halogen-free FR) vinyl-ester is the primary MT 558.2 matrix, with epoxy and polyurethane variants for structural and non-FR duties. The ATH-APP-AOM package gives UL 94 V-0 and LOI $\geq 28 \%$ in a single pull; a conductive carbon-veil outer layer brings surface resistance to $\leq 3 \times 10^8 \Omega$ for the MT 558.2 anti-static limit. Glass veil and biaxial woven fabric are offered for UV and abrasion service.

TYPICAL APPLICATIONS

- Underground coal-mine methane (CMM) drainage networks
- Auxiliary mine-ventilation ducting
- Acidic mine-water transfer (pH 2 – 6)
- Compressed-air supply mains in coal mines
- Outdoor surface vent & drainage runs (UV-exposed)
- Combined service runs along mine roadways

STANDARDS

MT 558.2-2005 Anti-static & FR pipe for coal mines (CN)

ISO 4589-2 Oxygen index (LOI) test method

UL 94 V-0 Self-extinguishing class

ASTM E84 Class I · FSI ≤ 25

● F1 COMPOSITES

Capabilities · 6 plants · 370 pultrusion lines · 150,000 t/yr · VE / EP / PUR resin systems · Glass veil / biaxial fabric / carbon veil surfaces · ISO 14692 / NORSOK M-622 qualification path

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