



Zurcon® H₂Pro™ ZLT

A UNIQUE MATERIAL DESIGNED SPECIFICALLY FOR LOW-TEMPERATURE HYDROGEN APPLICATIONS



Specially engineered for hydrogen applications, Zurcon® H₂Pro™ ZLT is a thermoplastic polyurethane (TPU) material suitable for use at temperatures as low as -60 °C/-76 °F.

Zurcon® H₂Pro™ ZLT It is part of the expanding Trelleborg Sealing Solutions portfolio of H₂Pro™ materials designed to support customers working with hydrogen in the renewable energy sector.

Zurcon® H₂Pro™ ZLT is optimized for use in low temperature and high pressure conditions with gases, including hydrogen and methane. It is suitable for static and short stroke hydraulic applications, such as valves, regulators, flanges and connectors.

This proprietary material extends low temperature sealing capabilities by +10 °C/+50 °F, compared to existing premium grades. Simultaneously, it maintains its high temperature and extrusion and wear resistance properties under high pressure.

Zurcon® H₂Pro™ ZLT meets a wide range of typical application criteria for high-pressure gas and hydraulic applications including hardness, compatibility with process and lubrication media, and service life and cleansing requirements.

Facilitating Innovation

Are you working on a new design for a hydrogen application?

Zurcon® H₂Pro™ ZLT is available for prototypes and samples of existing products, such as O-Rings, U-Cups and scrapers. If you are working on new innovations in the field of renewable energy, hydraulics and pneumatics, please contact us for support.

www.trelleborg.com/seals/worldwide

Features and Benefits

- Compatible with H₂ and oxygen
- Superior resistance to rapid gas decompression (RGD), tested to ISO 17268
- Very low permeability
- Wide operating service temperature range from -60 °C to +110 °C/-76 °F to +230 °F
- Excellent extrusion and wear resistance properties, extending service life in high pressure environments
- Compliant with Regulation (EC) 79/2009, SAE J2600 and ANSI CHMC 2
- Outstanding low temperature capabilities proven using glass transition temperature (T_g) testing in accordance with ISO 11357-1 and DIN 53545

Applications

Suitable for high-pressure hydrogen storage applications including:

- Valves/regulators
- Filters
- Connectors
- Storage tanks
- Flow meters

Suitable for high-pressure end-use applications including:

- Refueling pumps
- Connectors
- Nozzles
- Fuel tanks
- Filters

Material Data

Extensive testing was conducted to determine physical and mechanical characterization, including glass transition temperature (Tg), leakage (using an O-Ring), permeation rate with helium, and compatibility with hydrogen and oxygen.

General Properties		
Hardness A	ISO 48-4 A	94 Shore A
Hardness D	ISO 48-4 A	44 Shore D
Density	DIN ISO 1183-1	1.16 g/cm ³
Modulus	100% DIN 53 504 S2	12.9 MPa/ 1871 psi
Tensile Strength	DIN 53 504 S2	70.7 MPa/ 10254 psi
Elongation	DIN 53 504 S2	678%
Rebound Resilience	DIN ISO 4662 B	54.3%
Tear Resistance	DIN ISO 34-1 B	78.8 N/mm
Compression Set	72h, +70 °C/+158 °F, DIN ISO 815-1 test piece B method A	19%
Compression Set	72h, +100 °C/+212 °F, DIN ISO 815-1 test piece B method A	28%

Hydrogen Resistance 168h based on EC79/SAE J2600/ISO 17682, 70 MPa/10152.6 psi

Temperature	Change in Volume Max. -1/+25%	Change in Weight Max. -10%	Rapid Gas Decompression
-40 °C/-40 °F	-0.03%	-0.1%	no cracks
+20 °C/+68 °F	0.1%	-0.1%	no cracks
+85 °C/+185 °F	2.4%	-0.1%	no cracks

Oxygen Ageing according to ASTM D572
96h, 2.07 MPa/300 psi, +70 °C/+158 °F

no cracks

Ozone Ageing according to ISO 1431
120h, +40 °C/+104 °F, 50 pphm, 20% elongation

pass

Heat Ageing 72h, 100 °C/212 °F according to ISO 188

Change of Hardness	±0 Shore A
100% Modulus	12.3 MPa/1784 psi
Tensile Strength	67.0 MPa/9717.5 psi
Change of Tensile Strength	-5%
Elongation at break	642%
Change of Elongation at break	+5%
Change of Weight	±0%

General Data	H ₂ Pro™ ZLT
Projected Service Temperature	-60 °C to +110 °C/ -76 °F to +230 °F

