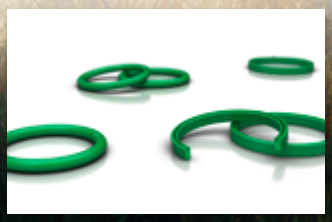
Zurcon® H_2Pro™ ZLT

A UNIQUE MATERIAL DESIGNED SPECIFICALLY FOR LOW-TEMPERATURE HYDROGEN APPLICATIONS



H_2 READY & tested

Specially engineered for hydrogen applications, Zurcon® H_2Pro™ ZLT is a thermoplastic polyurethane (TPU) material suitable for use at temperatures as low as -60 °C/-76 °F.

Zurcon® H_2Pro™ ZLT It is part of the expanding Trelleborg Sealing Solutions portfolio of H_2Pro™ materials designed to support customers working with hydrogen in the renewable energy sector.

Zurcon® H_2Pro™ 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/+18 °F, compared to existing premium grades. Simultaneously, it maintains its high temperature and extrusion and wear resistance properties under high pressure.

Zurcon® H_2Pro™ 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® H_2Pro™ 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.

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Features and Benefits

- Compatible with H_2 and oxygen
- Superior resistance to rapid gas decompression (RGD), tested to ISO 17268
- Very low permeability
- Wide operating service temperature range from -60 °C/-76 °F up to +110 °C/+230 °F
- Excellent extrusion and wear resistance properties, extending service live 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 (Tg) testing in accordance with ISO 11357-1 and DIN 53545

Applications

Suitable for high-pressure hydrogen storage applications including:

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

Suitable for high-pressure end-use applications including:

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

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 ShA
Hardness D	ISO 48-4 A	44 ShD
Density	DIN ISO 1183-1	1.16 g/cm3
Modulus	100% DIN 53 504 S2	12.9 MPa
Tensile Strength	DIN 53 504 S2	70.7 MPa
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 DIN ISO 815-1 test piece B method A	19%
Compression Set	72h/+100 °C DIN ISO 815-1 test piece B method A	28%

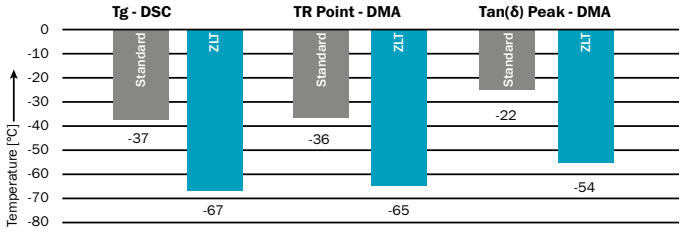
Hydrogen Resistance 168h based on EC79/SAE J2600/ISO 17268	Ch. Volume	Ch. Weight	Rapid Gas Decompression
Acceptance Criteria	**MAX -1/+25%**	**Max -10%**	
70 MPa / - 40 °C	-0.03%	-0.1%	no cracks
70 MPa / +20 °C	0.1%	-0.1%	no cracks
70 MPa / +85 °C	2.4%	-0.1%	no cracks

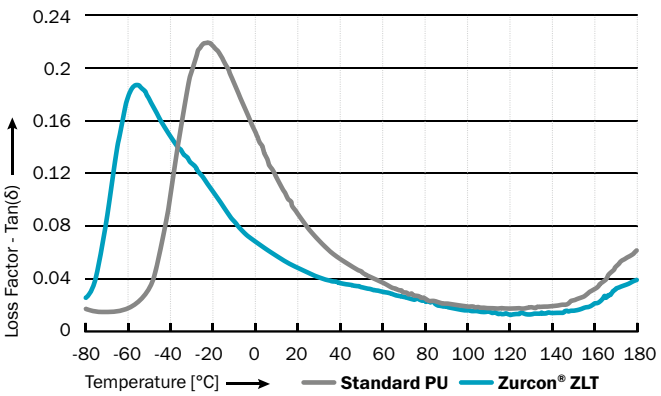
Oxygen Ageing acc. ASTM D572	
96h/300psi/+70 °C	no cracks

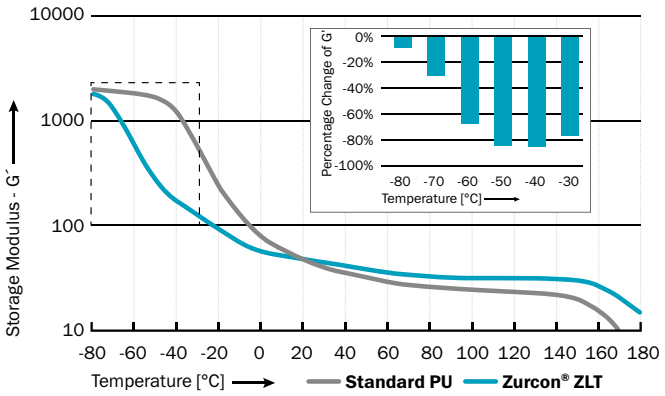
Ozone Ageing acc. ISO 1431	
120h/+40 °C/50pphm/20% elongation	pass

Heat Ageing 72h/100 °C acc. ISO 188	
Change of Hardness	±0 Shore A
100% Modulus	12.3 Mpa
Tensile Strength	67.0 Mpa
Ch. of Tensile Strength	-5%
Elongation at break	642%
Ch. of Elongation at break	+5%
Change of Weight	±0 %

General Data	H_2Pro^{TM} ZLT
Projected Service Temperature	-60 °C/-76 °F to +110 °C/+230 °F







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