

DESCRIPTION:

ZEROCOR's ZCor100 coating is purposed for highly corrosive environments. ZCor100 is a ceramic epoxy blend that is designed to provide corrosion protection for injection wells, floods, WAG, CO₂ and H₂S.

Compared to typical epoxies, ZCor100 offers superior corrosion resistance, impact resistance, adhesion and friction reduction.

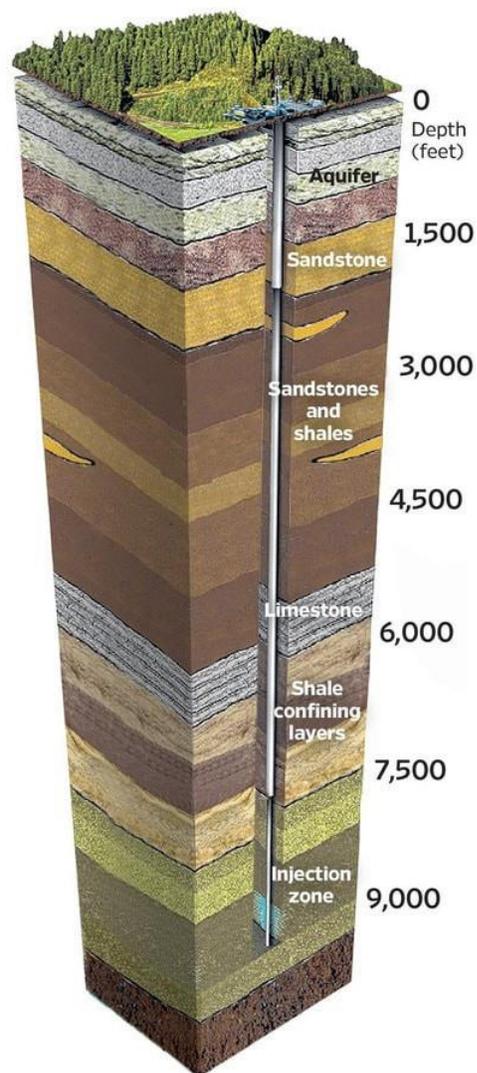
With over ten successful years in the oil and gas industry, ZCor100 coating improves service life of tubing. By reducing the maintenance cost, ZEROCOR offers a reliable and cost-effective solution, extending the life of your tubulars in down-hole applications.

FEATURES:

- Ceramic Epoxy Coating
- Temperature rating up to 204°C (400°F)
- Proprietary thread coating technology
- Coating applied thickness 8-15 mils
- Low fluid permeability
- High impact resistance



INJECTION / DISPOSAL WELL



BENEFITS:

- Reduces paraffin, wax or scale build up
- Withstands high temperature and pressure
- Low surface friction coefficient
- Resists corrosion and wear
- Withstands multiple wireline runs
- Over ten years of proven field performance

DIMENSIONS OF API TUBING:

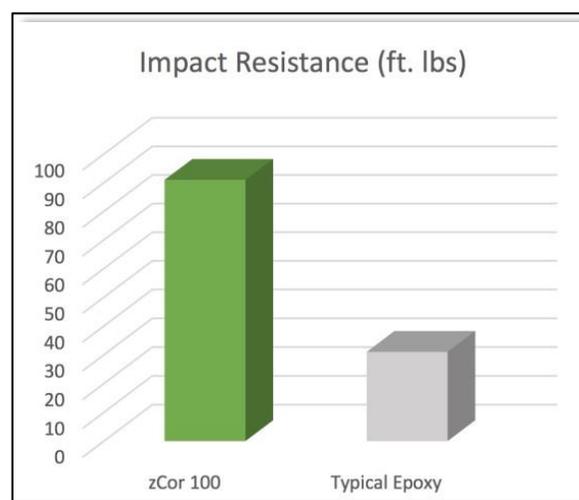
60.33 mm (2.375 in) x 6.99 kg/m (4.70 lbs/ft) EUE Tubing	Metric	Imperial
Normal ID	50.67 mm	1.995 in
API Drift - ZCor100 Coated Dimension	48.29 mm	1.901 in
73.03 mm (2.875 in) x 9.67 kg/m (6.50 lbs/ft) EUE Tubing	Metric	Imperial
Normal ID	62.00 mm	2.441 in
API Drift - ZCor100 Coated Dimension	59.61 mm	2.347 in
88.90 mm (3.500 in) x 13.84 kg/m (9.30 lbs/ft) EUE Tubing	Metric	Imperial
Normal ID	76.00 mm	2.992 in
API Drift - ZCor100 Coated Dimension	72.82 mm	2.867 in
114.30 mm (4.500 in) x 18.97 kg/m (12.75 lbs/ft) EUE Tubing	Metric	Imperial
Normal ID	100.53 mm	3.958 in
API Drift - ZCor100 Coated Dimension	97.36 mm	3.833 in

TESTING:

Impact Resistance

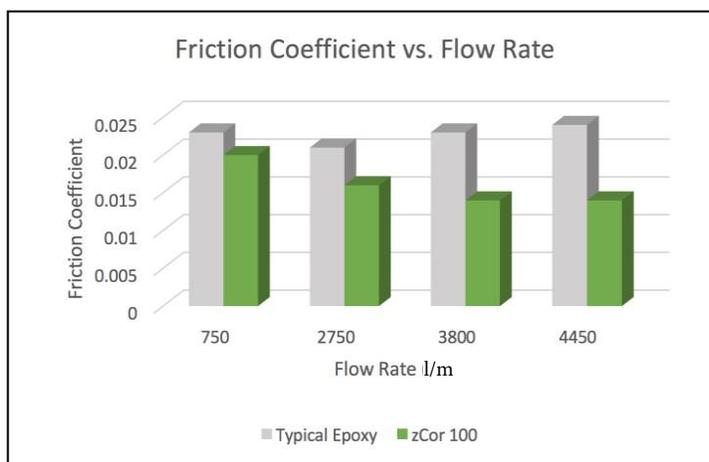
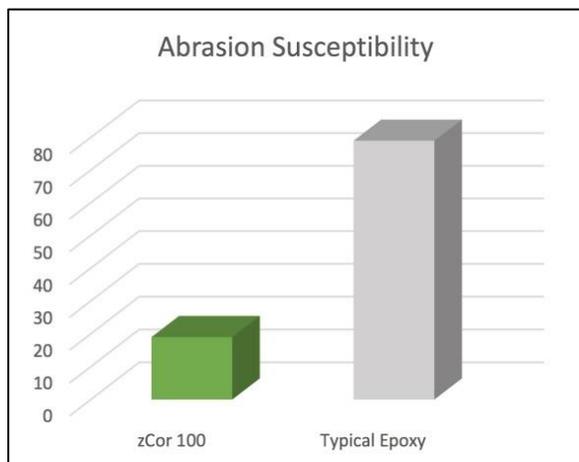
Impact resistance testing involves the use of a known weight, from a calculated height, that is released to impact a sample until it ruptures the coating.

Based on the energy required to cause penetration of the coating film, its impact resistance is determined. The units are the force accepted by the coating, per unit of thickness.



Taber Abrasion

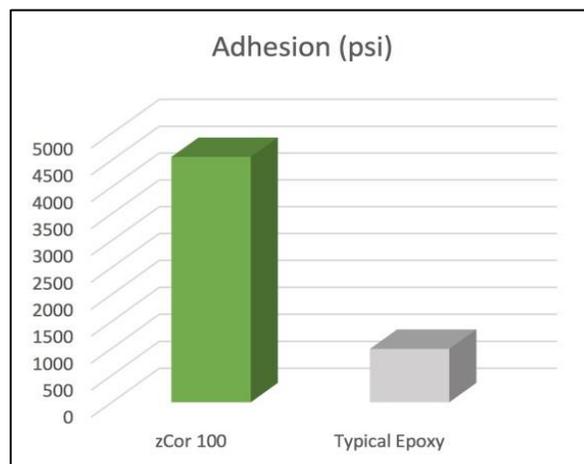
Coatings on substrates can be damaged by abrasion during its service life. This accelerated test method is useful in evaluating the resistance of the coating to abrasion produced, utilizing the Taber Abraser on the coating which has been applied to a rigid surface, such as a metal pipe.



Pull-Off Strength (Adhesion)

This test is used for evaluating the pull-off strength of the coating.

Coated test panels are soaked in hot water and the adhesion of the coating is consequently assessed by cutting a rectangle into the coating. The cut is then pried with a utility knife to determine if the coating can be lifted from the metal surface.



Flexural Three-Point Bend

The three-point bending flexural test indicates the elasticity of the coating.

This test method is used to determine the flexural (bending) properties, which is simply a resistance to bending along a sample's axial plane. The flexural strength represents the highest stress experienced within the coating at its moment of yield (crack resistance).

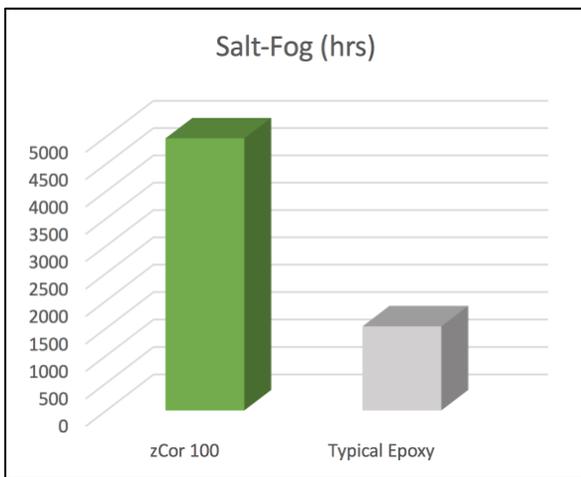
Hardness

Barcol Hardness

This test measures the mechanical property of the coating hardness. An indentation is performed on a smooth surface, produced by a sharp point with a flat tip. The depth of the penetration is converted into absolute Barcol numbers.

Shore D Hardness

The Shore Durometer measures the depth of a coating's indentation as created by a given force on a standardized pressure foot. The basic test involves the application of a uniform force, without shock, and measuring the resulting hardness through the depth of the indentation produced by a sharp point with a round end.



Salt Spray and Salt Fog

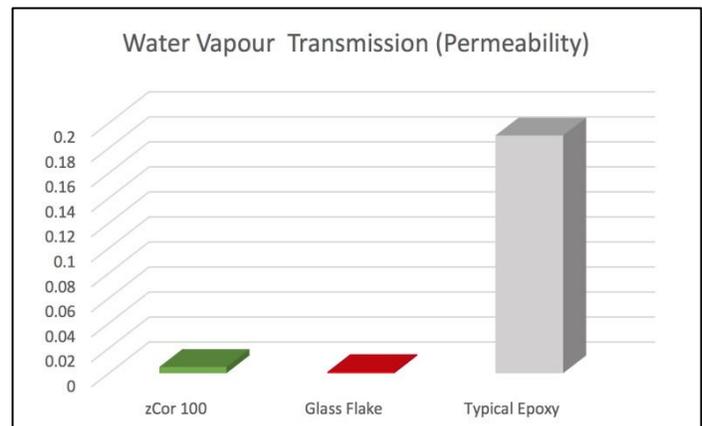
The salt spray and salt fog test provide a controlled accelerated corrosive environment, to evaluate the coating's corrosive resistance.

Test duration depends on the evaluation of the coating's corrosive resistance. The more corrosion resistant the coating is, the longer it will remain in the chamber of salt solution to detect product failure.

Water Vapour Transmission Rate (WVTR)

The data from this test represents the coating's ability to resist the infiltration and permeation of water vapour transfer from the coating to the surface of the steel.

A lower value indicates better moisture protection.



SPECIFICATIONS:

Physical Properties:	Measurement	Unit	Method
Density	1.8	g/cm ³	ASTM D792
Operating Temperature	204 (400)	°C (°F)	-
Volume of Organic Content, (VOC)	2.2 (264)	lbs/gal (g/liter)	-
Coating Thickness (recommended)	8-12 (200-300)	mils (µm)	-
Mechanical Properties:			
Impact Resistance	118 (1044.4)	Joules (in. lbs)	ASTM G14
Taber Abrasion (loss)	64	mg	ASTM D4060
Static Coefficient of Friction	0.187	-	-
Hazen-Williams Coefficient	150	C Value	-
Pull-Off Strength (Adhesion)	45.2 (6555)	MPa (psi)	ASTM D4541
Three-Point Bend and Flexural Test	PASS	-	ASTM D790
Hardness, Barcol	68	-	ASTM D2583
Hardness, Shore D	>90	-	ASTM D2240-74
Salt Spray and Salt Fog Test, 1700+ hours	PASS	hours	ASTM B117-97
Chemical Resistance:			
Autoclave Test #1: 7 days, 177°C (350°F), 5000psi No swelling, blistering, cracking or detachment from the substrate	PASS	hours	ASTM G42-96
Autoclave Test #2: 7 days, 204°C (400°F), 5000psi No swelling, blistering, cracking or detachment from the substrate	PASS	hours	ASTM G42-96
Autoclave Test #3: 7 days, 149°C (300°F), 6500psi No swelling, blistering, cracking or detachment from the substrate		hours	ASTM G42-96
Autoclave Test #4: 120 days, 150°C (302°F), 70psi No swelling, blistering, cracking or detachment from the substrate	PASS	hours	ASTM G42-96
Autoclave Test #5: 30 days, 65°C (150°F), 285 psi No swelling, blistering, cracking or detachment from the substrate	PASS	hours	ASTM G42-96
Autoclave Test #6: 30 days, 65°C (150°F), 3000 psi No swelling, blistering, cracking or detachment from the substrate	PASS	hours	ASTM G42-96
Cathodic Disbonding: 30 days, 23°C (°F)	1.5	mg	ASTM G8-96