‘ Parylene’ Coating

To provide additional protection in extreme environments where stress corrosion could occur, Thames Side Sensors load cells can be provided with a special transparent ‘Parylene’ coating to give excellent resistance to aggressive chemicals.

Parylene is the generic name for poly-para-xylylenes. These materials form linear, highly-crystalline polymers which are chemically and biologically inert and stable and therefore make excellent barrier materials. Parylenes are almost completely unaffected by solvents, have low bulk permeability and easily pass a 100 hour salt-spray test. Parylenes also have good thermal endurance and can perform in air without significant loss of physical properties for 10 years at 80 degrees Celsius.

The Parylene coating process is unique in coating technology and is carried out under vacuum with specialised equipment. The coating chamber is at room temperature and the pyrolised Parylene vapour condenses on all surfaces equally and can pass through holes as small as 1 micron. It then spontaneously polymerises to form a product with a high degree of crystallinity.

Coating thicknesses on load cells are typically 15-18 microns and are pinhole-free.

Engineering Properties of Parylene

Property			**units**
Density		1.29	g/cm³
Melting Point		290	°C
Water Absorption		<0.1	%
Water Vapour Transmission @ 37 °C		$0.4.10^{-3}$	ng/(Pa.s.m)
Gas Permeability @ 25 °C	N_2	2.0	amol/(Pa.s.m)
	O_2	14.4	
	CO_2	15.4	
	H_2S	26.0	
	SO_2	22.0	
	Cl_2	0.7	

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