Parylene: The Purest Name in Dimer

World Distributor of Dimer

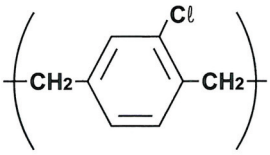
Parylene Coating Services, a business unit of Curtiss-Wright Surface Technologies, has been a leader in Parylene conformal coating since 1991.

Our proprietary PCS Dimer, “The purest name in Dimer,” enables faster, more efficient processing and delivers the truest possible deposition on the part surface.

Dimer is the key polymer used in the Parylene conformal coating process and is created by combining two identical molecules. This Dimer (di-para-xylene) is heated to approximately 150°, resulting in conversion to a gaseous monomer. Coating thicknesses and uniformity are both dictated by the amount and purity of the Dimer used. PCS Dimer is over 99% pure, the purest available, resulting in a more truly conformal coating, providing better protection for your substrates – meaning fewer product failures and leaving you with a higher profit margin.

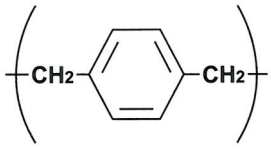
Parylene Coating Services offers two Parylene Dimer variations:

Parylene C

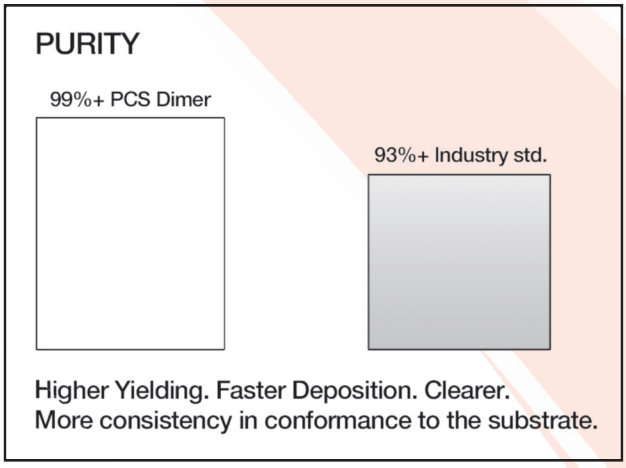


The most widely used dimer is Parylene C due to its outstanding electrical and physical properties.

Parylene N



Parylene N is selected for its high dielectric strength, lower coefficient of friction and penetration capability.



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Properties of Parylene

TYPICAL PHYSICAL & MECHANICAL PROPERTIES	Parylene N	Parylene C
Tensile strength, psi	6,500	10,000
Tensile strength, MPa	45	69
Yield strength, psi	6,300	8,000
Tensile strength, MPa	43	55
Tensile modulus, MPa	2,400	3,200
Elongation at break, %	40	200
Yield elongation, %	2.5	2.9
Density, g/cm³	1.110	1.289
Coefficient of friction: Static	0.25	0.29
Dynamic	0.25	0.29
Water absorption: % (24hr)	0.01(.019")	0.06 (.029")
Index of refraction, n_D^{23}	1.661	1.639
TYPICAL ELECTRICAL PROPERTIES	**Parylene N**	**Parylene C**
Dielectric strength, short time (Volts/mil at 1 mil)	7,000	6,800
Volume resistivity, 23°C, 50% RH (Ohm-cm)	$1x10^{17}$	$6x10^{16}$
Surface resistivity, 23°C, 50% RH (Ohm)	10^{15}	10^{15}
Dielectric constant: 60 Hz	2.65	3.15
1,000 Hz	2.65	3.10
1,000,000 Hz	2.65	2.95
Dissipation factor: 60Hz	0.0002	0.020
1,000 Hz	0.0002	0.019
1,000,000 Hz	0.0006	0.013
TYPICAL BARRIER PROPERTIES	**Parylene N**	**Parylene C**
GAS PERMEABILITY cm³ - mil/100 in²-24hr – atm (23°C)		
Nitrogen	7.7	0.95
Oxygen	30	7.1
Carbon dioxide	214	7.7
Hydrogen sulphide	795	13
Sulfur dioxide	1.89	11
Chlorine	74	0.35
MOISTURE VAPOR TRANSMISSION g-mil/100 in²-24hr, 37°C, 90%RH	1.50	0.14
1 mil = 1/1000 in = 25.4 microns		
TYPICAL THERMAL PROPERTIES	**Parylene N**	**Parylene C**
Melting temperatures (°C)	410	290
Linear coefficient of expansion (10^{-5}/°C)	6.9	3.5
Thermal conductivity, @ 25°C watts/Meter.Kelvin	0.120	0.082

Fig. 1
Volume resistivity, 23°C, 50% RH (Ohm-cm)

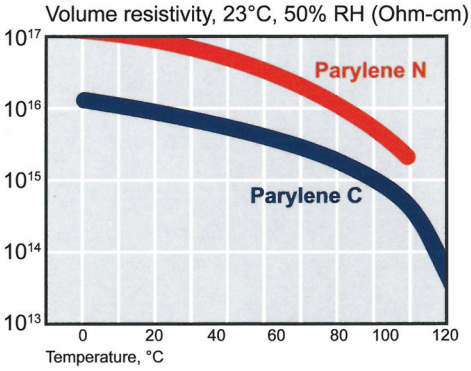


Fig. 2
Dielectric constant, 1,000 Hz

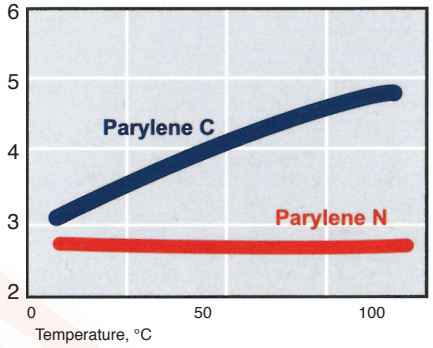
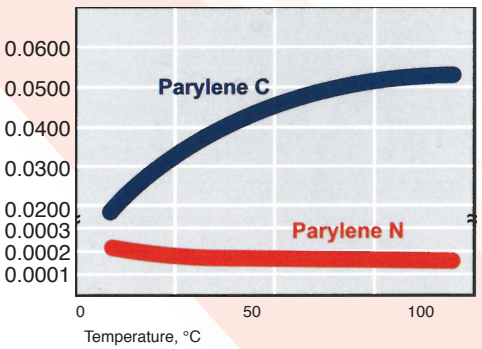
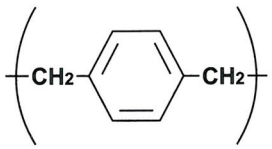


Fig. 3
Dissipation factor, 1,000 Hz

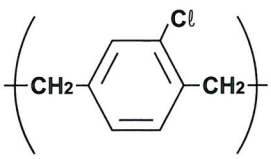


Parylene N



Where lubricity is needed

Parylene C



Excellent barrier protection

Results of a number of Parylene coating and Dimer studies are available on request. Additionally, we maintain device and drug master files with the US FDA. These files include the results of biological studies commissioned by CWST and are available for reference by commercial coating service customers.

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