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Dielectric Strength

The following is a summary of all dielectric breakdown data on Garlock sheet materials. Data is shown, where available, from both outside lab tests at US Testing and in house. Where style was tested more than once, the more recent data is shown. Tests at US Testing are performed in an insulating oil bath, which keeps the voltage from arcing through the air and around the gasket, and is the normal method for gaskets with high dielectric. We do not have that capability. Some results are, therefore, lower than the actual dielectric since the electricity did not pass through the sample. Voltage rate of rise is 500 volts/second with 2" diameter electrodes (except where noted). Voltage is AC.

The dielectric for gaskets tests after 96 hours at 100% relative humidity is considerably lower than tests done on dry samples. Styles 3565, 3504, and 3545 held up best against this loss of dielectric.

The ASTM D149 test method advises that test results for electrical properties be used as a guide when selecting a material for a particular service, and that the end user perform tests on the materials in the actual service to verify proper performance.

All dielectric values given are expressed in **volts/mil**.

Styles shown in **RED** have been cancelled.

Compressed Sheet Styles

<u>Style</u>	<u>Date</u>	<u>Thickness (inches)</u>	<u>US Testing¹ Oil Bath</u>	<u>Garlock 3 / 250°F</u>	<u>Garlock 96 / 100% RH</u>
660	4-03	1/16		18 ²	
681	4-03	1/8		21 ²	
700	4-06,5-07	1/32		597	< 2
700	4-06,5-07	1/8		290	< 2
ST-706	8-93	1/16		133	25
ST-706	8-93	1/8		142	25
2400	12-03	1/32		500	
2400	12-03	1/16		475+	
2400	12-03	1/8		298+	
2550	7-00	1/32		589	
2550	7-00	1/16		492	
2550	7-00	1/8		285+	
2900	3-02	1/16		342+	26
2900	3-02	1/8		254+ ⁴	28
2910	5-94	1/32		625+	
2910	5-94	1/16		375+	

<u>Style</u>	<u>Date</u>	<u>Thickness (inches)</u>	<u>US Testing¹ Oil Bath</u>	<u>Garlock 3 / 250°F</u>	<u>Garlock 96 / 100% RH</u>
2920	5-94	1/32		678+	
2920	5-94	1/16		442+	
2950	7-04	1/8		294+ ²	
3000	8-87	1/16		832	
3000	11-93	1/16		450+	
3000	3-94	1/16		396+	271
3000	9-80	1/8		363	
3000	3-94	1/8		257+	142
3200	8-87	1/16		508	
3200	3-94	1/16		427+	116
3200	3-94	1/8		285+	140
3300	8-87	1/16		517	
3300	3-94	1/16		392+	78
3300	3-94	1/8		269+	73
3400	8-87	1/16		630	
3400	3-94	1/16		405+	101
3400	3-94	1/8		287+	58
3400	8-01	1/8		422	
3700	8-87	1/16		620	
3700	3-94	1/16		451+	134
3700	3-94	1/8		291+	71
3750	3-03	1/16		496	
3750	3-03	1/8		285	
3760	4-06	1/32		607	
3760	4-06,11-07	1/16		385+	<10
3760	11-07	1/8			<10
CP-3900	12-94	1/16		209	
CP-3900	12-94	1/8		203	
CP-3920	12-94	1/16		333	
CP-3920	12-94	1/8		269	
IFG-5500	12-94	1/16		284	
IFG-5500	12-94	1/8		245	
IFG-5507	12-94	1/16		396+	
HTC-9800	2-88	1/16	N/A ³		
HTC-9850	3-93	1/16		< 2 ²	
G-9900	3-93	1/16		< 2 ²	

GYLON and PTFE Styles

<u>Style</u>	<u>Date</u>	<u>Thickness (inches)</u>	<u>US Testing¹ Oil Bath</u>	<u>Garlock 3 / 250°F</u>	<u>Garlock 96 / 100% RH</u>
3500	10-91	1/16	375		
3500	3-94	1/16		362	61
3500	9-80	1/8	327		
3504	10-91	1/16	310		
3504	3-94	1/16		318	245
3504	9-80	1/8	281		
3510	5-83	1/16	577		
3510	10-91	1/16	510		
3510	3-94	1/16		466+	59
3529	10-91	1/16	639		
3530	3-93	1/16		<2 ²	
3540	3-94	1/16		86	16
3540	3-94	1/8		61	
3545	5-95	1/16		248	222
3545	5-95	1/8		244	264
3561	?	1/16	449		
3565	3-94	1/16		301	221
3575	12-07	1/16		250	
3570	10-92	1/16		82 ²	
3591	6-03	1/16		445 ²	
3594	1-03	1/16		357 ²	
Tephonic	7-06	1/8		120 ^{2,6}	

Graph-Lock Styles

<u>Style</u>	<u>Date</u>	<u>Thickness (inches)</u>	<u>US Testing¹ Oil Bath</u>	<u>Garlock 3 / 250°F</u>	<u>Garlock 96 / 100% RH</u>
3123	2-88	1/16	NA ³		

Rubber Styles⁵

<u>Style</u>	<u>Date</u>	<u>Thickness (inches)</u>	<u>US Testing¹ Oil Bath</u>	<u>Garlock 3 / 250°F</u>	<u>Garlock 96 / 100% RH</u>
22	10-92	1/8		280+ ²	
8312	10-92	1/8		148 ²	
8314	10-92	1/8		4 ²	
8452	10-92	1/8		7 ²	
8459	10-92	1/16		7 ²	
8639	8-87	1/16	NA ³		
7986	3-94	1/8		118 ²	
9075	3-94	1/8		108 ²	
9518	4-07	1/8		66 ²	
Stress Saver XP	4-09	1/8		104 ²	

Cloth-Inserted Rubber Styles⁵

<u>Style</u>	<u>Date</u>	<u>Thickness (inches)</u>	<u>US Testing¹ Oil Bath</u>	<u>Garlock 3 / 250°F</u>	<u>Garlock 96 / 100% RH</u>
19	6-94	1/8		31 ²	
159	6-94	1/8		34 ²	
8798	2-93	1/8		128 ²	
8798	2-93	1/8		128 ²	
9200	2-04	1/8		8 ²	

Conditioned 3 hr./250°F, Cooled 1 hr./Dessicator, ¼” Electrodes

3500	3-94	1/16		424	
3504	3-94	1/16		425	
3510	3-94	1/16		569+	

The ¼” electrodes were used since they are the recommended size for PTFE products. The results were higher with these electrodes than with the 2” electrodes. This may not be significant, however, since these tests resulted in voltage discharges through the air and around the sample. The distance the arc has to travel is longer when using ¼” electrodes. Testing in an oil bath may negate this difference

+ Indicates current arced around & not through gasket. Dielectric higher than indicated.

Notes:

1. Conditioning unknown.
2. No conditioning.
3. No measurable voltage build up. Dielectric extremely low.
4. The style 2900 1/8” value reported in the previous release (514+) was incorrect.
5. Values for elastomer (rubber) styles may change when alternate fillers are used, such as alternate types of carbon black. Values should be verified before use.
6. Gasket was pressed for 3 seconds at 350°F. This value was derived from the uncompressed voltage and the compressed thickness- conservative measurement.