

# DESCO INDUSTRIES INCORPORATED

3651 WALNUT AVENUE, CHINO CA 91710  
PHONE (999) 627-8178 | WEB DescoIndustries.com

## QUALIFICATION REPORT – ANSI/ESD S20.20

### DESCO STATFREE® Z2 VINYL DISSIPATIVE 3-LAYER MAT

ANSI/ESD S20.20	DESCO Test Results	Test Methods
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#### Resistance (ohms) @ 12% RH, 23°C, 48-72 hours conditioning, N=3 specimens, 100V

Resistance-to-Groundable point	< 1.0 x 10 <sup>9</sup>	See Table 1	ANSI/ESD STM4.1
Resistance Point-to-Point	< 1.0 x 10 <sup>9</sup>	See Table 2	ANSI/ESD STM4.1

#### Resistance (ohms) @ 50% RH, 23°C, 48-72 hours conditioning, N=3 specimens, 100V

Resistance-to-Groundable point	< 1.0 x 10 <sup>9</sup>	See Table 1	ANSI/ESD STM4.1
Resistance Point-to-Point	< 1.0 x 10 <sup>9</sup>	See Table 2	ANSI/ESD STM4.1

#### Testing Equipment (Calibration records and test results are located at our corporate lab (Canton, MA)):

- Environment Chamber with ETS Automatic Humidity Controller (Model 514)
- Desco Electrodes for Surface Resistance (Model 50003)
- Desco Surface Resistance Meter (Model 19291)

#### Test Data:

Table 1 - Resistance-to-Groundable point

S4.1 Test Position	RTG (ohms), at 12%RH, 23°C			RTG (ohms), at 50%RH, 23°C		
	Sample #1	Sample #2	Sample #3	Sample #1	Sample #2	Sample #3
Figure 1 – Position 1	1.74 x 10 <sup>7</sup>	1.70 x 10 <sup>7</sup>	2.00 x 10 <sup>7</sup>	1.09 x 10 <sup>7</sup>	1.15 x 10 <sup>7</sup>	1.08 x 10 <sup>7</sup>
Figure 1 – Position 2	2.08 x 10 <sup>7</sup>	1.83 x 10 <sup>7</sup>	2.38 x 10 <sup>7</sup>	1.19 x 10 <sup>7</sup>	1.17 x 10 <sup>7</sup>	1.12 x 10 <sup>7</sup>
Figure 1 – Position 3	1.94 x 10 <sup>7</sup>	1.79 x 10 <sup>7</sup>	2.19 x 10 <sup>7</sup>	1.31 x 10 <sup>7</sup>	1.45 x 10 <sup>7</sup>	1.16 x 10 <sup>7</sup>
Figure 1 – Position 4	2.15 x 10 <sup>7</sup>	1.98 x 10 <sup>7</sup>	2.43 x 10 <sup>7</sup>	2.06 x 10 <sup>7</sup>	1.36 x 10 <sup>7</sup>	2.27 x 10 <sup>7</sup>
Figure 1 – Position 5	1.84 x 10 <sup>7</sup>	1.70 x 10 <sup>7</sup>	1.90 x 10 <sup>7</sup>	1.11 x 10 <sup>7</sup>	1.23 x 10 <sup>7</sup>	1.13 x 10 <sup>7</sup>
Min. =	1.74 x 10 <sup>7</sup>	1.70 x 10 <sup>7</sup>	1.90 x 10 <sup>7</sup>	1.09 x 10 <sup>7</sup>	1.15 x 10 <sup>7</sup>	1.08 x 10 <sup>7</sup>
Mean =	1.94 x 10 <sup>7</sup>	1.82 x 10 <sup>7</sup>	2.21 x 10 <sup>7</sup>	1.35 x 10 <sup>7</sup>	1.30 x 10 <sup>7</sup>	1.35 x 10 <sup>7</sup>
Max. =	2.15 x 10 <sup>7</sup>	1.98 x 10 <sup>7</sup>	2.43 x 10 <sup>7</sup>	2.06 x 10 <sup>7</sup>	1.45 x 10 <sup>7</sup>	2.27 x 10 <sup>7</sup>

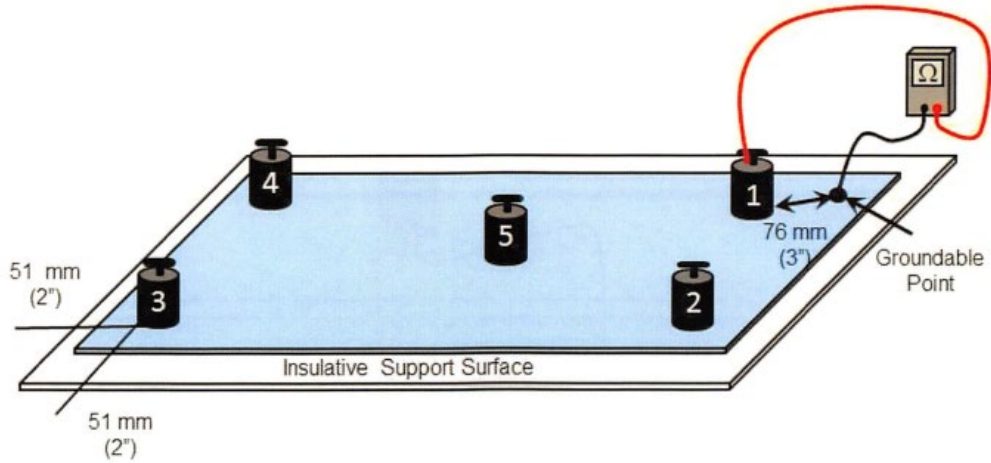
Table 2 - Resistance Point-to-Point

S4.1 Test Position	RTT (ohms), at 12%RH, 23°C			RTT (ohms), at 50%RH, 23°C		
	Sample #1	Sample #2	Sample #3	Sample #1	Sample #2	Sample #3
Figure 2 – Set up A	1.67 x 10 <sup>7</sup>	1.54 x 10 <sup>7</sup>	2.64 x 10 <sup>7</sup>	9.87 x 10 <sup>6</sup>	1.04 x 10 <sup>7</sup>	1.46 x 10 <sup>7</sup>
Figure 2 – Set up B	1.67 x 10 <sup>7</sup>	1.60 x 10 <sup>7</sup>	5.48 x 10 <sup>7</sup>	1.04 x 10 <sup>7</sup>	1.00 x 10 <sup>7</sup>	1.36 x 10 <sup>7</sup>
Figure 2 – Set up C	1.78 x 10 <sup>7</sup>	1.51 x 10 <sup>7</sup>	3.07 x 10 <sup>7</sup>	9.09 x 10 <sup>6</sup>	1.03 x 10 <sup>7</sup>	1.39 x 10 <sup>7</sup>
Figure 2 – Set up D	1.48 x 10 <sup>7</sup>	1.60 x 10 <sup>7</sup>	4.09 x 10 <sup>7</sup>	9.53 x 10 <sup>6</sup>	1.01 x 10 <sup>7</sup>	1.47 x 10 <sup>7</sup>
Min. =	1.48 x 10 <sup>7</sup>	1.51 x 10 <sup>7</sup>	2.64 x 10 <sup>7</sup>	9.09 x 10 <sup>6</sup>	1.00 x 10 <sup>7</sup>	1.36 x 10 <sup>7</sup>
Mean =	1.65 x 10 <sup>7</sup>	1.56 x 10 <sup>7</sup>	3.67 x 10 <sup>7</sup>	9.71 x 10 <sup>6</sup>	1.02 x 10 <sup>7</sup>	1.42 x 10 <sup>7</sup>
Max. =	1.78 x 10 <sup>7</sup>	1.60 x 10 <sup>7</sup>	5.48 x 10 <sup>7</sup>	1.04 x 10 <sup>7</sup>	1.04 x 10 <sup>7</sup>	1.47 x 10 <sup>7</sup>

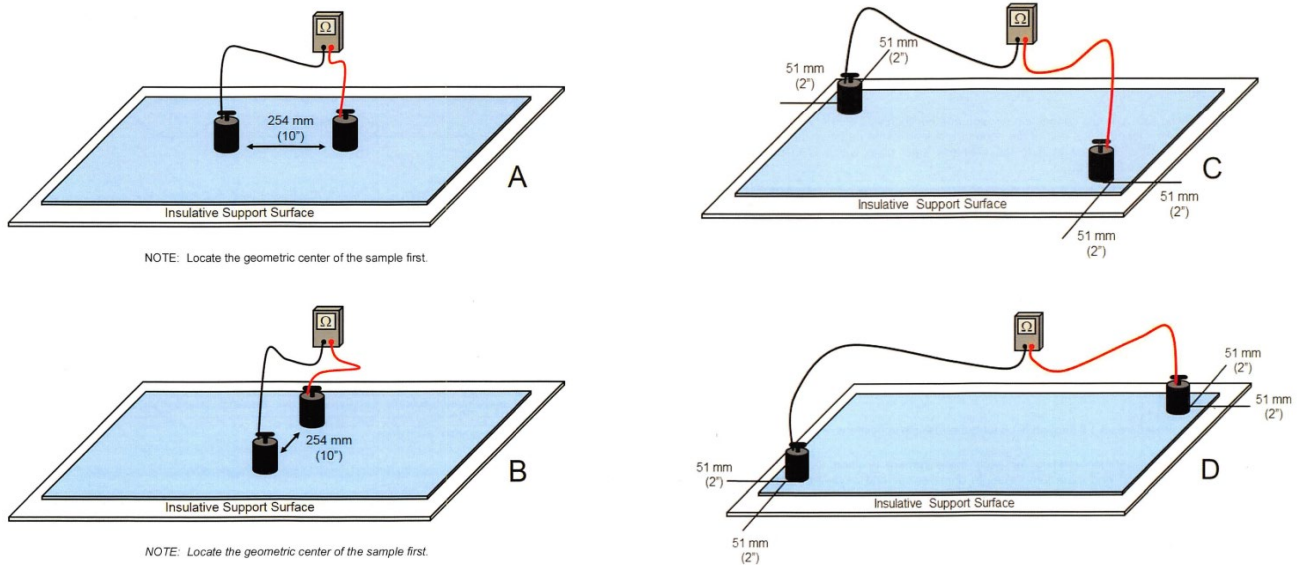
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## References:



ANSI/ESD STM4.1– Figure 1: Work-surface – Resistance-to-Groundable Point



ANSI/ESD STM4.1 – Figure 2: Work-surface – Resistance Point-to-Point