

# DESCO INDUSTRIES INCORPORATED

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## QUALIFICATION REPORT – ANSI/ESD S20.20

### DESCO STATFREE® HJ DISSIPATIVE 2-LAYER RUBBER

ANSI/ESD S20.20	DESCO Test Results	Test Methods	
<b>Resistance (ohms) @ 12% RH, 23°C, 48-72 hours conditioning, N=3 specimens, 100V</b>			
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
<b>Resistance (ohms) @ 50% RH, 23°C, 48-72 hours conditioning, N=3 specimens, 100V</b>			
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

ANSI/ESD STM4.1 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	3.66 x 10 <sup>7</sup>	4.26 x 10 <sup>7</sup>	4.62 x 10 <sup>7</sup>	5.04 x 10 <sup>6</sup>	4.74 x 10 <sup>6</sup>	4.25 x 10 <sup>6</sup>
Figure 1 – Position 2	4.23 x 10 <sup>7</sup>	4.75 x 10 <sup>7</sup>	5.44 x 10 <sup>7</sup>	6.59 x 10 <sup>6</sup>	5.04 x 10 <sup>6</sup>	5.29 x 10 <sup>6</sup>
Figure 1 – Position 3	4.65 x 10 <sup>7</sup>	6.59 x 10 <sup>7</sup>	4.81 x 10 <sup>7</sup>	4.22 x 10 <sup>6</sup>	5.40 x 10 <sup>6</sup>	5.32 x 10 <sup>6</sup>
Figure 1 – Position 4	4.09 x 10 <sup>7</sup>	7.66 x 10 <sup>7</sup>	5.56 x 10 <sup>7</sup>	4.64 x 10 <sup>6</sup>	5.51 x 10 <sup>6</sup>	5.11 x 10 <sup>6</sup>
Figure 1 – Position 5	5.02 x 10 <sup>7</sup>	5.91 x 10 <sup>7</sup>	4.398 x 10 <sup>7</sup>	5.59 x 10 <sup>6</sup>	5.70 x 10 <sup>6</sup>	4.97 x 10 <sup>6</sup>
<b>Min.=</b>	<b>3.66 x 10<sup>7</sup></b>	<b>4.26 x 10<sup>7</sup></b>	<b>4.40 x 10<sup>7</sup></b>	<b>4.22 x 10<sup>6</sup></b>	<b>4.74 x 10<sup>6</sup></b>	<b>4.25 x 10<sup>6</sup></b>
<b>Mean =</b>	<b>4.33 x 10<sup>7</sup></b>	<b>5.83 x 10<sup>7</sup></b>	<b>4.97 x 10<sup>7</sup></b>	<b>5.22 x 10<sup>6</sup></b>	<b>5.28 x 10<sup>6</sup></b>	<b>4.99 x 10<sup>6</sup></b>
<b>Max. =</b>	<b>5.02 x 10<sup>7</sup></b>	<b>7.66 x 10<sup>7</sup></b>	<b>5.56 x 10<sup>7</sup></b>	<b>6.59 x 10<sup>6</sup></b>	<b>5.70 x 10<sup>6</sup></b>	<b>5.32 x 10<sup>6</sup></b>

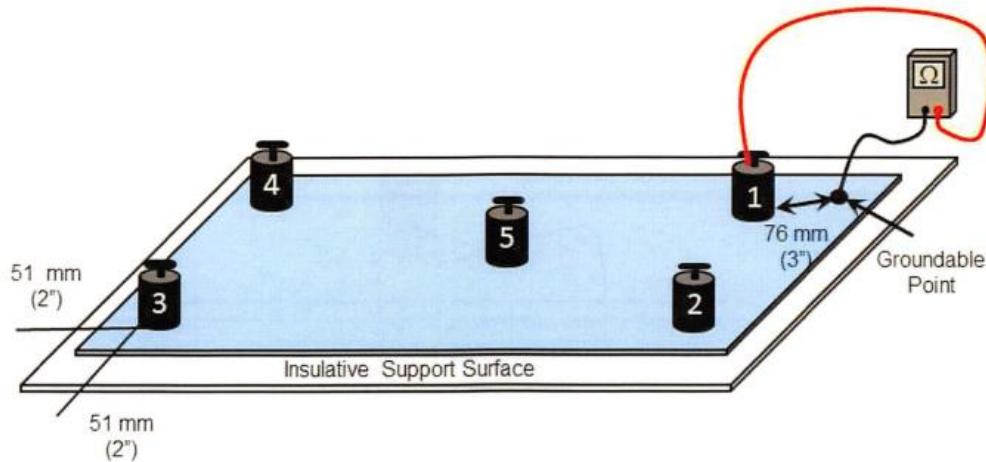
Table 2 - Resistance Point-to-Point

ANSI/ESD STM4.1 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	1.03 x 10 <sup>8</sup>	1.09 x 10 <sup>8</sup>	9.47 x 10 <sup>7</sup>	1.37 x 10 <sup>7</sup>	1.25 x 10 <sup>7</sup>	1.09 x 10 <sup>7</sup>
Figure 2 – Set up B	8.26 x 10 <sup>7</sup>	9.53 x 10 <sup>7</sup>	7.82 x 10 <sup>7</sup>	1.15 x 10 <sup>7</sup>	1.16 x 10 <sup>7</sup>	9.60 x 10 <sup>6</sup>
Figure 2 – Set up C	9.15 x 10 <sup>7</sup>	9.34 x 10 <sup>7</sup>	9.60 x 10 <sup>7</sup>	1.05 x 10 <sup>7</sup>	1.25 x 10 <sup>7</sup>	1.13 x 10 <sup>7</sup>
Figure 2 – Set up D	8.78 x 10 <sup>7</sup>	9.40 x 10 <sup>7</sup>	9.34 x 10 <sup>7</sup>	1.16 x 10 <sup>7</sup>	1.16 x 10 <sup>7</sup>	1.04 x 10 <sup>7</sup>
<b>Min.=</b>	<b>8.26 x 10<sup>7</sup></b>	<b>9.34 x 10<sup>7</sup></b>	<b>7.82 x 10<sup>7</sup></b>	<b>1.05 x 10<sup>7</sup></b>	<b>1.16 x 10<sup>7</sup></b>	<b>9.60 x 10<sup>6</sup></b>
<b>Mean =</b>	<b>9.12 x 10<sup>7</sup></b>	<b>9.79 x 10<sup>7</sup></b>	<b>9.06 x 10<sup>7</sup></b>	<b>1.18 x 10<sup>7</sup></b>	<b>1.21 x 10<sup>7</sup></b>	<b>1.06 x 10<sup>7</sup></b>
<b>Max. =</b>	<b>1.03 x 10<sup>8</sup></b>	<b>1.09 x 10<sup>8</sup></b>	<b>9.60 x 10<sup>7</sup></b>	<b>1.37 x 10<sup>7</sup></b>	<b>1.25 x 10<sup>7</sup></b>	<b>1.13 x 10<sup>7</sup></b>

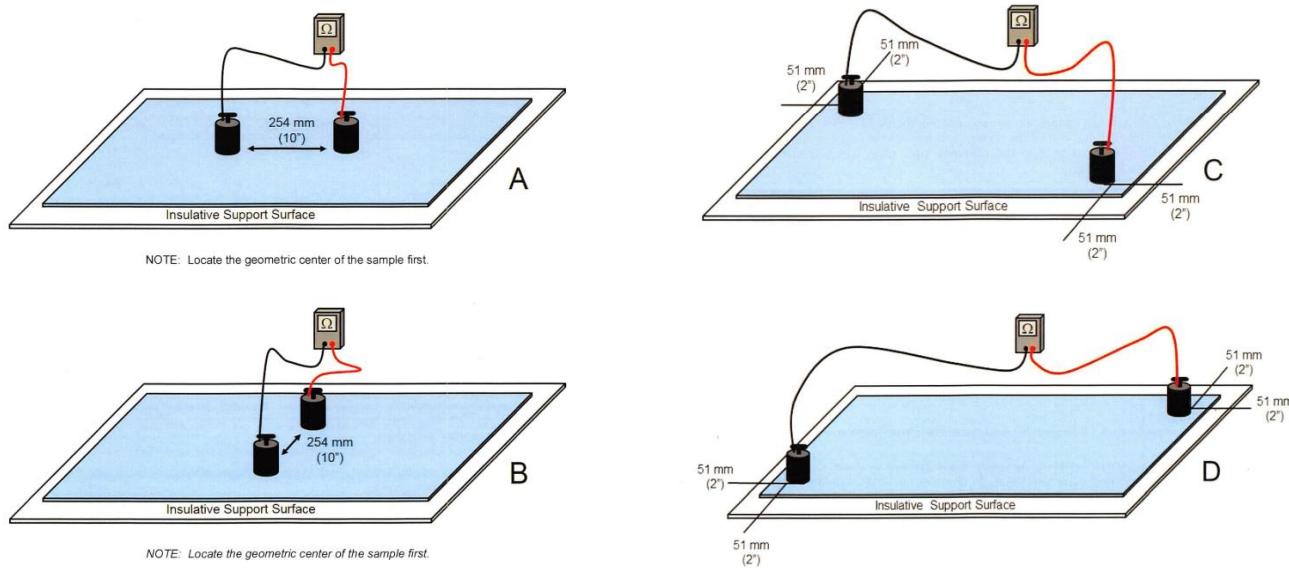
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## References:



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



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