

TEST REPORT

Particle Removal Efficiency of Tacky Mats

80% OF CONTAMINATION ENTERS YOUR CRITICAL AREA AT GROUND LEVEL

Source: 3M

Task

Determine the removal efficiency of particles from cleanroom boot soles using Cleanroom Supplies multi layer sticky mats



Reduce:

- Contamination
- Particles
- Microbes
- The risk to your Business and Reputation

Test Method

The test apparatus consisted of a raised perforated stainless steel grid with an isokinetic sampling probe beneath it. The apparatus was placed in a laminar flow hood. The isokinetic probe was connected to a Met-One Model A2400 Laser Particle Counter. The apparatus was cleaned using a nonwoven cleanroom wiper pre-saturated with 70% isopropyl alcohol and re-cleaned between each test.

A clean Chemstat 939 molded boot sole was dropped from a height of 6 inches onto the perforated grid every 10 seconds for one minute. Particle counts were obtained during the dropping of the sole. This sample was designated SOLE A Background.

The boot sole was then placed in a glass dish containing AC Fine Test Dust and slight pressure applied to the inside of the sole so that the dust particles would adhere to the surface. The sole was dropped from a height of 6 inches onto the perforated grid every 10 seconds for one minute. Particle counts were obtained during the dropping of the sole. This sample was designated SOLE A Dirty.

The boot sole was again placed in a glass dish containing AC Fine Test Dust and slight pressure applied to the inside of the sole so that the dust particles would adhere to the surface. The sole was then placed on the Cleanroom Supplies sticky mat and approximately 100 pounds of pressure applied to simulate a human taking a step. The sole was moved to a second location on the sticky mat to simulate a second step. The sole was then dropped from a height of 6 inches onto the perforated grid every 10 seconds for one minute. Particle counts were obtained during the dropping of the sole. This sample was designated SOLE A Clean.

Two additional boot soles were tested in the same manner (B and C).

Results

SOLE A - Size: Medium			
Particle Size	Without Mat (Dirty)	With Mat (Clean)	Particle Removal Efficiency
> 0.3 um	293309	69260	76.30%
> 0.5 um	215300	44780	79.20%
> 1.0 um	126932	21495	83.10%
> 5.0 um	7787	878	88.70%
> 10.0 um	2339	287	87.70%

SOLE B - Size: Medium			
Particle Size	Without Mat (Dirty)	With Mat (Clean)	Particle Removal Efficiency
> 0.3 um	234293	94731	59.60%
> 0.5 um	163561	61595	62.30%
> 1.0 um	87879	29383	66.60%
> 5.0 um	4146	1261	69.60%
> 10.0 um	1384	438	68.30%

SOLE C - Size: Small			
Particle Size	Without Mat (Dirty)	With Mat (Clean)	Particle Removal Efficiency
> 0.3 um	125471	42711	66.00%
> 0.5 um	85050	26672	68.60%
> 1.0 um	44488	12193	72.60%
> 5.0 um	2006	554	72.40%
> 10.0 um	660	197	70.20%

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Conclusion

The following average particle removal efficiencies were determined based on only two steps of a dirty boot sole on the Cleanroom Supplies multi layer sticky mat:

- >0.3um 67.3%
- >0.5um 70.0%
- >1.0um 74.1%
- >5.0um 76.9%
- >10.0um 75.4%

In conclusion, of the 5 different particle sizes that were tested, the Cleanroom Supplies Tacky mat had at least a 67% particle removal efficiency.

