

Semiconductor Automation Manufacturer Achieves 4× Roller Life

THE PROBLEM

A semiconductor automation manufacturer needed rollers that could pass ISO clean-room particulate testing while maintaining high wear strength and static control. Their existing options either met cleanliness standards but wore down too quickly, or provided durability but failed contamination tests. The customer required a conductive roller that could deliver all three — wear life, clean-room compliance, and static safety.

THE SOLUTION

MPC developed a custom Durethane® urethane formulation engineered for both durability and cleanliness. The compound achieved a resistivity range of 10^8 – 10^9 ohm-cm, ensuring safe static dissipation while passing ISO clean-room certification. It offered exceptional tensile and tear strength, maintaining its properties through thousands of wafer-handling cycles. Each roller was precision molded, finished to a smooth, low-friction surface, and validated for particle generation, solvent resistance, and conductivity stability.

THE RESULT

The final design passed ISO clean-room particulate testing, maintained conductivity throughout operation, and delivered four times longer wear life than the prior plastic rollers. The customer reported zero contamination events during extended clean-room testing. By combining conductivity, high wear strength, and clean-room compliance in a single formulation, MPC provided a solution that previously didn't exist — enabling reliable, particle-free performance in one of the most demanding automation environments.

MARKET

Industrial

Semiconductor
Manufacturing

SOLUTION

Media Handling

Static Dissipation

PRODUCT

Polyurethane Rollers

TECHNICAL SPECIFICATIONS

MATERIAL
Conductive Polyurethane

VOLUME RESISTIVITY
 10^8 – 10^9 ohm-cm

PROCESS
Cast molding, precision
machining

COMPONENT
Precision molded conductive
roller

4×

LONGER WEAR LIFE VS.
PLASTIC ROLLERS

Zero

CONTAMINATION
EVENTS IN TESTING

ISO

CLEAN-ROOM
PARTICULATE
CERTIFIED

Tell us what you're working on.

One partner — from concept to production — for performance that can't stop.

Get Started ›