

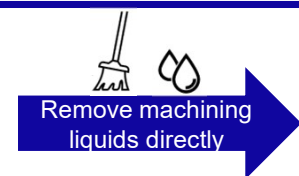
# CLEAN MANUFACTURING (EN)



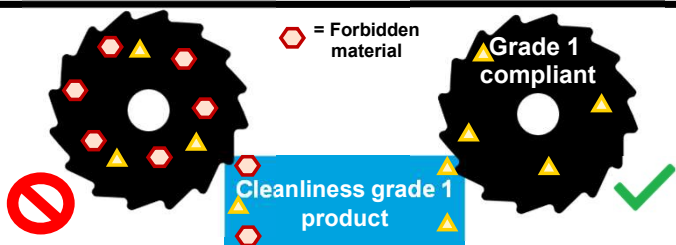
Machining liquids (milling, drilling etc.) contain chemicals and trap particles from machining.



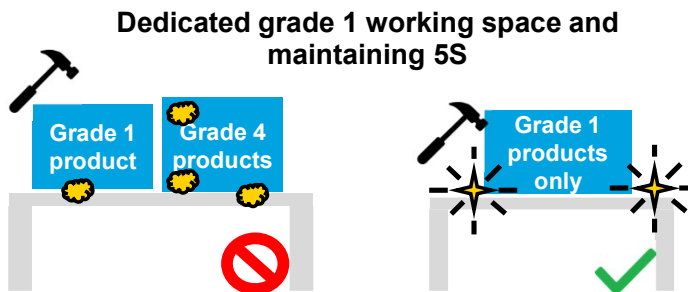
Dried-in process liquid (chemically bonded) and strongly bonded particles are uncleanable later in the manufacturing process!



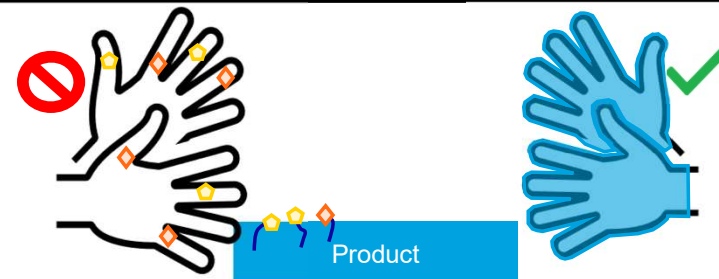
Directly removing (rinsing) machining liquid prevents chemical surface alterations and strongly bonded particles.



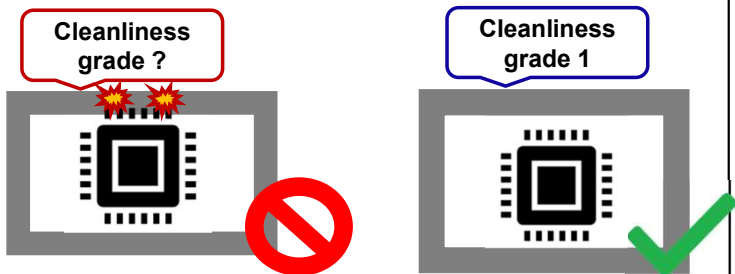
Machining tools contaminate products by wear. Tools should be constructed of cleanliness grades compliant materials.



Grade 1 products have dedicated workspaces.



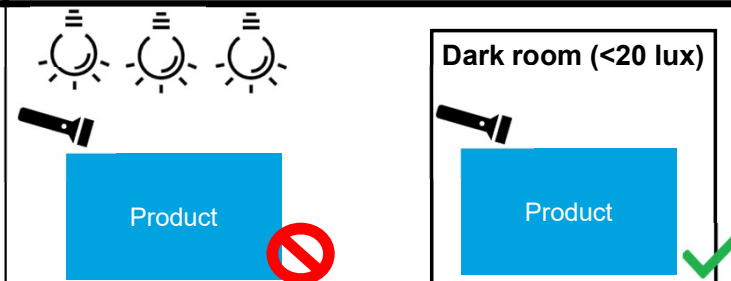
Body acids and salts lead to uncleanable (chemically bonded) stains and corrosion. Wear gloves to avoid.



Ensure stored products are packed and labeled according to their most stringent cleanliness grade.

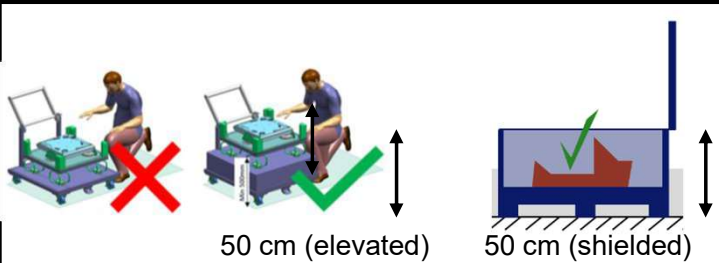


Avoid cross-contamination (particles, greases etc.) by cleaning tools accordingly. Tip: Use dedicated tooling for grade 1 parts.



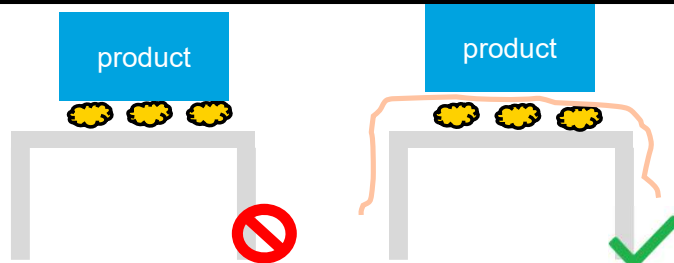
Visual inspection (UV-A / Bright light) must be performed in low light conditions <20 lux.

## CLEAN ASSEMBLY (EN)

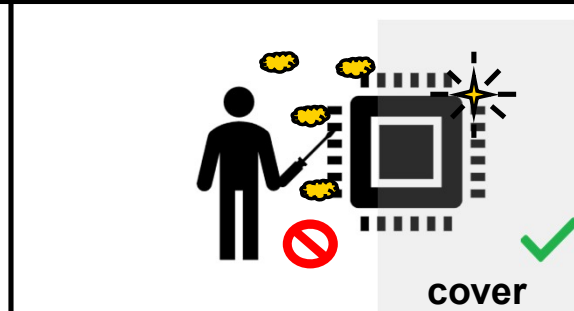


50 cm (elevated) 50 cm (shielded)

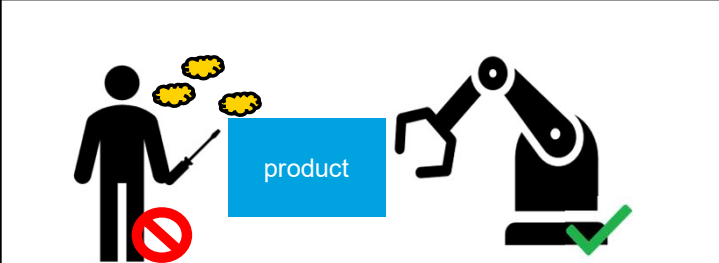
Keep machine parts minimally 50 cm from floor (knee-height).



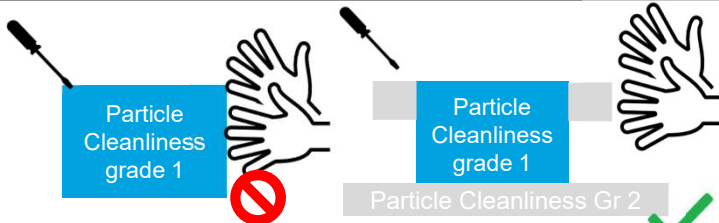
Avoid cross-contaminating parts by the workbench. Clean or cover (with clean PE-foil) the workbench.



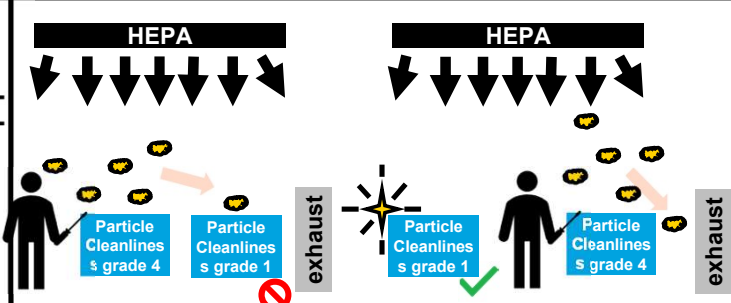
Use dedicated covers during assembly.



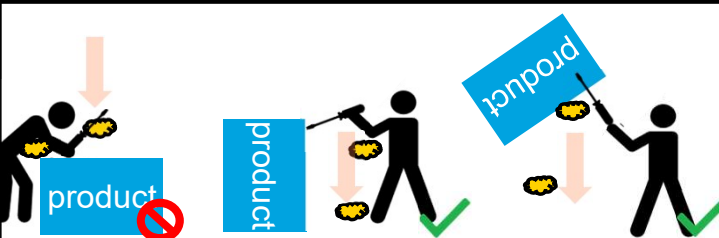
Minimize manual operations, use dedicated tooling. Avoid human contact.



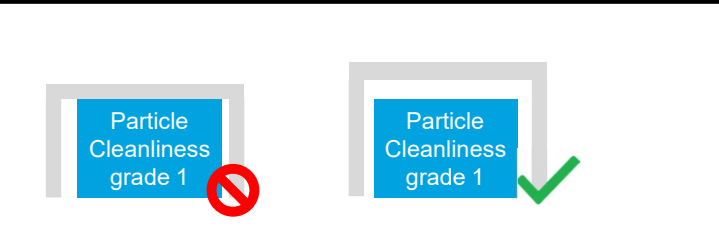
Avoid touching Particle Cleanliness Grade 1 with gloves/tools. Use dedicated touching areas (Particle Cleanliness Grade 2).



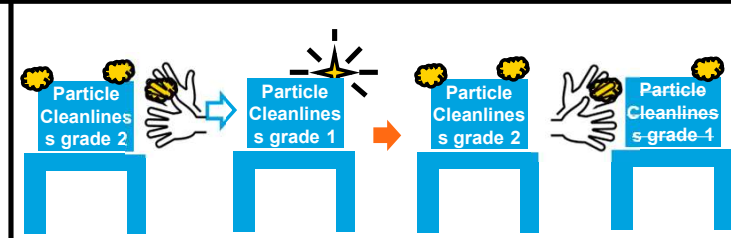
Avoid operations upstream (airflow) of critical product.



No operations upstream/above product: Avoid leaning over product during assembling, assemble product vertically or upside-down.



Covers (including PE-foil) should not touch the critical part Particle Cleanliness Grade 1.



Avoid cross-contamination, change to new clean gloves when starting to work on higher cleanliness grades.