DIAMOND has created a new ISO 7 cleanroom (class 10’000 according to FED STD 209E), in order to supply products such as connector sets, pigtails, patchcords, adapters and mechanical parts that are cleaned and packaged in a controlled environment.

The Diamond cleanroom takes all the following aspects into account:

- Temperature humidity control
- Control of particulate concentration
- Electrostatic discharge
- Gas contaminants
- Airflow pattern control
- Pressurisation
## Classification

<table>
<thead>
<tr>
<th>ISO Class</th>
<th>maximal particles/m³</th>
<th>FED STD 209E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≥0.1 µm</td>
<td>≥0.2 µm</td>
</tr>
<tr>
<td>ISO 1</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>ISO 2</td>
<td>100</td>
<td>24</td>
</tr>
<tr>
<td>ISO 3</td>
<td>1,000</td>
<td>237</td>
</tr>
<tr>
<td>ISO 4</td>
<td>10,000</td>
<td>2,370</td>
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<tr>
<td>ISO 5</td>
<td>100,000</td>
<td>23,700</td>
</tr>
<tr>
<td>ISO 6</td>
<td>1,000,000</td>
<td>237,000</td>
</tr>
<tr>
<td>ISO 7</td>
<td>352,000</td>
<td>83,200</td>
</tr>
<tr>
<td>ISO 8</td>
<td>3,520,000</td>
<td>832,000</td>
</tr>
<tr>
<td>ISO 9</td>
<td>35,200,000</td>
<td>8,320,000</td>
</tr>
</tbody>
</table>

- Class 1
- Class 10
- Class 100
- Class 1000
- Class 10’000
- Class 100’000
- Room air
Cleanroom characteristics

Class: ISO 7 (according to norm DIN EN ISO 14644-1)
Type: Turbulent air flow
Flow rate: Min. 40 air exchanges /h
Filters: 3 ULPA U15 filters
Air flow: 3,600 m³/h total
Overpressure: 24 Pa
ESD-compliant: Yes

Surface:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleanroom</td>
<td>34 m²</td>
</tr>
<tr>
<td>Changing room</td>
<td>5 m²</td>
</tr>
<tr>
<td>Material airlock</td>
<td>1 m²</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>40 m²</strong></td>
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</tbody>
</table>

Lights and filters are under UPS
Product capabilities

- Connector sets
- Pigtails, patchcords
- Adapters
- Mechanical parts
- Ceramics
- Titanium
- Steel
- Alloys
- Plastics
- Widia
- Aluminium
Processes

1: Preparation

2: Preconditioning

3: Cleaning → Drying → Controlling → Packaging

Outside cleanroom

Inside cleanroom
# Processes overview

<table>
<thead>
<tr>
<th>Process</th>
<th>Specification</th>
<th>Connector sets</th>
<th>Pigtails, patchcords &amp; adapters</th>
<th>Mechanical parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation</td>
<td>Dürr Ecoclean (hydrocarbon solvent)</td>
<td>X</td>
<td>[ ]</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Fisa Ultrasonic bath line (sodium soaps)</td>
<td>X</td>
<td>[ ]</td>
<td>X</td>
</tr>
<tr>
<td>Preconditioning</td>
<td>Ionic air flow</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cleaning → Drying → Controlling → Packaging</td>
<td>Ultrasonic bath acetone</td>
<td>X</td>
<td>[ ]</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Ultrasonic bath IPA</td>
<td>X</td>
<td>[ ]</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Ultrasonic bath water</td>
<td>X</td>
<td>[ ]</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Cleaning with wipes and IPA</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Drying</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Controlling</td>
<td></td>
<td>X</td>
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<tr>
<td>Report</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Packaging in N₂: sealed blisters</td>
<td></td>
<td>X</td>
<td>[ ]</td>
<td></td>
</tr>
<tr>
<td>Packaging in N₂: double skin bag</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Packaging in air: blisters with VCI</td>
<td></td>
<td></td>
<td>[ ]</td>
<td>X</td>
</tr>
</tbody>
</table>
Preparation (outside cleanroom)

- Dürr Ecoclean (hydrocarbon solvent)
- Fisa Ultrasonic cleaning line (sodium soaps)

Production environment

Preparation
Preconditioning (outside cleanroom)

Before entering the cleanroom, every product is initially cleaned with a ionised air flow to discharge static from the surface.

Filters:
- Filter reducer 0.3 ... 7 bars, 5 µm
- Fine filter and high capacity filter, 1 µm
- Fine filter and high capacity filter, 0.01 µm
- Activated carbon filter

Air gun:
- Operating voltage 5kV AC
- Air consumption 68 l / min
- Required air pressure 7 bar
Cleanroom overview

- Vacuum oven
- Ultrasonic baths
- Double skin packing machine
- Packing machine
- Vacuum gun
- 80x microscope
Cleaning (inside cleanroom)

3 Ultrasonic baths with:
- Acetone
- IPA
- Deionised water

Compatible materials:
- Ferrule
- Steel
- Alloys
- Plastics
- Widia
- Aluminium

Cleaned materials:
- Resins
- Glues
- Adhesives
- Fats
- Oils
Cleaning (inside cleanroom)

- Ability to clean patchcords up to 30 metres (90 ft) may be limited by cable specification
- Cleaning with cleanroom wipes and IPA
Drying (inside cleanroom)

Thermo Scientific Vacuum Oven

- Temperature: 15°C – 200°C (59°F – 392°F)
- Capacity: 130 l (4.5 cu. Ft.)
- Max. vacuum: 50 mbar
Controlling (inside cleanroom)

Leica M80 Microscope

■ 80x zoom
■ 4-angle illumination
■ Leica 170HD camera
■ Leica V4.3 application suite

Suitable for 100% inspection, image storing and complete report.
Packaging (inside cleanroom)

- Packaging
  - Conditioned atmosphere ($N_2$)
    - Sealed blisters
  - In air
    - Double skin
    - Sealed blisters with VCI cover