



ISO 7 CLEANROOM



Overview

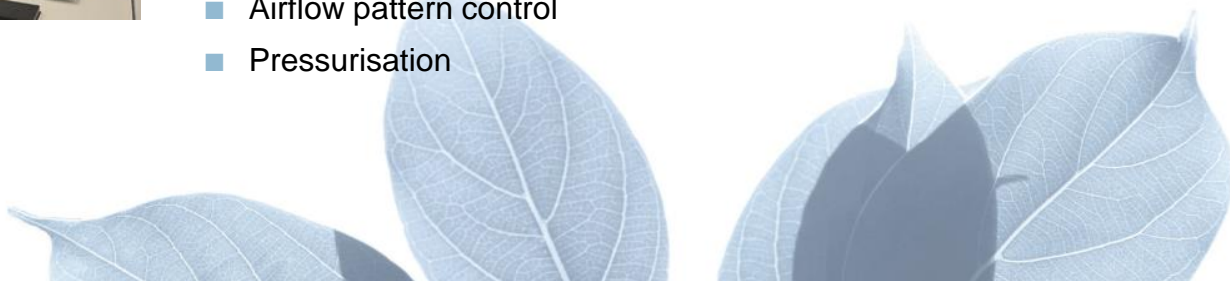


DIAMOND has created a **new ISO 7 cleanroom (class 10'000 according to FED STD 209E)**, in order to supply products such as connector sets, pigtails, patchcords, adapters and mechanical parts that are cleaned and packaged in a controlled environment.



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



ISO Class	maximal particles/m ³						FED STD 209E
	≥0.1 μm	≥0.2 μm	≥0.3 μm	≥0.5 μm	≥1 μm	≥5 μm	
ISO 1	10	2					
ISO 2	100	24	10	4			
ISO 3	1,000	237	102	35	8		Class 1
ISO 4	10,000	2,370	1,020	352	83		Class 10
ISO 5	100,000	23,700	10,200	3,520	832	29	Class 100
ISO 6	1,000,000	237,000	102,000	35,200	8,320	293	Class 1000
ISO 7				352,000	83,200	2,930	Class 10'000
ISO 8				3,520,000	832,000	29,300	Class 100'000
ISO 9				35,200,000	8,320,000	293,000	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:

Cleanroom	34 m ²
Changing room	5 m ²
Material airlock	1 m ²
Total	40 m²

Lights and filters are under UPS



Product capabilities

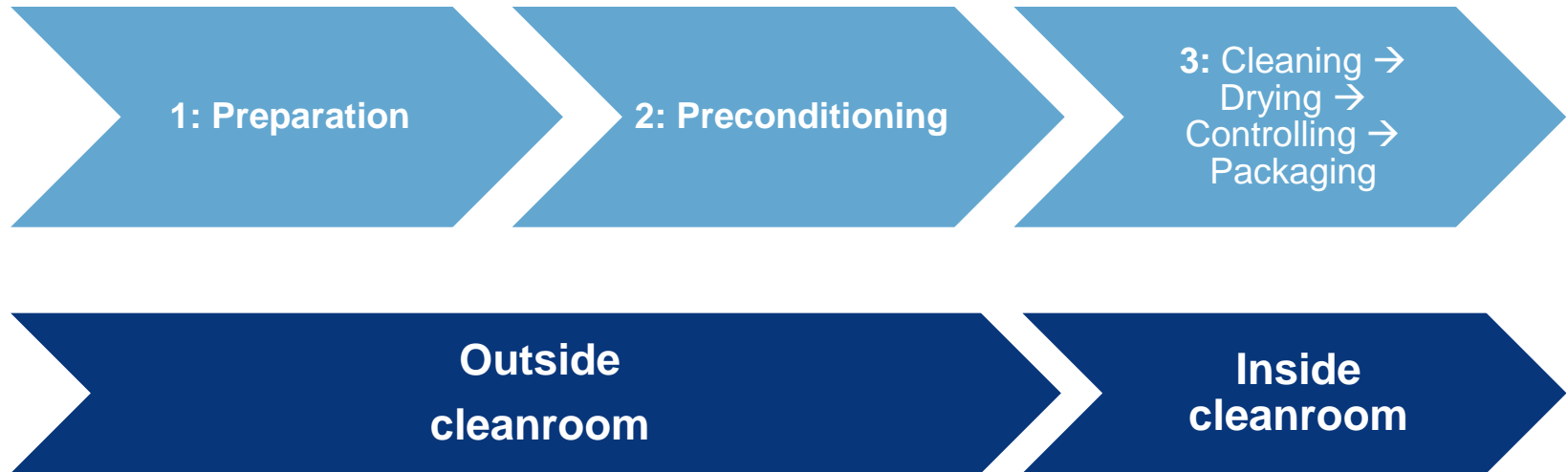


- Connector sets
- Pigtails, patchcords
- Adapters
- Mechanical parts

- Ceramics
- Titanium
- Steel
- Alloys
- Plastics
- Widia
- Aluminium



Processes



Processes overview



Process	Specification	Connector sets	Pigtails, patchcords & adapters	Mechanical parts
Preparation	Dürr Ecoclean (hydrocarbon solvent)	X		X
	Fisa Ultrasonic bath line (sodium soaps)	X		X
Preconditioning	Ionic air flow	X	X	X
Cleaning → Drying → Controlling → Packaging	Ultrasonic bath acetone	X		X
	Ultrasonic bath IPA	X		X
	Ultrasonic bath water	X		X
	Cleaning with wipes and IPA		X	
	Drying	X	X	X
	Controlling	X	X	X
	Report	X	X	X
	Packaging in N ₂ : sealed blisters	X		
	Packaging in N ₂ : double skin bag		X	X
	Packaging in air: blisters with VCI			X

Preparation (outside cleanroom)



Dürr Ecoclean
(hydrocarbon solvent)

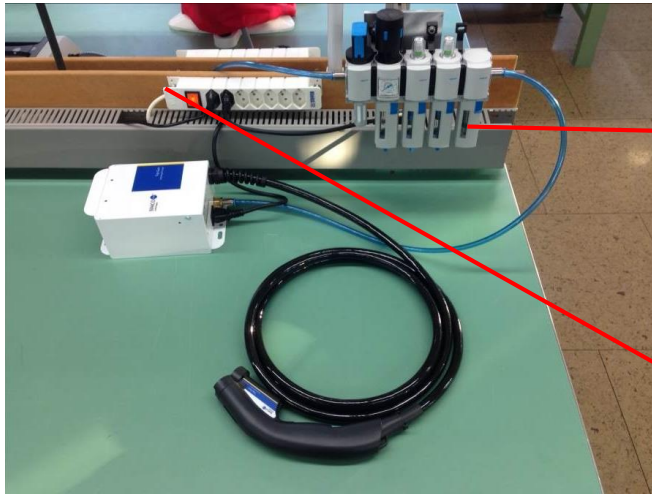
Fisa Ultrasonic
cleaning line
(sodium soaps)

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.



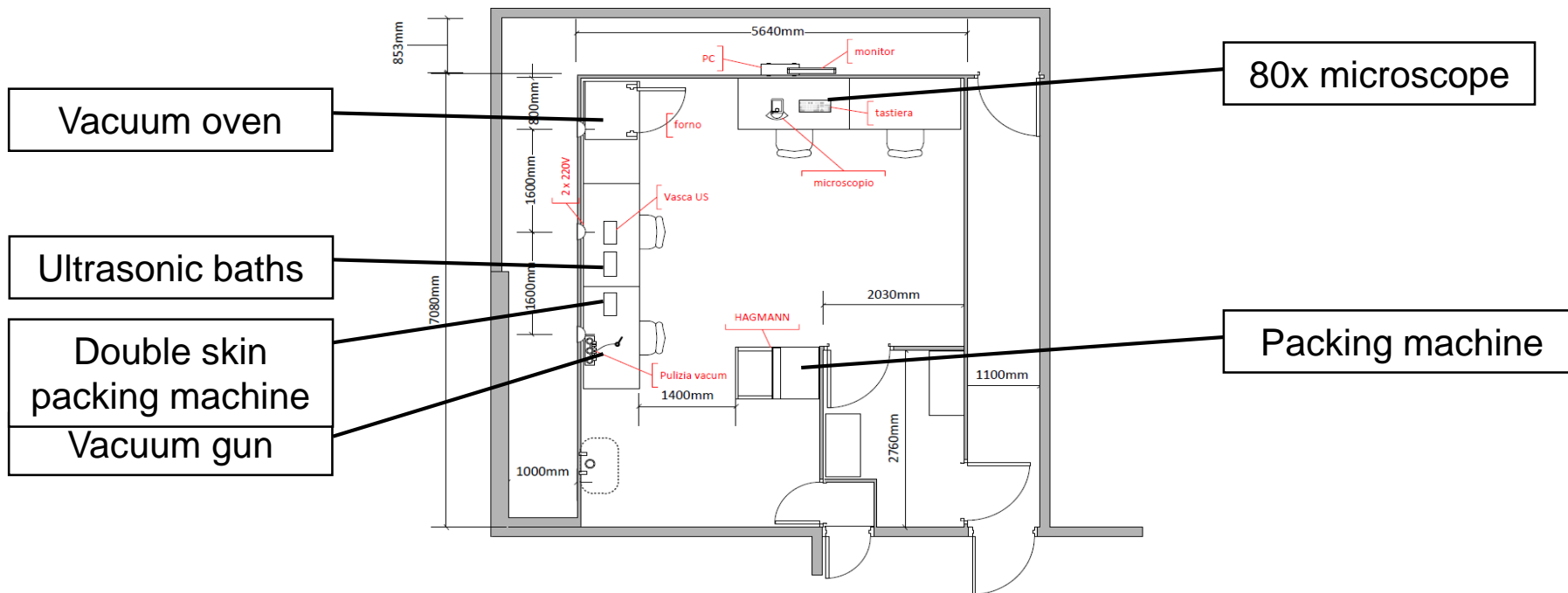
Filters:

- 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



Cleaning (inside cleanroom)

■ 3 Ultrasonic baths with:

- Acetone
- IPA
- Deionised water



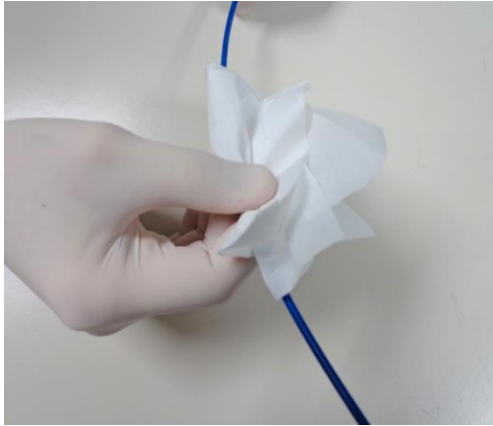
■ Compatible materials:

- 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: 15oC – 200oC (59oF – 392 oF)

→ 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)

