

# Product Index

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 Messe München GmbH, Am Messesee 2, 81829 München, Germany

## A Cluster Semiconductor

- |   |   |
|---|---|
| <b>1 Semiconductor production</b>                   | 1.1 Wafer front-end processing<br>1.2 Wafer back-end processing/Advanced Packaging/Chiplets<br>1.3 Production of power electronics (IGBT, Power MOSFET, Thyristors, etc.)<br>1.4 Measurement and control systems for semiconductor production<br>1.5 Packaging and assembly materials<br>1.6 Electronic components<br>1.7 Electronic applications |
| <b>2 Production of displays, LEDs and discretes</b> | 2.1 Display manufacturing<br>2.2 Manufacturing of Light Emitting Diodes (LED)<br>2.3 Manufacturing of discrete components (resistors, capacitors, transistors, diodes)  |
| <b>3 Photovoltaics production</b>                   | 3.1 Materials for Photovoltaics<br>3.2 Photovoltaic production technology<br>3.3 Factory planning and -equipment for photovoltaics  |
| <b>4 micronano-production/MEMS</b>                  | 4.1 Materials/substances<br>4.2 Production equipment<br>4.3 Test, measurement and adaptation equipment for microtechnology<br>4.4 Assembly and packaging technology, microintegration<br>4.5 Microtechnology applications<br>4.6 Nanotechnology   |
| <b>5 Clean room technology</b>                      | 5.1 Clean rooms<br>5.2 Clean-room maintenance and control<br>5.3 Clean-room equipment<br>5.4 Clean-room equipment for personnel   |
| <b>6 Materials processing</b>                       | 6.1 Mechanical processing other than PCB<br>6.2 Thermal treatment<br>6.3 Welding<br>6.4 Chemical and electroplate processing<br>6.5 Fastening, connecting<br>6.6 Laser material-processing systems<br>6.7 System periphery for laser-based manufacturing  |

## B Cluster PCB & EMS

- |  |  |
|--|--|
| <b>7 PCB and circuit-carrier manufacturing</b>   | 7.1 Base materials<br>7.2 Circuit-printing tools and photomasters<br>7.3 Tools, machines and accessories for PCB processing<br>7.4 Generating circuit structure<br>7.5 Chemical processing of PCBs<br>7.6 Heat treatment, drying<br>7.7 Solder-resist technology<br>7.8 Legend printing<br>7.9 Molded Interconnect Device (MID) production<br>7.10 Printed Circuit Board (PCB) handling<br>7.11 Special machines for power electronics<br>7.12 Special machines for the production of high frequency devices |
| <b>8 Electronic Manufacturing Services (EMS)</b> | 8.1 EMS for component/chip carrier manufacturing<br>8.2 EMS for component assembly and Advanced Packaging<br>8.3 Development-related services  |

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## C Cluster SMT

- 9 Component mount technology, pick & place**
- 9.1 Component preparation
  - 9.2 Component mount techniques, component mounting
  - 9.3 Production
  - 9.4 Handling technology

- 10 Soldering and joining technology for PCBs**
- 10.1 Solders and soldering aids
  - 10.2 Paste application systems and stencils
  - 10.3 Soldering units
  - 10.4 Soldering equipment
  - 10.5 Soldering accessories
  - 10.6 Gluing, dispensing, varnishing, coating

- 11 Test and measurement, quality assurance**
- 11.1 Visual inspection, image processing, with AI
  - 11.2 Materials testing
  - 11.3 Measurement technology for non-electrical parameters
  - 11.4 Measurement technology for electrical parameters
  - 11.5 Test and measurement systems
  - 11.6 Conveyors, handling systems, test adapters
  - 11.7 Laboratory/test station equipment

- 12 Product finishing**
- 12.1 Repair and rework
  - 12.2 Programming equipment, memory components
  - 12.3 Protective coating and potting
  - 12.4 Hybrids
  - 12.5 Housings
  - 12.6 Electronic protective devices (EMC/ESD)

- 13 Production subsystems**
- 13.1 Assembly and handling technology, Advanced Packaging
  - 13.2 Drive technology
  - 13.3 Systems for production data acquisition (PDA)

- 14 Production logistics and material-flow technology**
- 14.1 Information acquisition
  - 14.2 Purchasing, Supply Chain Management
  - 14.3 Merchandise management systems
  - 14.4 Logistics management
  - 14.5 Material-flow control
  - 14.6 Transportation and conveyor technology
  - 14.7 Storage technology and commissioning systems
  - 14.8 Packaging technology
  - 14.9 Complete solutions and turnkey systems for logistics

## D Cluster Cables, Coils & Hybrids

- 15 Production technologies for cables and connectors**
- 15.1 Cable and wire processing
  - 15.2 Tools for wiring
  - 15.3 Cable-processing equipment
  - 15.4 Others
  - 15.5 Cable-protection devices
  - 15.6 Processing equipment for cable-protection devices
  - 15.7 Technology for detachable connections, connectors

- 16 Coilware production**
- 16.1 Materials for coilware
  - 16.2 Production equipment for coilware
  - 16.3 Applications for coilware

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## 17 Hybrid-component manufacturing

- 17.1 Tooling and mouldmaking
- 17.2 Tools, tool equipment
- 17.3 Assembly and handling technology, periphery
- 17.4 Stamping
- 17.5 Shaping
- 17.6 Surface-finishing equipment, refinement
- 17.7 Injection molding for plastics
- 17.8 Metal/plastic composite technologies
- 17.9 Process and quality control/Automation

## E Cluster Future Production—Smart Factory

### 18 Industry 4.0

- 18.1 Autonomous inter-connected micro systems, sensor and actuator networks, cyber physical systems
- 18.2 Software: basic systems and development tools
- 18.3 Machine software
- 18.4 Manufacturing software
- 18.5 Business software
- 18.6 Software services
- 18.7 Application specific software

### 19 Production technologies for batteries and electrical energy storage

- 19.1 Materials and components for batteries and electrical energy storage
- 19.2 Equipment for batteries and electrical energy storage
- 19.3 Inspection and test systems for batteries and electrical energy storage
- 19.4 Accumulators

### 20 Organic and printed electronics

- 20.1 Materials and components
- 20.2 Manufacturing equipment
- 20.3 Inspection and test systems
- 20.4 Applications and devices

### 21 3D Printing, Additive Manufacturing

- 21.1 Production equipment and process technology
- 21.2 Sub systems and machine components
- 21.3 Materials

## F Cluster Overall Production Support

### 22 Production materials/equipment and environmental technology

- 22.1 Preliminary products and semi-finished goods, metallic
- 22.2 Preliminary products and semi-finished goods, non-metallic
- 22.3 Process materials
- 22.4 Plant equipment
- 22.5 Decontamination, cleaning, disposal (environmental management)
- 22.6 Recirculation systems, supply, recycling

### 23 Services

- 23.1 Information management
- 23.2 Production services except EMS
- 23.3 Used machines, systems, equipment
- 23.4 Brainware and Sales
- 23.5 Other services

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## A Cluster Semiconductor

<b>1</b>	<b>Semiconductor production</b>	1.1.4.2.14	Evaporator inserts
<b>1.1</b>	<b>Wafer front-end processing</b>	1.1.4.2.15	Reactors for epitaxy
<b>1.1.1</b>	<b>Wafers and substrates</b>	<b>1.1.5</b>	<b>Etching equipment</b>
<b>1.1.1.1</b>	<b>Materials</b>	1.1.5.1	Ion-etching equipment
1.1.1.1.1	Wafers made of semiconductor material	1.1.5.2	Wet-etching equipment
1.1.1.1.2	Ceramic substrates	1.1.5.3	Etching plasma generators
1.1.1.1.3	Thin-film substrates (glass/ceramic)	1.1.5.4	Spray etchers
1.1.1.1.4	Glass wafers	1.1.5.5	Plasma-, sputter-etching equipment
1.1.1.1.5	Semiconductor semi-finished parts, miscellaneous	<b>1.1.6</b>	<b>Drying equipment</b>
1.1.1.1.6	Ceramic foils	1.1.6.1	Continuous dryers
1.1.1.1.7	Process gases	1.1.6.2	UV dryers
<b>1.1.1.2</b>	<b>Production equipment</b>	1.1.6.3	IR dryers
<b>1.1.1.2.1</b>	<b>Crystal growing systems and substrate treatment</b>	1.1.6.4	Vacuum dryers
1.1.1.2.1.1	Melt growth	<b>1.1.7</b>	<b>Equipment for mechanical machining</b>
1.1.1.2.1.2	Gas-phase growth	1.1.7.1	Polishing devices/machines for semiconductor technology
1.1.1.2.1.3	Tempering ovens	1.1.7.2	Scribers and automatic scribers
1.1.1.2.2	Polishing tools	1.1.7.3	Lapping equipment
1.1.1.2.3	Other tools for wafer processing	1.1.7.4	Separating/trimming/scribing lasers
<b>1.1.2</b>	<b>Mask and artwork generation</b>	1.1.7.5	Wafer-cleaning systems
1.1.2.1	Mask production equipment	1.1.7.6	Wafer saws
1.1.2.2	Resist-coating systems	1.1.7.7	Wafer dicing equipment
<b>1.1.2.3</b>	<b>Beam sources for exposure equipment</b>	<b>1.1.8</b>	<b>Manufacturing and machining equipment, miscellaneous</b>
1.1.2.3.1	Lasers for exposure equipment	1.1.8.1	Plasma equipment, miscellaneous
1.1.2.3.2	UV exposure light sources	1.1.8.2	Spray process machines, miscellaneous
<b>1.1.3</b>	<b>Lithography</b>	1.1.8.3	Photoresist stripping systems
<b>1.1.3.1</b>	<b>Lithography equipment</b>	1.1.8.4	Substrate-cleaning systems
1.1.3.1.1	Microlithography equipment	1.1.8.5	Wafer washers
1.1.3.1.2	Contact exposure equipment	<b>1.1.8.6</b>	<b>Semiconductor technology process equipment, miscellaneous</b>
1.1.3.1.3	Optical steppers	1.1.8.6.1	Gas; liquid delivery panels as subsystems
1.1.3.1.4	Laser writing equipment	1.1.8.6.2	Handling; transfer; loading systems; lifting devices
<b>1.1.3.2</b>	<b>Lithography materials</b>	1.1.8.6.3	Temperature sensing; control; recirculators; chillers; heat exchangers
1.1.3.2.1	Resists, Developers & Ancillaries (incl. Adhesion promoter HMDS); Primer	<b>1.1.9</b>	<b>Wafer/substrate handling</b>
1.1.3.2.2	AR coatings	1.1.9.1	CTC wafer-handling equipment
1.1.3.2.3	Developers	1.1.9.2	Wafer-cassette equipment
<b>1.1.4</b>	<b>Thin-film generation</b>	1.1.9.3	Wafer storage/shipping containers
<b>1.1.4.1</b>	<b>Materials</b>	1.1.9.4	Wafer mounters
1.1.4.1.1	Epitaxial materials	1.1.9.5	Wafer/tape laminators/de-laminators
1.1.4.1.2	Process materials, thin-film technology, miscellaneous	1.1.9.6	Wafer transfer systems
1.1.4.1.3	Quartzware (silicon carbide, fused quartz glass, sapphire), ceramics	1.1.9.7	Wafer/chip manipulators
1.1.4.1.4	Vapor deposition materials	1.1.9.8	Marking equipment
1.1.4.1.5	Strippers	1.1.9.9	Wafer/substrate handling systems, miscellaneous
1.1.4.1.6	Sputter targets	<b>1.2</b>	<b>Wafer back-end processing/Advanced Packaging/Chiplets</b>
1.1.4.1.7	Lapping, polishing and grinding agents	<b>1.2.1</b>	<b>Chip handling</b>
1.1.4.1.8	Process chemicals, Cleaning Chemicals, Solvents, miscellaneous	1.2.1.1	Component handlers
<b>1.1.4.2</b>	<b>Production equipment</b>	1.2.1.2	Component-handling machines, specialized
1.1.4.2.1	Diffusion ovens	1.2.1.3	Die sorters
1.1.4.2.2	Dosing devices	1.2.1.4	Sorting equipment for components
1.1.4.2.3	Heat treatment equipment for microstructuring, miscellaneous	1.2.1.5	Lifter modules
1.1.4.2.4	Cathode sputter equipment, PVD	1.2.1.6	Coordinate tables
1.1.4.2.5	CVD equipment, MOCVD; PECVD; LPCVD; ALD; REALD; MVD	1.2.1.7	Piezo actuators
1.1.4.2.6	Electron-beam deposition equipment	1.2.1.8	Process carriers
1.1.4.2.7	High-vacuum evaporation equipment	1.2.1.9	Transport carriers
1.1.4.2.8	Ion-beam coating equipment	1.2.1.10	Micromanipulators
1.1.4.2.9	Oxidation equipment	1.2.1.11	Micropositioning
1.1.4.2.10	Plasma coating systems	1.2.1.12	Positioning systems, miscellaneous
1.1.4.2.11	Plasma polymerization units	1.2.1.13	Chip-handling equipment, miscellaneous
1.1.4.2.12	Vacuum coating equipment	<b>1.2.2</b>	<b>Bonding</b>
1.1.4.2.13	Vacuum components	1.2.2.1	Pre-contacting processes
		1.2.2.2	Plasma cleaning and activation equipment

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<b>1.2.2.3</b>	<b>Chip carriers</b>	<b>1.5</b>	<b>Packaging and assembly materials</b>
1.2.2.3.1	Semi-finished CC goods (metal/plastic)	<b>1.6</b>	<b>Electronic components</b>
1.2.2.3.2	Plastic-chip carriers (PCC)	<b>1.7</b>	<b>Electronic applications</b>
1.2.2.3.3	Ceramic-chip carriers (including LTCC configurations)	<b>2</b>	<b>Production of displays, LEDs and discretes</b>
<b>1.2.2.4</b>	<b>Internal connections</b>	<b>2.1</b>	<b>Display manufacturing</b>
1.2.2.4.1	Bonding wires/tapes	<b>2.1.1</b>	<b>Substrate processing for displays</b>
1.2.2.4.2	Die bonders	2.1.1.1	Aligners, exposer systems for displays
1.2.2.4.3	Flip-chip bonders	2.1.1.2	CVD equipment for displays
1.2.2.4.4	Bonders, miscellaneous	2.1.1.3	Laser-annealing systems
1.2.2.4.5	Bumping systems	2.1.1.4	Substrate processing for displays, miscellaneous
1.2.2.4.6	Dispensing systems	<b>2.1.2</b>	<b>Materials, parts</b>
<b>1.2.2.5</b>	<b>Tools</b>	2.1.2.1	Substrate materials
1.2.2.5.1	Ultrasonic bonders	2.1.2.2	Spacers for displays
1.2.2.5.2	Ultrasonic generators	2.1.2.3	Functional organic materials (OLED)
1.2.2.5.3	Ultrasonic transducers	2.1.2.4	Photomasks
1.2.2.5.4	Ultrasound metrology	2.1.2.5	Functional films, laminates for displays
1.2.2.5.5	Contacting equipment, miscellaneous	2.1.2.6	Resins, adhesives for displays
1.2.2.5.6	Welding equipment for microconnections	2.1.2.7	Materials, parts, miscellaneous
1.2.2.5.7	Resistance soldering/welding equipment	<b>2.1.3</b>	<b>Panel processing</b>
1.2.2.5.8	Bonding tools, miscellaneous	<b>2.1.3.1</b>	<b>Printers</b>
<b>1.2.3</b>	<b>Chip packaging</b>	2.1.3.1.1	Screen printers
1.2.3.1	Housings	2.1.3.1.2	Inkjet printers
<b>1.2.3.2</b>	<b>Caps and encapsulations, encapsulation equipment</b>	2.1.3.1.3	Flexo printers
1.2.3.2.1	Protective component caps	2.1.3.1.4	Display separation equipment
1.2.3.2.2	Glass, passivation/encapsulation	<b>2.2</b>	<b>Manufacturing of Light Emitting Diodes (LED)</b>
1.2.3.2.3	Ball-grid array packages	<b>2.2.1</b>	<b>Materials, components</b>
1.2.3.2.4	Potting compounds, encapsulations	2.2.1.1	Substrates (Sapphire, SiC, bulk Si, bulk GaN, composites, InP; SiGe, etc.)
1.2.3.2.5	Encapsulation materials, miscellaneous	2.2.1.2	Material for buffer layers
1.2.3.2.6	Encapsulations and encapsulation equipment, miscellaneous	2.2.1.3	Material for emitter layers, compound semiconductors
1.2.3.2.7	Epoxy-processing equipment	2.2.1.4	Optical components
1.2.3.2.8	Sealants	2.2.1.5	Reflectors
1.2.3.2.9	Molding presses	2.2.1.6	Components for LED Package
1.2.3.2.10	Molding tools	2.2.1.7	Resins, material for sealing
<b>1.2.3.3</b>	<b>Protective coatings for devices</b>	<b>2.2.2</b>	<b>Manufacturing equipment</b>
<b>1.2.3.3.1</b>	<b>Impregnating equipment for devices</b>	2.2.2.1	Sapphire wafer equipment (crystal growth, sawing, grinding)
1.2.3.3.1.1	Impregnating machines for metal	2.2.2.2	Silicon carbide wafer equipment (crystal growth, sawing, grinding)
1.2.3.3.1.2	Vacuum pressure impregnating machines	2.2.2.3	Wafer equipment for other LED-related semiconductors
1.2.3.3.1.3	Atmospheric pressure impregnating machines	2.2.2.4	Lithography
1.2.3.3.1.4	Impregnating machines for laboratory and special applications	2.2.2.5	Etching
<b>1.2.3.4</b>	<b>Potting equipment</b>	2.2.2.6	Metallization
1.2.3.4.1	Potting mixing/dosing equipment	2.2.2.7	Dicing
1.2.3.4.2	Vacuum potting systems	2.2.2.8	Pick-and-place
1.2.3.4.3	Atmospheric potting systems	2.2.2.9	Die attach
1.2.3.4.4	R&D and specialized potting systems	2.2.2.10	Bonding
1.2.3.4.5	Automatic pressure gelation (APG)	2.2.2.11	Phosphor coating
1.2.3.4.6	Bearings and conveyor equipment for cast resins	2.2.2.12	Packaging, sealing, housing
1.2.3.4.7	Additional potting equipment, miscellaneous	<b>2.2.2.13</b>	<b>Equipment for epitaxy</b>
1.2.3.5	Drying and hardening systems	2.2.2.13.1	Organic/Organo-metallic vapour phase deposition (OMVPE, MOCVD)
<b>1.3</b>	<b>Production of power electronics (IGBT, Power MOSFET, Thyristors, etc.)</b>	<b>2.2.3</b>	<b>Test systems</b>
1.3.1	Materials	2.2.3.1	Life time test systems
1.3.2	Machines and production equipment	2.2.3.2	Photometric test systems
1.3.3	Housing and components	2.2.3.3	LED test systems, miscellaneous
1.3.4	Sinter oven	<b>2.3</b>	<b>Manufacturing of discrete components (resistors, capacitors, transistors, diodes)</b>
<b>1.4</b>	<b>Measurement and control systems for semiconductor production</b>	2.3.1	Materials for discrete components
1.4.1	Monitoring and control units for clean-room technology	<b>2.3.2</b>	<b>Equipment for manufacturing of discrete components</b>
1.4.2	Monitoring systems, process-specific	2.3.2.1	Small parts precision manufacturing equipment
1.4.3	Positioning controllers		
1.4.4	Control equipment, miscellaneous, application-specific		
1.4.5	Computer, control, communication; data acquisition systems		

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2.3.2.2	Vacuum technology equipment	3.2.2.8	Automation and handling equipment
2.3.2.3	Laser-processing equipment for discrete components	3.2.2.9	Vacuum technology
2.3.2.4	Surface-finishing equipment	3.2.2.10	Measurement tools/process control/environmental monitoring
2.3.2.5	Continuous furnaces	3.2.2.11	Equipment for thin-film production, miscellaneous
2.3.2.6	Drying/curing equipment, miscellaneous	<b>3.2.3</b>	<b>Equipment for new generation solar cells</b>
2.3.2.7	Finishing equipment for discrete components	3.2.3.1	Equipment for concentrator photovoltaics (CPV)
2.3.2.8	Manufacturing equipment for capacitors	3.2.3.2	Equipment for other novel solar concepts
2.3.2.9	Manufacturing equipment for resistors	<b>3.3</b>	<b>Factory planning and -equipment for photovoltaics</b>
2.3.2.10	Manufacturing equipment for transistors/diodes	3.3.1	Waste-gas abatement/Waste-water treatment
2.3.2.11	Film casting equipment	3.3.2	Turnkey solutions
2.3.2.12	Processing equipment for discrete component manufacture, miscellaneous	<b>4</b>	<b>micronano-production/MEMS</b>
<b>3</b>	<b>Photovoltaics production</b>	<b>4.1</b>	<b>Materials/substances</b>
<b>3.1</b>	<b>Materials for Photovoltaics</b>	4.1.1	Substrate materials for microtechnology
3.1.1	Polysilicon, wafers (silicon, III-V semiconductors, aso.)	4.1.2	Nanomaterials
3.1.2	Materials for organic photovoltaics and novel solar cells	4.1.3	Materials for micro/nano technology, miscellaneous
3.1.3	Glass substrates for thin-film photovoltaics	<b>4.2</b>	<b>Production equipment</b>
3.1.4	Process chemicals	<b>4.2.1</b>	<b>Mask and artwork generation</b>
3.1.5	Sputter targets	4.2.1.1	CA mask generation
3.1.6	Materials for evaporation and CVD	4.2.1.2	Resist-coating systems
3.1.7	Solder pastes	<b>4.2.1.3</b>	<b>Exposure tools</b>
3.1.8	Ribbons	4.2.1.3.1	Pattern generators
3.1.9	Adhesives	4.2.1.3.2	Laser writing equipment
3.1.10	Foils, laminates for encapsulation/modular technology	4.2.1.3.3	Exposure equipment, miscellaneous
<b>3.2</b>	<b>Photovoltaic production technology</b>	4.2.1.4	Mask handling systems
<b>3.2.1</b>	<b>Equipment for wafer-based photovoltaics</b>	<b>4.2.2</b>	<b>Lithography, substrate processing</b>
<b>3.2.1.1</b>	<b>Ingot and wafer production</b>	4.2.2.1	Microlithography equipment
3.2.1.1.1	Crystal growing equipment	4.2.2.2	Contact-printing equipment
3.2.1.1.2	Wafer inspection	4.2.2.3	Laser writing equipment
<b>3.2.1.2</b>	<b>Cell production</b>	4.2.2.4	E-beam writers
3.2.1.2.1	Wafer texturing	<b>4.2.3</b>	<b>Production technology for microsystems</b>
3.2.1.2.2	Diffusion furnaces	4.2.3.1	Photo lithography
3.2.1.2.3	Etching equipment (wet etch, laser)	4.2.3.2	Double-sided lithography
3.2.1.2.4	Deposition equipment (PECVD, Sputtering)	4.2.3.3	UV depth lithography systems
3.2.1.2.5	Printers for front and backside contacts	4.2.3.4	Thin-film technology
3.2.1.2.6	Print screens for metallisation	4.2.3.5	Etching techniques
3.2.1.2.7	Drying furnaces/Fast-firing furnaces	4.2.3.6	RIE (reactive ion etching)
3.2.1.2.8	Equipment for cell production, miscellaneous	4.2.3.7	Laser ablation systems
<b>3.2.1.3</b>	<b>Module production</b>	4.2.3.8	Doping techniques
3.2.1.3.1	Tabbers/Stringers/Soldering ovens/Bonder	<b>4.2.4</b>	<b>Tool and mould making</b>
3.2.1.3.2	Laminators	4.2.4.1	Micro tools
3.2.1.3.3	Framing units	4.2.4.2	Prototype/sample manufacturing
3.2.1.3.4	Module test/Quality inspection	4.2.4.3	Rapid prototyping
3.2.1.3.5	Equipment for module production, miscellaneous	4.2.4.4	Rapid tooling
<b>3.2.1.4</b>	<b>Equipment for crystalline photovoltaics, miscellaneous</b>	<b>4.2.5</b>	<b>Micromachining and ultra-precision manufacturing</b>
3.2.1.4.1	Loaders/Unloaders	4.2.5.1	Micro tools
3.2.1.4.2	Automation, assembly and handling equipment	4.2.5.2	Micro milling machines
3.2.1.4.3	Laser processing equipment (sawing, drilling, edge isolation, marking)	4.2.5.3	Drills for micromechanics
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#### 14.4.2 Engineering, development and planning for logistics

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- 22.2.1.6 Industrial laminates (sheets, rods, tubes)
- 22.2.1.7 Thermoplastic molded parts/semi-finished goods
- 22.2.1.8 Silicones and silicone parts

# Product Index

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22.2.1.9	Molded ceramic parts/semi-finished goods, miscellaneous	22.4.4.7	ESD packaging
22.2.1.10	Plastic parts, miscellaneous	22.4.4.8	Antistatic products, miscellaneous
22.2.1.11	Insulated molded parts/semi-finished goods, miscellaneous	22.4.5	Work safety equipment
<b>22.2.2</b>	<b>Materials, miscellaneous</b>	<b>22.4.6</b>	<b>Plant fittings, miscellaneous</b>
22.2.2.1	Masks (including UV-curable)	22.4.6.1	Power supplies higher than 3 kW
22.2.2.2	Sealants	22.4.6.2	Workshop equipment, miscellaneous
22.2.2.3	Seals	22.4.6.3	Protection materials, miscellaneous
22.2.2.4	Foils, insulating	<b>22.5</b>	<b>Decontamination, cleaning, disposal (environmental management)</b>
<b>22.3</b>	<b>Process materials</b>	22.5.1	Decontamination
<b>22.3.1</b>	<b>Lacquers</b>	<b>22.5.2</b>	<b>Cleaners</b>
22.3.1.1	Photographic laminates (resists)	22.5.2.1	Solvents/cleaners
22.3.1.2	Protective lacquers	22.5.2.2	Defluxers
22.3.1.3	Solder mask lacquers	22.5.2.3	Stencil cleaners
22.3.1.4	Insulating paints/lacquers	22.5.2.4	Ultrasonic cleaning equipment
<b>22.3.2</b>	<b>Metals</b>	22.5.2.5	Cleaning agents, miscellaneous
22.3.2.1	Precious metals	<b>22.5.3</b>	<b>Strippers</b>
22.3.2.2	Metals/alloys, pure/ultra-pure	22.5.3.1	Photo-laminate strippers
22.3.2.3	Metallic powders	22.5.3.2	Tin strippers
<b>22.3.3</b>	<b>Chemicals</b>	22.5.3.3	Strippers, miscellaneous
22.3.3.1	Electronics chemicals	<b>22.5.4</b>	<b>Equipment and systems</b>
22.3.3.2	Process chemicals, miscellaneous	22.5.4.1	Final-cleaning equipment (before population)
22.3.3.3	Solvents	22.5.4.2	Sterilization equipment, UV
22.3.3.4	Chemicals, miscellaneous	22.5.4.3	Semi-aqueous cleaning systems
<b>22.3.4</b>	<b>Insulating materials</b>	22.5.4.4	Lead-frame cleaning systems
22.3.4.1	Insulating resins	22.5.4.5	Film/surface cleaning units
22.3.4.2	Impregnation insulating materials	22.5.4.6	Low-profile component cleaning systems
22.3.4.3	Insulating materials, miscellaneous	22.5.4.7	Plasma-cleaning systems
<b>22.3.5</b>	<b>Plastics</b>	22.5.4.8	Screen-washing equipment
22.3.5.1	Elastomers	22.5.4.9	Underwipe cleaning
22.3.5.2	Polyester materials	22.5.4.10	Rinsing equipment, specialized
22.3.5.3	Polyamides	22.5.4.11	Substrate-cleaning equipment
22.3.5.4	Polymer materials, miscellaneous	22.5.4.12	Reflow cleaning equipment
22.3.5.5	Antistatic PE foam	22.5.4.13	In-line washing stations
22.3.5.6	Plastics, miscellaneous	22.5.4.14	Ionizers
<b>22.3.6</b>	<b>Gases</b>	22.5.4.15	Cleaning equipment, specialized, miscellaneous
22.3.6.1	Gases for semiconductor technology	22.5.4.16	Washing/rinsing equipment, specialized, miscellaneous
22.3.6.2	Industrial gases	22.5.4.17	Ultrasonic cleaning systems
22.3.6.3	Gases, miscellaneous	22.5.5	Peripheral systems
<b>22.3.7</b>	<b>Process materials, miscellaneous</b>	<b>22.5.6</b>	<b>Waste gas abatement</b>
22.3.7.1	Glass powders	22.5.6.1	Waste gas abatement/exhaust extraction equipment
22.3.7.2	Compound materials	22.5.6.2	Chip/dust extraction equipment
<b>22.4</b>	<b>Plant equipment</b>	22.5.6.3	Environmental protection equipment, miscellaneous
<b>22.4.1</b>	<b>Clothing</b>	<b>22.5.7</b>	<b>Scraping</b>
22.4.1.1	Antistatic clothing	22.5.7.1	Scrap-electronics disassembly equipment
22.4.1.2	Clean-room garments	22.5.7.2	Obsolete electronic parts reprocessing equipment
<b>22.4.2</b>	<b>Furniture</b>	<b>22.6</b>	<b>Recirculation systems, supply, recycling</b>
22.4.2.1	Office/lab furniture	22.6.1	Preparation equipment, miscellaneous
22.4.2.2	Vibration-proof tables	<b>22.6.2</b>	<b>Consumables for preparation equipment</b>
22.4.2.3	Lab desks	22.6.2.1	Filter materials
22.4.2.4	Stand-up aids	22.6.2.2	Ultra-pure water filtration systems
<b>22.4.3</b>	<b>Equipment</b>	22.6.2.3	Filtration equipment, miscellaneous
22.4.3.1	Workstations, specialized	22.6.2.4	Resist filter systems in recirculation
22.4.3.2	Lighting equipment	22.6.2.5	Exhaust gas absorbers
22.4.3.3	Floor coverings, specialized	22.6.2.6	Waste-water treatment chemicals
22.4.3.4	Climate control equipment	<b>22.6.3</b>	<b>Supply systems</b>
22.4.3.5	Modular workstation systems	22.6.3.1	Chemical supply/feed systems
<b>22.4.4</b>	<b>ESD protection</b>	22.6.3.2	Ultra-pure gas supply systems
22.4.4.1	ESD working environment	22.6.3.3	Ultra-pure water supply systems
22.4.4.2	ESD personnel grounding	22.6.3.4	Rinse-water circulation systems
22.4.4.3	ESD floor systems	22.6.3.5	Gas management systems
22.4.4.4	ESD clean-room products	22.6.4	Exchangers, miscellaneous
22.4.4.5	ESD protection	<b>22.6.5</b>	<b>Armatures</b>
22.4.4.6	EGB workstation equipment		

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22.6.5.1	Valves, connectors	<b>23.2.5</b>	<b>Test and measurement services</b>
22.6.5.2	Vacuum valves	23.2.5.1	Test and test design services
22.6.5.3	Pumps and pumping systems	23.2.5.2	Measurement and calibration services
22.6.5.4	Vacuum pumps	23.2.5.3	Acceptance and approval services
<b>22.6.6</b>	<b>Cleaning</b>	<b>23.3</b>	<b>Used machines, systems, equipment</b>
22.6.6.1	Process-water purification equipment (recirculation)	23.3.1	Plants
22.6.6.2	Waste-water treatment equipment	23.3.2	Machines
22.6.6.3	Etching-solvent reclamation equipment	23.3.3	Used machines, systems and plants, miscellaneous
22.6.6.4	Cleaning equipment, miscellaneous	<b>23.4</b>	<b>Brainware and Sales</b>
<b>22.6.7</b>	<b>Recycling</b>	<b>23.4.1</b>	<b>Consulting</b>
22.6.7.1	Metal recycling	23.4.1.1	Research institutes
22.6.7.2	Reclamation equipment, miscellaneous	23.4.1.2	Professional and trade associations
<b>23</b>	<b>Services</b>	23.4.1.3	Information services and training
<b>23.1</b>	<b>Information management</b>	23.4.1.4	Consultants, miscellaneous
23.1.1	Technical books	<b>23.4.2</b>	<b>Engineering services</b>
23.1.2	Technical journals and periodicals	23.4.2.1	Production line optimization
23.1.3	Publications, miscellaneous	23.4.2.2	Setup concepts
23.1.4	Databases, incl. online accessible	<b>23.4.3</b>	<b>Process optimization</b>
23.1.5	Product-information systems	23.4.3.1	Training
23.1.6	Information, miscellaneous	23.4.3.2	Education
<b>23.2</b>	<b>Production services except EMS</b>	23.4.3.3	Process optimization
<b>23.2.1</b>	<b>Production services for semiconductors</b>	23.4.3.4	Quality analysis
23.2.1.1	Chip bonding	<b>23.4.4</b>	<b>Sales</b>
23.2.1.2	Chip packaging	23.4.4.1	Equipment sales
23.2.1.3	Contacting services	23.4.4.2	Sales of production services
<b>23.2.2</b>	<b>Services for material machining</b>	23.4.4.3	Manufacturers representation; distributors; sales, miscellaneous
23.2.2.1	Laser welding/cutting	<b>23.5</b>	<b>Other services</b>
23.2.2.2	Plating subcontractors	23.5.1	Procurement services
23.2.2.3	Surface treatment	23.5.2	Financial services
23.2.2.4	Metal machining	23.5.3	Parylene coatings
23.2.2.5	Manufacturing precision lathed and milled parts	23.5.4	Maintenance services
<b>23.2.3</b>	<b>Production services for components</b>	23.5.5	Repair services
23.2.3.1	Belting services	23.5.6	Disposal services
23.2.3.2	Testing/adjusting of component connections	23.5.7	Packaging of material and liquids
<b>23.2.4</b>	<b>Services for cable processing</b>	23.5.8	Component database generation
23.2.4.1	Cable assembly	23.5.9	Other services, miscellaneous