



**IUCLID 5**  
INTERNATIONAL UNIFORM CHEMICAL INFORMATION DATABASE

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

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# Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

## Uses by workers in industrial settings

<b>EU: REACH</b>	
<b>Identified use name</b>	Feedstock
<b>Process category</b>	<p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 7: Industrial spraying</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p>
<b>Environmental release category</b>	<p>ERC 1: Manufacture of substances</p> <p>ERC 2: Formulation of preparations</p> <p>ERC 3: Formulation in materials</p> <p>ERC 5: Industrial use resulting in inclusion into or onto a matrix</p>
<b>Substance supplied to that use in form of</b>	As such
<b>Market sector by type of chemical product</b>	PC 19: Intermediate
<b>Sector of end use</b>	<p>SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)</p> <p>SU 9: Manufacture of fine chemicals</p> <p>SU 13: Manufacture of other non-metallic mineral products, e.g. plasters, cement</p>
<b>Subsequent service life relevant for that use?</b>	yes

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

### EU: REACH

<b>Identified use name</b>	Ceramics
<b>Process category</b>	<p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 6: Calendering operations</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p>
<b>Environmental release category</b>	<p>ERC 1: Manufacture of substances</p> <p>ERC 2: Formulation of preparations</p> <p>ERC 3: Formulation in materials</p> <p>ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>ERC 10a: Wide dispersive outdoor use of long-life articles and materials with low release</p> <p>ERC 10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)</p> <p>ERC 11a: Wide dispersive indoor use of long-life articles and materials with low release</p>
<b>Substance supplied to that use in form of</b>	<p>As such</p> <p>In a mixture</p>
<b>Market sector by type of chemical product</b>	PC 19: Intermediate
<b>Sector of end use</b>	<p>SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)</p> <p>SU 9: Manufacture of fine chemicals</p>

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

	SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
	SU 13: Manufacture of other non-metallic mineral products, e.g. plasters, cement
	SU 16: Manufacture of computer, electronic and optical products, electrical equipment
	SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
<b>Subsequent service life relevant for that use?</b>	yes
<b>Article category related to subsequent service life</b>	AC 2: Machinery, mechanical appliances, electrical/electronic articles
	AC 4: Stone, plaster, cement, glass and ceramic articles

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

### EU: REACH

<b>Identified use name</b>	Refractories
<b>Process category</b>	<p>PROC 1: Use in closed process, no likelihood of exposure</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 7: Industrial spraying</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 13: Treatment of articles by dipping and pouring</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>PROC 19: Hand-mixing with intimate contact and only PPE available.</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p>
<b>Environmental release category</b>	<p>ERC 1: Manufacture of substances</p> <p>ERC 2: Formulation of preparations</p> <p>ERC 3: Formulation in materials</p> <p>ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>ERC 7: Industrial use of substances in closed systems</p> <p>ERC 8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix</p> <p>ERC 10a: Wide dispersive outdoor use of long-life articles and materials with low release</p> <p>ERC 11a: Wide dispersive indoor use of long-life articles and materials with low release</p>
<b>Substance supplied to that use in form of</b>	As such

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

	In a mixture
<b>Market sector by type of chemical product</b>	PC 7: Base metals and alloys PC 14: Metal surface treatment products, including galvanic and electroplating products PC 19: Intermediate PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products
<b>Sector of end use</b>	SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU 13: Manufacture of other non-metallic mineral products, e.g. plasters, cement SU 14: Manufacture of basic metals, including alloys SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU 19: Building and construction work
<b>Subsequent service life relevant for that use?</b>	yes
<b>Article category related to subsequent service life</b>	AC 4: Stone, plaster, cement, glass and ceramic articles

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

### EU: REACH

<b>Identified use name</b>	Glass
<b>Process category</b>	<p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p>
<b>Environmental release category</b>	<p>ERC 1: Manufacture of substances</p> <p>ERC 2: Formulation of preparations</p> <p>ERC 3: Formulation in materials</p> <p>ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)</p>
<b>Substance supplied to that use in form of</b>	As such
<b>Market sector by type of chemical product</b>	PC 19: Intermediate
<b>Sector of end use</b>	SU 13: Manufacture of other non-metallic mineral products, e.g. plasters, cement
<b>Subsequent service life relevant for that use?</b>	yes
<b>Article category related to subsequent service life</b>	<p>AC 2: Machinery, mechanical appliances, electrical/electronic articles</p> <p>AC 4: Stone, plaster, cement, glass and ceramic articles</p>

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

### EU: REACH

<b>Identified use name</b>	Abrasives
<b>Process category</b>	<p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 7: Industrial spraying</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 10: Roller application or brushing</p> <p>PROC 13: Treatment of articles by dipping and pouring</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p>
<b>Environmental release category</b>	<p>ERC 1: Manufacture of substances</p> <p>ERC 2: Formulation of preparations</p>
<b>Substance supplied to that use in form of</b>	<p>As such</p> <p>In a mixture</p>
<b>Market sector by type of chemical product</b>	<p>PC 14: Metal surface treatment products, including galvanic and electroplating products</p> <p>PC 15: Non-metal-surface treatment products</p> <p>PC 19: Intermediate</p> <p>PC 25: Metal working fluids</p> <p>PC 31: Polishes and wax blends</p> <p>PC 34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids</p> <p>PC 39: Cosmetics, personal care products</p>
<b>Sector of end use</b>	<p>SU 6b: Manufacture of pulp, paper and paper products</p> <p>SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)</p> <p>SU 9: Manufacture of fine chemicals</p>



## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)  
SU 11: Manufacture of rubber products  
SU 13: Manufacture of other non-metallic mineral products, e.g. plasters, cement  
SU 15: Manufacture of fabricated metal products, except machinery and equipment  
SU 16: Manufacture of computer, electronic and optical products, electrical equipment  
SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment  
SU 18: Manufacture of furniture  
SU 19: Building and construction work  
SU 23: Electricity, steam, gas water supply and sewage treatment

**Subsequent service life relevant for that use?**    yes

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

### EU: REACH

<b>Identified use name</b>	Fillers
<b>Process category</b>	<p>PROC 1: Use in closed process, no likelihood of exposure</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 6: Calendering operations</p> <p>PROC 7: Industrial spraying</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 10: Roller application or brushing</p> <p>PROC 13: Treatment of articles by dipping and pouring</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected</p> <p>PROC 19: Hand-mixing with intimate contact and only PPE available.</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles</p> <p>PROC 25: Other hot work operations with metals</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p>
<b>Environmental release category</b>	<p>ERC 1: Manufacture of substances</p> <p>ERC 2: Formulation of preparations</p> <p>ERC 3: Formulation in materials</p> <p>ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles</p> <p>ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>ERC 6b: Industrial use of reactive processing aids</p>

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

	<p>ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>ERC 6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers</p> <p>ERC 10a: Wide dispersive outdoor use of long-life articles and materials with low release</p> <p>ERC 11a: Wide dispersive indoor use of long-life articles and materials with low release</p>
<b>Substance supplied to that use in form of</b>	<p>As such</p> <p>In a mixture</p>
<b>Market sector by type of chemical product</b>	<p>PC 1: Adhesives, sealants</p> <p>PC 7: Base metals and alloys</p> <p>PC 9a: Coatings and paints, thinners, paint removes</p> <p>PC 9b: Fillers, putties, plasters, modelling clay</p> <p>PC 18: Ink and toners</p> <p>PC 19: Intermediate</p> <p>PC 26: Paper and board dye, finishing and impregnation products: including bleaches and other processing aids</p> <p>PC 32: Polymer preparations and compounds</p> <p>PC 35: Washing and cleaning products (including solvent based products)</p> <p>PC 39: Cosmetics, personal care products</p>
<b>Sector of end use</b>	<p>SU 5: Manufacture of textiles, leather, fur</p> <p>SU 6b: Manufacture of pulp, paper and paper products</p> <p>SU 7: Printing and reproduction of recorded media</p> <p>SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)</p> <p>SU 9: Manufacture of fine chemicals</p> <p>SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)</p> <p>SU 11: Manufacture of rubber products</p> <p>SU 12: Manufacture of plastics products, including compounding and conversion</p> <p>SU 13: Manufacture of other non-metallic mineral products, e.g. plasters, cement</p> <p>SU 14: Manufacture of basic metals, including alloys</p> <p>SU 15: Manufacture of fabricated metal products, except machinery and equipment</p> <p>SU 16: Manufacture of computer, electronic and optical products, electrical equipment</p> <p>SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment</p> <p>SU 18: Manufacture of furniture</p> <p>SU 19: Building and construction work</p> <p>SU 20: Health services</p>
<b>Subsequent service life relevant for that use?</b>	<p>yes</p>

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses



**Article category related to subsequent service life**

- AC 1: Vehicles
- AC 5: Fabrics, textiles and apparel
- AC 7: Metal articles
- AC 8: Paper articles
- AC 10: Rubber articles
- AC 13: Plastic articles

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

### EU: REACH

<b>Identified use name</b>	Water treatment
<b>Process category</b>	PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 15: Use as laboratory reagent
<b>Environmental release category</b>	ERC 7: Industrial use of substances in closed systems ERC 10b: Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)
<b>Substance supplied to that use in form of</b>	As such In a mixture
<b>Market sector by type of chemical product</b>	PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents PC 37: Water treatment chemicals
<b>Sector of end use</b>	SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
<b>Subsequent service life relevant for that use?</b>	yes

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

### EU: REACH

<b>Identified use name</b>	Industrial applications
<b>Process category</b>	<p>PROC 1: Use in closed process, no likelihood of exposure</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 7: Industrial spraying</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 10: Roller application or brushing</p> <p>PROC 12: Use of blowing agents in manufacture of foam</p> <p>PROC 13: Treatment of articles by dipping and pouring</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p>
<b>Environmental release category</b>	<p>ERC 1: Manufacture of substances</p> <p>ERC 2: Formulation of preparations</p> <p>ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles</p> <p>ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)</p> <p>ERC 6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers</p> <p>ERC 10a: Wide dispersive outdoor use of long-life articles and materials with low release</p>
<b>Substance supplied to that use in form of</b>	<p>As such</p> <p>In a mixture</p>
<b>Market sector by type of chemical product</b>	<p>PC 2: Adsorbents</p> <p>PC 3: Air care products</p> <p>PC 19: Intermediate</p>

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

	PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents
	PC 21: Laboratory chemicals
	PC 24: Lubricants, greases, release products
	PC 25: Metal working fluids
	PC 26: Paper and board dye, finishing and impregnation products: including bleaches and other processing aids
	PC 32: Polymer preparations and compounds
	PC 34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids
<b>Sector of end use</b>	SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)
	SU 9: Manufacture of fine chemicals
	SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
<b>Subsequent service life relevant for that use?</b>	yes

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

### EU: REACH

<b>Identified use name</b>	Others: e.g. lubricants and greases, chemical reagents...
<b>Process category</b>	<p>PROC 1: Use in closed process, no likelihood of exposure</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 7: Industrial spraying</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 10: Roller application or brushing</p> <p>PROC 13: Treatment of articles by dipping and pouring</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected</p> <p>PROC 17: Lubrication at high energy conditions and in partly open process</p> <p>PROC 19: Hand-mixing with intimate contact and only PPE available.</p> <p>PROC 20: Heat and pressure transfer fluids in dispersive, professional use but closed systems</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting</p> <p>PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p>
<b>Environmental release category</b>	<p>ERC 1: Manufacture of substances</p> <p>ERC 2: Formulation of preparations</p> <p>ERC 3: Formulation in materials</p> <p>ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles</p> <p>ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p>



# Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

	<p>ERC 6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers</p> <p>ERC 7: Industrial use of substances in closed systems</p> <p>ERC 10a: Wide dispersive outdoor use of long-life articles and materials with low release</p>
<b>Substance supplied to that use in form of</b>	<p>As such</p> <p>In a mixture</p>
<b>Market sector by type of chemical product</b>	<p>PC 1: Adhesives, sealants</p> <p>PC 7: Base metals and alloys</p> <p>PC 12: Fertilisers</p> <p>PC 14: Metal surface treatment products, including galvanic and electroplating products</p> <p>PC 16: Heat transfer fluids</p> <p>PC 17: Hydraulic fluids</p> <p>PC 19: Intermediate</p> <p>PC 21: Laboratory chemicals</p> <p>PC 24: Lubricants, greases, release products</p> <p>PC 25: Metal working fluids</p> <p>PC 27: Plant protection products</p> <p>PC 29: Pharmaceuticals</p> <p>PC 30: Photo-chemicals</p> <p>PC 31: Polishes and wax blends</p> <p>PC 32: Polymer preparations and compounds</p> <p>PC 33: Semiconductors</p> <p>PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products</p>
<b>Sector of end use</b>	<p>SU 1: Agriculture, forestry and fishing</p> <p>SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)</p> <p>SU 9: Manufacture of fine chemicals</p> <p>SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)</p> <p>SU 12: Manufacture of plastics products, including compounding and conversion</p> <p>SU 13: Manufacture of other non-metallic mineral products, e.g. plasters, cement</p> <p>SU 14: Manufacture of basic metals, including alloys</p> <p>SU 15: Manufacture of fabricated metal products, except machinery and equipment</p> <p>SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment</p> <p>SU 19: Building and construction work</p> <p>SU 23: Electricity, steam, gas water supply and sewage treatment</p>
<b>Subsequent service life relevant for that use?</b>	<p>yes</p>

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses



<b>Article category related to subsequent service life</b>	AC 2: Machinery, mechanical appliances, electrical/electronic articles
	AC 8: Paper articles
	AC 10: Rubber articles

# Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

## Uses by professional workers

### EU: REACH

<b>Identified use name</b>	Fillers
<b>Process category</b>	PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 10: Roller application or brushing PROC 11: Non industrial spraying PROC 13: Treatment of articles by dipping and pouring PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 15: Use as laboratory reagent PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected PROC 19: Hand-mixing with intimate contact and only PPE available. PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 26: Handling of solid inorganic substances at ambient temperature
<b>Environmental release category</b>	ERC 2: Formulation of preparations ERC 3: Formulation in materials ERC 8a: Wide dispersive indoor use of processing aids in open systems ERC 8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC 8d: Wide dispersive outdoor use of processing aids in open systems ERC 8e: Wide dispersive outdoor use of reactive substances in open systems ERC 8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC 10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC 11a: Wide dispersive indoor use of long-life articles and materials with low release
<b>Substance supplied to that use in form of</b>	As such In a mixture
<b>Market sector by type of chemical product</b>	PC 1: Adhesives, sealants PC 9a: Coatings and paints, thinners, paint removes PC 9b: Fillers, putties, plasters, modelling clay PC 9c: Finger paints PC 18: Ink and toners PC 26: Paper and board dye, finishing and impregnation products: including bleaches and other processing aids PC 35: Washing and cleaning products (including solvent based products)
<b>Sector of end use</b>	SU 5: Manufacture of textiles, leather, fur

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

	SU 7: Printing and reproduction of recorded media
	SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
	SU 18: Manufacture of furniture
	SU 19: Building and construction work
	SU 20: Health services
<b>Subsequent service life relevant for that use?</b>	yes
<b>Article category related to subsequent service life</b>	AC 1: Vehicles
	AC 5: Fabrics, textiles and apparel
	AC 7: Metal articles
	AC 8: Paper articles
	AC 10: Rubber articles
	AC 13: Plastic articles

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

### EU: REACH

<b>Identified use name</b>	Others: e.g. lubricants and greases, chemical reagents...
<b>Process category</b>	<p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 10: Roller application or brushing</p> <p>PROC 11: Non industrial spraying</p> <p>PROC 13: Treatment of articles by dipping and pouring</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>PROC 19: Hand-mixing with intimate contact and only PPE available.</p> <p>PROC 20: Heat and pressure transfer fluids in dispersive, professional use but closed systems</p> <p>PROC 21: Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC 26: Handling of solid inorganic substances at ambient temperature</p>
<b>Environmental release category</b>	<p>ERC 2: Formulation of preparations</p> <p>ERC 3: Formulation in materials</p> <p>ERC 8a: Wide dispersive indoor use of processing aids in open systems</p> <p>ERC 8d: Wide dispersive outdoor use of processing aids in open systems</p> <p>ERC 9a: Wide dispersive indoor use of substances in closed systems</p> <p>ERC 9b: Wide dispersive outdoor use of substances in closed systems</p> <p>ERC 10a: Wide dispersive outdoor use of long-life articles and materials with low release</p>
<b>Substance supplied to that use in form of</b>	<p>As such</p> <p>In a mixture</p>
<b>Market sector by type of chemical product</b>	<p>PC 1: Adhesives, sealants</p> <p>PC 8: Biocidal products (e.g. disinfectants, pest control)</p> <p>PC 12: Fertilisers</p> <p>PC 14: Metal surface treatment products, including galvanic and electroplating products</p> <p>PC 16: Heat transfer fluids</p> <p>PC 17: Hydraulic fluids</p> <p>PC 21: Laboratory chemicals</p> <p>PC 24: Lubricants, greases, release products</p> <p>PC 25: Metal working fluids</p> <p>PC 29: Pharmaceuticals</p> <p>PC 31: Polishes and wax blends</p> <p>PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products</p>
<b>Sector of end use</b>	SU 1: Agriculture, forestry and fishing

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

	SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
	SU 19: Building and construction work
<b>Subsequent service life relevant for that use?</b>	yes
<b>Article category related to subsequent service life</b>	AC 2: Machinery, mechanical appliances, electrical/electronic articles
	AC 8: Paper articles
	AC 10: Rubber articles

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

### Uses by consumers

**EU: REACH**

<b>Identified use name</b>	Ceramics
<b>Chemical product category</b>	PC 0: Other: UCN Codes: AO5200, EO7400, EO7900,P15500,R30200
<b>Environmental release category</b>	ERC 2: Formulation of preparations ERC 3: Formulation in materials ERC 8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC 8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC 10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC 11a: Wide dispersive indoor use of long-life articles and materials with low release
<b>Subsequent service life relevant for that use?</b>	yes
<b>Article category related to subsequent service life</b>	AC 2: Machinery, mechanical appliances, electrical/electronic articles AC 4: Stone, plaster, cement, glass and ceramic articles

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

**EU: REACH**

<b>Identified use name</b>	Abrasives
<b>Chemical product category</b>	PC 14: Metal surface treatment products, including galvanic and electroplating products PC 15: Non-metal-surface treatment products PC 31: Polishes and wax blends PC 34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids PC 39: Cosmetics, personal care products
<b>Environmental release category</b>	ERC 2: Formulation of preparations ERC 8a: Wide dispersive indoor use of processing aids in open systems ERC 8d: Wide dispersive outdoor use of processing aids in open systems
<b>Subsequent service life relevant for that use?</b>	yes



# Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

**EU: REACH**

<b>Identified use name</b>	Fillers
<b>Chemical product category</b>	PC 1: Adhesives, sealants PC 9a: Coatings and paints, thinners, paint removes PC 9b: Fillers, putties, plasters, modelling clay PC 9c: Finger paints PC 18: Ink and toners PC 26: Paper and board dye, finishing and impregnation products: including bleaches and other processing aids PC 35: Washing and cleaning products (including solvent based products) PC 39: Cosmetics, personal care products
<b>Environmental release category</b>	ERC 2: Formulation of preparations ERC 3: Formulation in materials ERC 8a: Wide dispersive indoor use of processing aids in open systems ERC 8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC 8d: Wide dispersive outdoor use of processing aids in open systems ERC 8e: Wide dispersive outdoor use of reactive substances in open systems ERC 8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC 10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC 11a: Wide dispersive indoor use of long-life articles and materials with low release
<b>Subsequent service life relevant for that use?</b>	yes
<b>Article category related to subsequent service life</b>	AC 1: Vehicles AC 5: Fabrics, textiles and apparel AC 7: Metal articles AC 8: Paper articles AC 10: Rubber articles AC 13: Plastic articles

## Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

**EU: REACH**

<b>Identified use name</b>	Personal care
<b>Chemical product category</b>	PC 39: Cosmetics, personal care products
<b>Environmental release category</b>	ERC 2: Formulation of preparations
<b>Subsequent service life relevant for that use?</b>	yes

# Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses

**EU: REACH**

<b>Identified use name</b>	Others: e.g. lubricants and greases, chemical reagents....
<b>Chemical product category</b>	PC 1: Adhesives, sealants PC 8: Biocidal products (e.g. disinfectants, pest control) PC 12: Fertilisers PC 14: Metal surface treatment products, including galvanic and electroplating products PC 16: Heat transfer fluids PC 17: Hydraulic fluids PC 24: Lubricants, greases, release products PC 25: Metal working fluids PC 29: Pharmaceuticals PC 31: Polishes and wax blends PC 38: Welding and soldering products (with flux coatings or flux cores.), flux products
<b>Environmental release category</b>	ERC 2: Formulation of preparations ERC 3: Formulation in materials ERC 8a: Wide dispersive indoor use of processing aids in open systems ERC 8d: Wide dispersive outdoor use of processing aids in open systems ERC 9a: Wide dispersive indoor use of substances in closed systems ERC 9b: Wide dispersive outdoor use of substances in closed systems ERC 10a: Wide dispersive outdoor use of long-life articles and materials with low release
<b>Subsequent service life relevant for that use?</b>	yes
<b>Article category related to subsequent service life</b>	AC 2: Machinery, mechanical appliances, electrical/electronic articles AC 8: Paper articles AC 10: Rubber articles

## **Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) identified uses**



### **Most common technical functions of the substance**

Technical function of substance (what it does) other: refractories, ceramics

### **Significant routes of exposure**

#### **Human exposure**

Oral; By inhalation

#### **Pattern of exposure**

Occasional