

2. MANUFACTURE AND USES

Table 2.1. Quantities (in tonnes/year)

Year	Tonnages (tonnes per year)

2.1. Manufacture

Table 2.2. Manufacture

	Manufacture
M-1	<p>manufacture of synthetic amorphous silicon dioxide <u>Further description of manufacturing process:</u> Production Processes of Synthetic Amorphous Silica (SAS) Descriptor list for Process Categories (PROC) The process categories define tasks, or process types from the occupational perspective. The PROCs are also differentiated by taking into account the exposure potential for workers during the respective tasks or process types. This descriptor can be assigned to workers' activities contributing to a use. For the industrial manufacturing of SAS the following Process Categories apply:</p> <p>PROC1 - Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. PROC2 - Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 - Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 - Chemical production where opportunity for exposure arises PROC5 - Mixing or blending in batch processes PROC7 - Industrial spraying PROC8b - Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing)</p> <p>Wet process routes The primary raw material for all wet route production SAS (precipitated silica, silica gels, and colloidal silica) is water glass (CAS# 1344-09-8; Na₂O*xSiO₂, x=2 to 4), which is an aqueous sodium silicate solution. Water-glass is the source of the "building block", the SiO₄⁴⁻ unit, of all wet process SAS materials. During the different processes (described below) variation/control of pH, salt content, temperature, time and shear forces will define primary particle, aggregate and agglomerate size and morphology of SAS. Basic principles of particle genesis are described in the literature, e.g. Iler, R. K. (1979). The Chemistry of Silica: Solubility, Polymerization, Colloid and Surface Properties and Biochemistry of Silica, John Wiley & Sons. (Chapter 3) Flörke, O. W., et al. (2000). Silica. Ullmann's Encyclopedia of Industrial Chemistry, Wiley-VCH Verlag GmbH & Co. KGaA.</p> <p>Wet process - Precipitated SAS Precipitated SAS is produced by the precipitation of diluted aqueous alkali metal silicates, e.g. water glass solution with an acid (e.g. dilute sulfuric acid or dilute hydrochloric acid) according to the equation below, using the more typical sulfuric acid: (Na₂O*xSiO₂) + H₂SO₄ → Na₂SO₄ + xSiO₂ + H₂O</p>

Variation/control of speed of addition of the components, solid content, pH, salt content, temperature, residence time in the vessel, and shear (mixing speed) will define primary particle, aggregate and agglomerate sizes and pore size/pore size distribution of precipitated SAS.

All these parameter may vary over a wide range and thus accomplish the design of SAS with the equal composition, but quite different properties. E.g., while primary and agglomerate sizes are correlated to the BET surface area of the final product, pore volume is pre-defined by aggregate and agglomerate structure. Hydrothermal conditions (increase pH and temperature) may be applied to reduce BET and increase aggregate/agglomerate strength while maintaining the primary particle size.

The solid content of the precipitation step is filtered, washed with water to modify specific attributes of the product and to remove by-products chemical such as sodium sulfate and sodium chloride.

Drying conditions (temperature, speed of drying, type of drying aggregate, etc.) again will influence aggregate strength and pore structure of the silica.

After drying the precipitated SAS can be sold as produced or can be post-processed (e.g. micronized, granulated, milled, classified) to achieve the specified particle size distribution and morphologies.

Then the product is packed.

Surface treated Precipitated SAS

Surface treatment of precipitated silica is typically a batch operation performed in an indirectly heated stirred reactor under inert atmosphere. Alternatively a continuous reactor may be used.

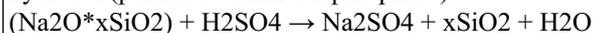
Dry silica powder is mixed with suitable surface treating substances (e.g. silanes, silicones, siloxanes and other including inorganic treatment agents) at elevated temperatures, the cracking products reacting with the surface silanol groups, followed by purging with an inert gas stream. The latter helps also to eliminate traces of unreacted silicone fragments.

Alternatively the surface treating substances can be added before washing and drying.

The surface coated product may be packed directly, milled, classified or granulated to achieve the specified particle size distribution.

Wet process – Silica Gel

The initial silica gel production step is the batch neutralization of sodium silicate at 35 – 80 °C with a diluted mineral acid (typically sulfuric acid but also hydrochloric acid is used) to form a hydrosol (particles within a liquid phase).



A hydrogel is formed within a specific time frame at ambient temperature through crosslinking of the hydrosols. The formed hydrogel is sized, washed with water/water with specific additives to remove salts and define properties of the gel and dried.

This basic process is used for all silica gels products. Variations of process conditions to generate higher pore volume and pore diameter are induced by washing and aging hydrogels under caustic conditions. Furthermore the pH of the silica gel can be determined by washing. One further variation involves fast drying which increases the pore volume and pore diameter of such gels. Several methods of forming hydrogel, typically into spherical shapes with a typical diameter between 4 to 30 nm, have been developed which all have the base structure of strongly fused aggregates in common.

Production Process of Colloidal Silica

The most important processes to make colloidal silica are based on neutralization of soluble silicates with acids, ion exchange, hydrolysis of silicon compounds, dispersion of pyrogenic silica aggregates (such aggregates are polydisperse but available in a size range below 100 nm), electro dialysis, dissolution of elemental silicon, and peptization of gels.

Currently, most commercial colloidal silica products are prepared by ion exchange of dilute solutions of sodium silicate. Sodium silicate can be deionized in a batch operation by adding simultaneously a dilute solution of sodium silicate and a cationic ion-exchange resin in the hydrogen form to a vigorously stirred weakly alkaline aqueous reaction medium in the pH range around 9, at 60 – 100°C. Under these conditions the system is stabilized against aggregation and the original silica nuclei grow while the sol concentration increases to about 10–15% silica. Rate of addition, pH, and temperature determine the particle size and quality of the colloidal silica.

After separation of the resin for regeneration, more sodium silicate is added to adjust the SiO₂/Na₂O ratio as needed for further stabilization of the sol. The product is filtered and concentrated by partial evaporation of water to the desired level. Colloidal silica products of small particle size,

such as 5 or 7 nm, may be used as "heels" to build up the particle size, for example, to 14 or 22 nm. Larger particle sizes are technically achievable by a prolonged process time at higher dilution rate in water to avoid aggregation.

Colloidal silica can also be made by dispersion of pyrogenic silica in water. Commercial pyrogenic silica is made from silicon tetrachloride at high temperatures by a flame hydrolysis–oxidation process. The product is a highly aggregated silica powder. Pyrogenic silica can be disagglomerated and partially disaggregated (by high shear forces) and dispersed to obtain aqua-sols or organosols of relatively high silica concentration. The silica units in this case consist mainly of short chain-like aggregates composed of silica particles ca. 7–100 nm in diameter.

Viable processes for making commercial colloidal silica products are based on the electro dialysis of sodium silicate solutions to continuously remove sodium ions until a sol is obtained.

Monodisperse Colloidal Silica are stable disperse systems in which the dispersion medium is a liquid (most likely water) and the dispersed or solid phase is silicon dioxide (SiO₂). This state comprises particles with a size sufficiently small (<100 nm) not to appear affected by gravitational forces but sufficiently large (>1 nm) to show marked deviations from the properties of typical.

In commercial colloidal silica the disperse silica is amorphous and the dispersion medium in most cases is water. Dispersions in organic solvents are also commercially available (organosols) but not subject of the current registration dossier substance identity.

Colloidal Silica are fluid and stable toward gelation and settling. Most commercial forms are close to monodisperse and typically consist of dense discrete spheres with a diameter range between approx. 4 or 5 nm and 100 nm (monodisperse colloidal dispersions with particles above 100 nm in diameter have been reported in literature but are not included in the current substance identity profile and thus not included in the registration dossier) where the surface is charged either positively or negatively for stabilization. Stabilization in this context means avoid aggregation by fusing individual particles forming a polydisperse system or even larger aggregates. Also commercially available in the form of colloidal or powders are grades with aggregates between 0.1 and approx. 1.5 µm. Particle size, particle-size distribution, and concentration of solids determine the appearance of sols. Colloidal Silica products look milky if the particle size is large and the concentration is high, opalescent if the size is intermediate, or clear and almost colourless if the particles are of the smallest size range. The Volume Specific Surface Area (VSSA or BET) is determined by the particle size and the concentration of SiO₂ in the given particle size.

Applications of colloidal silica products are based on characteristics such as particle size, high specific surface area that gives them good binding ability, stability towards gelation and settling, and surface properties. These characteristics enable colloidal silica to be used in a wide variety of applications. Major uses are in investment casting, silicon-wafer polishing, and fibrous ceramics. The classic monodisperse colloidal silica products with a particle size between 5 – 100 nm are prepared by nucleation, polymerization, and growth in aqueous systems. The particle-size range can be extended to at least 300 nm by autoclaving however not covered by the underlying substance identity of this registration dossier.

An alternative method of deionizing sodium silicate is to pass a relatively dilute solution through a bed of ion-exchange resin to produce colloidal silica which is then stabilized with alkali and concentrated. The particles grow during evaporation. The addition of further deionized colloidal silica to the evaporating liquid allows silica to build up on previously nucleated particles resulting in larger particle size. Through a surface modification with aluminium compounds, the stability of colloidal silica products can be shifted to lower pH-values.

Colloidal silica products generally undergo irreversible precipitation of the silica if frozen.

Therefore, they are generally stored in heated buildings. If outdoor bulk storage is required, tanks should be heated and insulated in climates where freezing might occur. Heated trucks are typically used in cold climates for shipping colloidal silica products.

Colloidal silica is sometimes freeze-stabilized by addition of organic substances such as glycols. The amount added is insufficient to prevent freezing, but does prevent irreversible precipitation. Storage in plastic, fibre glass-reinforced plastic, stainless steel or lined steel tanks is usually recommended.

Thermal Route

Production of the pyrogenic SAS

Basic principles of pyrogenic silica particle formation:

Volatile chlorosilanes and/or methylchlorosilanes are fed into a reactor together with a mixture of hydrogen and air. A reaction takes place at temperatures between 1200 – 1600 °C and hydrolysis of the silanes leads to SiO₂ molecules. As the reaction mixture cools, nucleation, condensation and coagulation leads from molecules to proto-particles of SiO₂ which combine to form primary particles of SiO₂.

The principles of the particle forming mechanisms have been investigated for decades. Examples: (Ulrich 1971), (Ulrich, Milnes et al. 1976), (Ulrich and Subramanian 1977), Primary particles, under the conditions of the reaction zone stick together building stable SiO₂ aggregates. Primary particles do not exist outside the reaction zone.

Lit. Examples: (Tsantilis, Briesen et al. 2001, Gutsch, Krämer et al. 2002).

Recent HR-TEM investigations confirmed, that aggregates are made up of sintered primary particles, that don't exist independently in industrial pyrogenic SAS (Albers, Maier et al. 2015). Aggregates subsequently form agglomerates of SiO₂.

The feed for pyrogenic silica production are chlorosilanes (e.g. SiCl₄, HSiCl₃) and/or alkylchlorosilanes (e.g. methylchlorosilane CH₃SiCl₃).

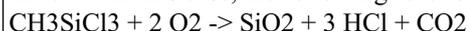
The chlorosilane feed is either produced directly for the synthesis of pyrogenic silica or is a by-product from other manufacturing processes (e.g. the production of pure silicon for the semiconductor industry). Alkylchlorosilanes are by-products from the silicone rubber industry.

The manufacture of pyrogenic silica uses: hydrogen, air and various blends of chlorinated silanes as feedstock.

The most common chlorinated feedstocks are silicon tetrachloride (SiCl₄), trichlorosilane (SiHCl₃) and methyltrichlorosilane (SiCH₃Cl₃):



It is also possible to use methyltrichlorosilane alone or mixed with silicon tetrachloride as the raw material. In this case, the following reaction takes place:



The raw materials: silane, hydrogen and air react in a flame zone of the reactor to yield silica. The gases leaving the reactor are cooled down with all of the silica in the form of an aerosol. The silica is then separated from the hydrochloric acid containing off-gas. Remaining hydrochloride adsorbed onto the surface of the pyrogenic silica is removed in a subsequent step.

The silica is transported pneumatically to storage silos and subsequently placed into bags or transported to consumers in bulk by road or rail.

Hydrogen chloride is washed out of the off-gas by absorption to give hydrochloric acid in commercial concentrations (e.g. it can be re-used by reacting it with metallurgical silicon to produce chlorosilanes, such as silicon tetrachloride, and hydrogen).

Chlorine is also a by-product and it is washed out of the off-gas (after absorption of hydrogen chloride) with caustic soda to yield sodium hypochlorite solution. This, in turn, is converted to sodium chloride solution via waste water treatment.

The properties of pyrogenic silica products can be controlled by varying process parameters, such as feedstock, flame composition and flame temperature.

For example, concentration of the raw material precursor, residence time in the flame, and the flame temperature will govern primary particle size and aggregate morphology. The wide range of reaction temperatures and reactant concentrations under which this hydrolysis and condensation pathway can occur is directly responsible for the wide range of surface areas and "grades" which are produced via this process.

Albers, P., et al. (2015). "Physical boundaries within aggregates – differences between amorphous, para-crystalline, and crystalline Structures." *Crystal Research and Technology* 50(11): 846-865.

Gutsch, A., et al. (2002). "Gas-Phase Production of Nanoparticles." *KONA Powder and Particle Journal* 20: 24-37.

Tsantilis, S., et al. (2001). "Sintering Time for Silica Particle Growth." *Aerosol Science and Technology* 34(3): 237-246.

Ulrich, G. D. (1971). "Theory of Particle Formation and Growth in Oxide Synthesis Flames." *Combustion Science and Technology* 4(1): 47-57.

Ulrich, G. D., et al. (1976). "Particle Growth in Flames. II: Experimental Results for Silica Particles." *Combustion Science and Technology* 14(4-6): 243-249.

Ulrich, G. D. and N. S. Subramanian (1977). "III. Coalescence as a Rate-Controlling Process." *Combustion Science and Technology* 17(3-4): 119-126.

Surface treated pyrogenic SAS

Surface treatment of SAS means the modification of the silica surface by a chemical reaction, thereby introducing a material onto the outermost layer of the silica. It is carried out to alter the property of hydrophobicity or introduce a functionality of the silica without changing its core properties.

During the treatment of hydrophilic SAS silanol groups react with with the organic groups of suitable silanes. The treatment component is covalently bound to the surface and can only be removed by severe chemical or thermal treatment, which would also alter the structure of the SAS. For sterical reasons the reaction is usually not stoichiometric, the carbon content at the surface of the silanized silica is typically lying below 20 wt-% however depending on the molecule size can be slightly higher.

Organosilanes used may have one, two or three hydrolysisable leaving groups, leading to the formation of one, two or three covalent bonds.

There are basically two general process routes to produce surface treated pyrogenic SAS:

1. Reaction of SAS directly (“on the fly”) after the flame process with e.g. halogenated silanes, alkyl silanes, silazanes, siloxanes etc..
2. Mixing of finished SAS with the treatment agent and thermal treatment to accomplish the reaction. This will be particularly done if the treatment agent carries a sensitive functional group that shall be maintained in the final surface treated SAS.

Contributing activity/technique for the environment :

- **manufacture of the substance (ERC1)**

Contributing activity/technique for the workers :

- **manufacture of the substance in closed process without likelihood of exposure (PROC 1)**
- **manufacture of the substance in closed continuous process with occasional controlled exposure (PROC 2)**
- **PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions**
- **manufacture of the substance where opportunity for exposure arises (PROC 4)**
- **transfer of the substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)**
- **transfer of the substance or mixture into small containers (dedicated filling line, including weighing (PROC 9)**

use registered according to REACH Article 10; total tonnage manufactured/imported \geq 10tonnes/year per registrant

Tonnage of substance for that use: tonnes/year

Related assessment: use assessed in a joint CSR

2.2. Identified uses

Table 2.3. Formulation

	Formulation
F-5	<p>formulation in rubber and tyre production, reinforcing filler</p> <p><u>Further description of the use:</u></p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - formulation into mixture (ERC2) - formulation into solid matrix (ERC3) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - formulation where opportunity of exposure arises (PROC 4) - mixing or blending in batch process (PROC 5) - transfer of substance or mixture at dedicated facilities (PROC 8b) - PROC 9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) <p>Product Category formulated: PC 32: Polymer preparations and compounds</p>

	<p>Technical function of the substance: filler ; reinforcing filler use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Related assessment: use assessed in a joint CSR</p>
F-4	<p>Formulation of coatings <u>Further description of the use:</u> Contributing activity/technique for the environment : - ERC2: Formulation into mixture (ERC2) Contributing activity/technique for the workers : - formulation in closed process without likelihood of exposure (PROC 1) - formulation in closed continuous process with occasional controlled exposure (PROC 2) - formulation in closed batch process with occasional controlled exposure (PROC 3) - formulation in batch and other process where opportunity for exposure arises (PROC 4) - Mixing or blending in batch processes for formulation of preparations and articles (PROC 5) - hand-mixing with intimate contact only PPE available (PROC 19) - PROC 8a: Transfer of substance or mixture at non-dedicated facilities (PROC 8a) - PROC 8b: Transfer of substance or mixture at dedicated facilities (PROC 8b) - PROC 9: Transfer of substance or mixture at dedicated facilities, including weighing (PROC 9) Product Category formulated: PC 9a: Coatings and paints, thinners, paint removes ; PC 9c: Finger paints ; PC 14: Metal surface treatment products ; PC 15: Non-metal-surface treatment products ; PC 18: Ink and toners ; PC 23: Leather treatment products ; PC 26: Paper and board treatment products ; PC 31: Polishes and wax blends ; PC 34: Textile dyes, and impregnating products Technical function of the substance: anticaking agent ; dispersing agent ; filler ; flame retardant ; flow promoter ; gelling modifier ; pigment ; processing aid ; stabilising agent ; thickener / thickening agent ; viscosity modifier ; anti corrosion use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Related assessment: use assessed in a joint CSR</p>
F-11	<p>formulation in pharmaceutical products <u>Further description of the use:</u> The use is regulated by following: Directive 2001/83/EC and Regulation (EC) No 726/2004 and amendments and is not covered under REACH No. 1907/2006 Contributing activity/technique for the environment : - formulation into mixture (ERC2) Contributing activity/technique for the workers : - formulation in closed process without likelihood of exposure (PROC 1) - formulation in closed continuous process with occasional controlled exposure (PROC 2) - formulation in closed batch process with occasional controlled exposure (PROC 3) - PROC 5: Mixing or blending in batch processes - PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities [EU REACH] - PROC 9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Product Category formulated: PC 29: Pharmaceuticals</p>

	<p>Technical function of the substance: anticaking agent ; filler ; thickener / thickening agent ; vehicle (carrier) ; moisture scavanger</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Substance supplied to that use: as such ; in a mixture</p> <p>Remarks:</p> <p>The use is regulated by following regulations: No. 2001/83/EC; No. 2004/726/EC; No 2011/62/EC; No. 2012/24/EC and is not covered under REACH</p> <p>Related assessment: use not assessed</p>
F-2	<p>Formulation or re-packing on-site for the production of insulation material</p> <p><u>Further description of the use:</u></p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - Formulation into solid matrix (ERC3) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - Formulation into solid matrix in closed batch process with occasional controlled exposure (PROC 3) - formulation into solid matrix where opportunity for exposure arises (PROC 4) - transfer of substance or mixture at non-dedicated facility (PROC 8a) - transfer of substance or mixture at dedicated facilities including weighing (PROC 9) <p>Product Category formulated: PC 0: Other: component of insulating material</p> <p>Technical function of the substance: filler ; insulators</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Substance supplied to that use: as such</p> <p>Related assessment:</p>
F-1	<p>Formulation or re-packing on-site for production of solid-solid or solid-liquid dispersions</p> <p><u>Further description of the use:</u></p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - formulation into mixture (ERC2) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - formulation in closed batch process with occasional controlled exposure (PROC 3) - formulation where opportunity for exposure arises (PROC 4) - PROC 5: Mixing or blending in batch processes - transfer of substance or mixture at dedicated facilities (PROC 8b) - transfer of substance or mixture at dedicated facilities, including weighing (PROC 9) <p>Product Category formulated: PC 0: Other: solid-solid and solid-liquid dispersions</p> <p>Technical function of the substance: component of the mixture</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Substance supplied to that use: as such</p> <p>Related assessment:</p>
F-10	<p>Formulation in washing and cleaning products</p> <p><u>Further description of the use:</u></p> <p>Washing and cleaning products are regulated by Regulation (EC) No 648/2004 on detergents and amendments and are not covered under REACH No. 1907/2006</p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - Formulation into mixture (ERC2) <p>Contributing activity/technique for the workers :</p>

	<ul style="list-style-type: none"> - Formulation in closed process without likelihood of exposure (PROC 1) - Formulation into mixture in closed continuous process with occasional exposure (PROC 2) - Formulation into mixture in closed batch process with occasional controlled exposure (PROC 3) - Formulation where opportunity of exposure arise (PROC 4) - mixing or blending in batch process (PROC 5) - tableting, compression, extrusio, pelletisation, granulation (PROC 14) - hand-mixing with contact (PROC 19) - transfer of substance or mixture at non-dedicated facilities (PROC 8a) - transfer of substance or mixture at dedicated facilities (PROC 8b) - transfer of substance or mixture including weighing (PROC 9) <p>Product Category formulated: PC 31: Polishes and wax blends ; PC 35: Washing and cleaning products</p> <p>Technical function of the substance: absorbent ; adsorbent ; anticaking agent ; filler ; thickener / thickening agent ; vehicle (carrier) ; viscosity modifier</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Substance supplied to that use: as such ; in a mixture</p> <p>Related assessment: use not assessed</p>
F-14	<p>Formulation in electronic industry</p> <p><u>Further description of the use:</u></p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - Formulation into mixture (ERC2) - Formulation into solid matrix (ERC3) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - PROC 1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions ; PROC 2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions ; PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions - manufacture or formulation in closed batch processes with occasional controlled exposure (PROC 3) - chemical production where opportunity of exposure arises (PROC 4) - mixing or blending in batch processes (PROC 5) - transfer of substance or mixture at dedicated facilities (PROC 8b) - transfer of substance or mixture including weighing (PROC 9) <p>Product Category formulated: PC 0: Other: component of batteries and electrodes</p> <p>Technical function of the substance: adsorbent ; filler ; thickener / thickening agent ; viscosity modifier ; polishing agent</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Substance supplied to that use: as such ; in a mixture</p> <p>Related assessment:</p>
F-13	<p>formulation in food and feed products</p> <p><u>Further description of the use:</u></p> <p>Food and feed products and food and feed additives are regulated by the EU Regulations No. 178/2002; No. 1831/2003 and No. 1333/2008 and amendments</p>

	<p>and are not covered under REACH No. 1907/2006 Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - formulation into mixture (ERC2) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - PROC 1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions ; PROC 2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions ; PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions - chemical production where opportunity of exposure arises (PROC 4) - mixing in batch process (PROC 5) - transfer of substance or mixture at dedicated facilities (PROC 8b) - transfer of substance or mixture including weighing (PROC 9) <p>Product Category formulated: PC 0: Other: food and feed products Technical function of the substance: anticaking agent ; filler ; thickener / thickening agent ; vehicle (carrier) use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Remarks: Food and feed products and food and feed additives are regulated by the EU Regulations No. 178/2002; No. 1831/2003 and No. 1333/2008 and are not covered under REACH Related assessment: use not assessed</p>
F-9	<p>Formulation in biocidal products <u>Further description of the use:</u> The use is regulated by the following EU Regulations: BPR (EU) No. 528/2012 and amendments and is not covered under REACH No. 1907/2006 Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - formulation into mixture (ERC2) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - formulation in closed process without likelihood of exposure (PROC 1) - formulation in closed continuous process with occasional controlled exposure (PROC 2) - formulation in closed batch process with occasional controlled exposure (PROC 3) - formulation where opportunity for rexposure arises (PROC 4) - transfer of substance or mixture at dedicated facilities (PROC 8b) - transfer of substance or mixture at non-dedicated facilities (PROC 8a) - transfer of substance or mixture including weighing (PROC 9) <p>Product Category formulated: PC 8: Biocidal products (e.g. disinfectants, pest control) ; PC 27: Plant protection products Technical function of the substance: adsorbent ; anticaking agent ; biocide ; filler ; processing aid ; thickener / thickening agent ; vehicle (carrier) ; viscosity modifier use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Remarks: The use is regulated by the following EU Regulations: BPR (EU) No. 528/2012 and amendments and is not covered under REACH No. 1907/2006. Related assessment: use not assessed</p>

F-3	<p>Formulation of non-metal surface treatment solutions/dispersions <u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - ERC2: Formulation into mixture (ERC2) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - formulation in closed process without likelihood of exposure (PROC 1) - formulation in closed continuous process with occasional exposure (PROC 2) - formulation in closed batch process with occasional controlled exposure (PROC 3) - mixing or blending in batch process (PROC 5) - Transfer of substance or mixture at dedicated facilities (PROC 8b) - Transfer of substance or mixture at dedicated facilities, including weighing (PROC 9) <p>Product Category formulated: PC 9a: Coatings and paints, thinners, paint removes ; PC 15: Non-metal-surface treatment products ; PC 31: Polishes and wax blends ; PC 0: Other: filler, polishing agents, coating, anti-corrosion, matting agents Technical function of the substance: basic material for surface treatment use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such Related assessment: use assessed in a joint CSR</p>
F-6	<p>Formulation of sealants and adhesives <u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - Formulation into mixture (ERC2) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - chemical production in closed process without likelihood of exposure (PROC 1) - chemical production in closed continuous process with occasional exposure (PROC 2) - manufacture or formulation in closed batch process with occasional controlled exposure (PROC 3) - PROC 4: Use in batch and other process where opportunity for exposure arises (PROC 4) - PROC 5: Mixing or blending in batch processes for formulation or preparations and articles (PROC 5) - PROC 8a: Transfer of substance or preparation from/to vessels/large containers at non-dedicated facilities (PROC 8a) - PROC 8b: Transfer of substance or preparation from/to vessels/large containers at dedicated facilities (PROC 8b) - PROC 9: Transfer of substance or preparation into small containers (PROC 9) <p>Product Category formulated: PC 1: Adhesives, sealants Technical function of the substance: filler ; gelling modifier ; thickener / thickening agent ; viscosity modifier ; reinforcing filler use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Related assessment: use assessed in a joint CSR</p>
F-	<p>Formulation in hygiene and sanitary products <u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - ERC2: Formulation into mixture <p>Contributing activity/technique for the workers :</p>

	<p>- PROC 1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions ; PROC 2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions ; PROC 4: Chemical production where opportunity for exposure arises ; PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities [EU REACH]</p> <p>Product Category formulated: PC 2: Adsorbents ; PC 0: Other: Abrasive, adsorbent or absorbent, binding agent, desiccant, excipient, extraction agent, filler, flow modifier/free-flow agent, wetting agent, solubility enhancer, viscosity control agent/rheology control</p> <p>Technical function of the substance: abrasive ; absorbent ; adsorbent ; binder ; filler ; flow promoter ; solubility enhancer ; viscosity modifier</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Substance supplied to that use: as such ; in a mixture</p> <p>Related assessment:</p>
F-8	<p>Formulation of cosmetic products</p> <p><u>Further description of the use:</u> formulation and use is regulated by the following Regulation (EC) No 1223/2009 on cosmetic products and amendments and is not covered under REACH No. 1907/2006</p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - formulation into mixture (ERC2) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - formulation in closed process without likelihood of exposure (PROC 1) - formulation in closed continuous process with occasional controlled exposure (PROC 2) - formulation in closed batch process with occasional controlled exposure (PROC 3) - formulation where opportunity for exposure arises (PROC 4) - mixing or blending in batch process (PROC 5) - hand-mixing with intimate contact (PROC 19) - transfer of substance or mixture at dedicated facilities (PROC 8b) - transfer of substance or mixture at non-dedicated facilities (PROC 8a) - transfer of substance or mixture including weighing (PROC 9) <p>Product Category formulated: PC 39: Cosmetics, personal care products</p> <p>Technical function of the substance: abrasive ; adsorbent ; anticaking agent ; filler ; pigment ; thickener / thickening agent ; vehicle (carrier) ; viscosity modifier ; desiccant, excipient, extraction agent, wetting agent</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Substance supplied to that use: as such ; in a mixture</p> <p>Remarks: Further processing into cosmetic application, formulation and use is regulated by the following Regulation (EC) No 1223/2009 on cosmetic products and amendments and is not covered under REACH No. 1907/2006.</p> <p>Related assessment: use not assessed</p>
F-7	<p>non-aqueous polymer preparation, e.g. for silicone elastomers and general rubber goods (GRG) manufacturing, plastic additive and catalyst carrier</p> <p><u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - formulation into mixture (ERC2) - formulation into solid matrix (ERC3) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - formulation where opportunity of exposure arises (PROC 4)

	<ul style="list-style-type: none"> - mixing or blending in batch process (PROC 5) - transfer at dedicated facilities (PROC 8b) - Transfer at non-dedicated facilities (PROC 8a) - transfer including weighing (PROC 9) <p>Product Category formulated: PC 32: Polymer preparations and compounds Technical function of the substance: vehicle (carrier) ; reinforcing filler, strengthener, plastic additive and catalyst carrier use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Remarks: Exposure scenario 5 in CSR Related assessment: use assessed in a joint CSR</p>
F-	<p>Formulation of pulp, paper and board products Further description of the use: Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - ERC2: Formulation into mixture ; ERC3: Formulation into solid matrix <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - PROC 2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions - PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions - PROC 5: Mixing or blending in batch processes - PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities [EU REACH] <p>Product Category formulated: PC 32: Polymer preparations and compounds ; PC 0: Other: Adsorbent or Absorbent, defoamer, filler, driers, siccative, additives to improve printability and whiteness and opacity Technical function of the substance: absorbent ; adsorbent ; defoamer ; drier ; filler use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: Related assessment:</p>
F-	<p>Formulation in catalysts and adsorbens Further description of the use: Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - Formulation of preparation (ERC2) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - Use in closed batch process (PROC 1) - Use in closed batch process (synthesis or formulation) (PROC 2) - PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions - Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4) - Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a) - Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities (PROC 8b) - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC 9)

	<p>- Tableting, compressing, extrusion, pelletisation, granulation (PROC 14)</p> <p>Product Category formulated: PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents ; PC 21: Laboratory chemicals ; PC 0: Other: Intermediate; UCN P15500</p> <p>Technical function of the substance: adsorbent ; binder ; processing aid ; vehicle (carrier)</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Substance supplied to that use: as such ; in a mixture</p> <p>Related assessment: use assessed in a joint CSR</p>
--	---

Table 2.4. Uses at industrial sites

Uses at industrial sites	
IW-2	<p>non-aqueous polymer preparation, e.g. silicone elastomers and general rubber goods (GRG) manufacturing</p> <p>Further description of the use:</p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - use at industrial site leading to inclusion into/onto article (ERC5) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - chemical production where opportunity for exposure arises (PROC 4) - mixing or blending in batch process (PROC 5) - transfer of substance or mixture at dedicated facilities (PROC 8b) - transfer of substance or mixture including weighing (PROC 9) <p>Product Category used: PC 32: Polymer preparations and compounds</p> <p>Sector of end use: SU 11: Manufacture of rubber products ; SU 12: Manufacture of plastics products, including compounding and conversion ; SU 0: Other: manufacture of silicone products</p> <p>Technical function of the substance: thickener / thickening agent ; viscosity modifier ; reinforcing filler, catalyst carrier, plastic additive carrier</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Substance supplied to that use: as such ; in a mixture</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life: Plastic articles</p> <p>Related assessment: use assessed in a joint CSR</p>
IW-6	<p>use in pharmaceutical products</p> <p>Further description of the use:</p> <p>The use is regulated by following: Directive 2001/83/EC and Regulation (EC) No 726/2004 and amendments and is not covered under REACH No. 1907/2006</p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - use at industrial site leading to inclusion into/onto articles (ERC4) - use at industrial site leading to inclusion into/onto articles (ERC5) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - production in closed process without likelihood of exposure (PROC 1) - production in closed continuous process with occasional controlled exposure (PROC 2) - manufacture or formulation in closed batch process with occasional controlled exposure (PROC 3) - production where opportunity for exposure arises (PROC 4) - mixing or blending in batch process (PROC 5) - transfer of substance or mixture at dedicated facilities (PROC 8b) - transfer of substance or mixture including weighing (PROC 9) - tableting (PROC 14)

	<p>Product Category used: PC 29: Pharmaceuticals Sector of end use: SU 20: Health services Technical function of the substance: anticaking agent ; thickener / thickening agent ; vehicle (carrier) use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant Regulatory status: use in pharmaceutical products. Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Subsequent service life relevant for that use: no Remarks: The use is regulated by following: Directive 2001/83/EC and Regulation (EC) No 726/2004and amendments and is not covered under REACH No. 1907/2006. Related assessment: use not assessed</p>
IW-	<p>Industrial use in catalysts and adsorbents <u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - Industrial use of processing aids in processes and products, not becoming part of articles (ERC4) - Industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a) - Industrial use of reactive processing aids (ERC6b) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - Use in closed process, no likelihood of exposure (PROC 1) - Use in closed, continuous process with occasional controlled exposure (e.g. sampling) (PROC 2) - Use in closed batch process (synthesis or formulation) (PROC 3) - Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4) - PROC 8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities - PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities [EU REACH] - PROC 9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) - PROC28: Manual maintenance (cleaning and repair) of machinery <p>Product Category used: PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents Sector of end use: SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) ; SU 9: Manufacture of fine chemicals Technical function of the substance: adsorbent ; binder ; process regulator ; vehicle (carrier) use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Subsequent service life relevant for that use: yes Link to the subsequent service life: Catalyst Related assessment: use assessed in a joint CSR</p>
IW-1	<p>Industrial use of adhesives and sealants <u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - Use at industrial site leading to inclusion into/onto article (ERC5) <p>Contributing activity/technique for the workers :</p>

	<ul style="list-style-type: none"> - mixing or blending in batch process (PROC 5) - Industrial spraying (PROC 7) - Transfer of substance or preparation from/to vessels/large containers at non-dedicated facilities (PROC 8a) - Transfer of substance or preparation from/to vessels/large containers at dedicated facilities (PROC 8b) - Roller application or brushing (PROC 10) - Treatment of articles by dipping and pouring (PROC 13) <p>Product Category used: PC 1: Adhesives, sealants Sector of end use: SU 16: Manufacture of computer, electronic and optical products, electrical equipment ; SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment ; SU 19: Building and construction work Technical function of the substance: filler ; thickener / thickening agent ; reinforcement agent use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: in a mixture Subsequent service life relevant for that use: yes Link to the subsequent service life: Service life of adhesives and sealants Related assessment: use assessed in a joint CSR</p>
IW-7	<p>use at industrial site in electronic industry <u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - use at industrial site leading to inclusion into/onto articles (ERC5) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - manufacture or formulation i'n closed batch processes with occasional controlled exposure (PROC 3) - mixing and blending in batch processes (PROC 5) - transfer of substance or mixture at dedicated facilities (PROC 8b) - transfer of substance or mixture including weighing (PROC 9) <p>Product Category used: PC 14: Metal surface treatment products ; PC 15: Non-metal-surface treatment products ; PC 33: Semiconductors ; PC42: Electrolytes for batteries Sector of end use: SU 16: Manufacture of computer, electronic and optical products, electrical equipment Technical function of the substance: abrasive ; thickener / thickening agent ; polishing agent use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Subsequent service life relevant for that use: yes Link to the subsequent service life: Service life of electrical and optical products Related assessment: use assessed in a joint CSR</p>
IW-5	<p>industrial use in food and feed products <u>Further description of the use:</u> Food and feed products and food and feed additives are regulated by the EU Regulations No. 178/2002; No. 1831/2003 and No. 1333/2008 and amendments and are not covered under REACH No. 1907/2006 Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - use of non-reactive processing aid no inclusion into or onto articles (ERC4) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - chemical production where opportunity for exposure arises (PROC 4) - mixing or blending in batch process (PROC 5)

	<ul style="list-style-type: none"> - tableting, compression, pelletisation, granulation (PROC 14) - transfer of substance or mixture at dedicated facility (PROC 8b) - transfer of substance or mixture including weighing (PROC 9) <p>Product Category used: PC 0: Other: food and feed products, feed and food additive Sector of end use: SU 4: Manufacture of food products ; SU 0: Other: manufacture of feed products Technical function of the substance: anticaking agent ; thickener / thickening agent ; vehicle (carrier) use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Regulatory status: food and feed additive. Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Subsequent service life relevant for that use: no Remarks: Food and feed products and food and feed additives are regulated by the EU Regulations No. 178/2002; No. 1831/2003 and No. 1333/2008 and are not covered under REACH Related assessment: use not assessed</p>
IW-4	<p>rubber and tyre production, reinforcing filler <u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - use at industrial site leading to inclusion into/onto articles (ERC5) - use at industrial site leading to inclusion into/onto article (ERC5) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - chemical production where opportunity for exposure arises (PROC 4) - mixing or blending in batch processes (PROC 5) - transfer of substance or mixture at dedicated facilities (PROC 8b) - transfer of substance or mixture including weighing (PROC 9) - tableting, compression, extrusion, pelletisation, granulation (PROC 14) <p>Product Category used: PC 32: Polymer preparations and compounds Sector of end use: SU 11: Manufacture of rubber products ; SU 0: Other: manufacture of tyre products Technical function of the substance: reinforcing filler use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Subsequent service life relevant for that use: yes Link to the subsequent service life: Service life of various articles Related assessment: use assessed in a joint CSR</p>
IW-	<p>Uses at industrial sites in hygiene and sanitary products <u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - ERC5: Use at industrial site leading to inclusion into/onto article <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - PROC 1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions ; PROC 2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions ; PROC 4: Chemical production where opportunity for exposure arises ; PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities [EU REACH]

	<p>Product Category used: PC 2: Adsorbents ; PC 35: Washing and cleaning products ; PC 0: Other: Abrasive, adsorbent or absorbent, binding agent, desiccant, excipient, extraction agent, filler, flow modifier/free-flow agent, wetting agent, solubility enhancer, viscosity control agent/rheology control</p> <p>Technical function of the substance: abrasive ; absorbent ; adsorbent ; binder ; filler ; flocculating agent ; flow promoter ; solubility enhancer ; viscosity modifier</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Substance supplied to that use: as such ; in a mixture</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life: Hygiene and sanitary products</p>
IW-	<p>Uses at industrial site for pulp, paper and board products</p> <p><u>Further description of the use:</u></p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ; ERC5: Use at industrial site leading to inclusion into/onto article ; ERC6a: Use of intermediate ; ERC6b: Use of reactive processing aid at industrial site (no inclusion into or onto article) ; ERC6c: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) ; ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article) ; ERC7: Use of functional fluid at industrial site <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - PROC 2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions ; PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions ; PROC 4: Chemical production where opportunity for exposure arises ; PROC 5: Mixing or blending in batch processes ; PROC 8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities ; PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities [EU REACH] <p>Product Category used: PC 2: Adsorbents ; PC 9b: Fillers, putties, plasters, modelling clay ; PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents ; PC 26: Paper and board treatment products ; PC 0: Other: adhesives, driers, siccatives, additives to improve printability and whiteness and opacity</p> <p>Sector of end use: SU 6a: Manufacture of wood and wood products ; SU 6b: Manufacture of pulp, paper and paper products</p> <p>Technical function of the substance: antifoam</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Substance supplied to that use: as such ; in a mixture</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life: Service life for Paper Articles</p>
IW-3	<p>Industrial use in coatings</p> <p><u>Further description of the use:</u></p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - ERC5: Use at industrial site leading to inclusion into/onto article (ERC5) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - mixing or blending in batch process (PROC 5) - Industrial spraying (PROC 7) - roller application or brushing (PROC 10) - treatment by dipping or pouring (PROC 13) - low energy manipulation bound in materials and/or articles (PROC 21)

	<ul style="list-style-type: none"> - Transfer of substance or preparation from/to vessels/large containers at dedicated facilities (PROC 8b) - Transfer of substance or mixture at non-dedicated facilities (PROC 8a) - Transfer of substance or mixture including weighing (PROC 9) <p>Product Category used: PC 9a: Coatings and paints, thinners, paint removes ; PC 9b: Fillers, putties, plasters, modelling clay ; PC 14: Metal surface treatment products ; PC 15: Non-metal-surface treatment products ; PC 18: Ink and toners ; PC 23: Leather treatment products ; PC 26: Paper and board treatment products ; PC 34: Textile dyes, and impregnating products</p> <p>Sector of end use: SU 5: Manufacture of textiles, leather, fur ; SU 6a: Manufacture of wood and wood products ; SU 6b: Manufacture of pulp, paper and paper products ; SU 7: Printing and reproduction of recorded media ; SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment ; SU 18: Manufacture of furniture ; SU 19: Building and construction work</p> <p>Technical function of the substance: absorbent ; adhesion promotor ; anticaking agent ; antistatic agent ; corrosion inhibitor ; filler ; flame retardant ; gelling modifier ; impregnation agent ; processing aid ; surface modifier ; thickener / thickening agent ; viscosity modifier ; waterproofing agent ; scratch resistance, reinforcing filler, anticorrosion, matting agent</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year Substance supplied to that use: in a mixture Subsequent service life relevant for that use: yes Link to the subsequent service life: Service life of painted/coated articles Related assessment: use assessed in a joint CSR</p>
IW-	<p>Use at industrial site for water treatment</p> <p><u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ; ERC5: Use at industrial site leading to inclusion into/onto article ; ERC6a: Use of intermediate ; ERC6b: Use of reactive processing aid at industrial site (no inclusion into or onto article) ; ERC6d: Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article) ; ERC7: Use of functional fluid at industrial site <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - PROC 2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions ; PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions ; PROC 5: Mixing or blending in batch processes ; PROC 8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities ; PROC 15: Use as laboratory reagent <p>Product Category used: PC 2: Adsorbents ; PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents ; PC 37: Water treatment chemicals</p> <p>Sector of end use: SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) ; SU 9: Manufacture of fine chemicals ; SU 0: Other: Uses of substances as such or in preparation at industrial sites</p> <p>Technical function of the substance: adsorbent ; flocculating agent ; processing aid</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year Substance supplied to that use: as such ; in a mixture Subsequent service life relevant for that use: no</p>

Table 2.5. Uses by professional workers

Uses by professional workers

PW-2	<p>Professional use of adhesives and sealants <u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - Widespread use leading to inclusion into/onto article (indoor) (ERC8c) - Widespread use leading to inclusion into/onto article (outdoor) (ERC8f) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - roller application or brushing (PROC 10) - non industrial spraying (PROC 11) - Treatment of articles by dipping and pouring (PROC 13) - Hand-mixing with intimate contact and only PPE available (PROC 19) <p>Product Category used: PC 1: Adhesives, sealants ; PC 9a: Coatings and paints, thinners, paint removes</p> <p>Sector of end use: SU 19: Building and construction work</p> <p>Technical function of the substance: filler ; thickener / thickening agent ; matting agent, coating, anto corrosion</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life: Service life of adhesives and sealants</p> <p>Related assessment: use assessed in a joint CSR</p>
PW-1	<p>Professional use of coatings <u>Further description of the use:</u> Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - ERC8c: Widespread use leading to inclusion into/onto article (indoor) (ERC8c) - ERC8f: Widespread use leading to inclusion into/onto article (outdoor) (ERC8f) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - Roller application or brushing (PROC 10) - Non industrial spraying (PROC 11) - treatment of articles by dipping and pouring (PROC 13) - Hand-mixing with intimate contact and only PPE available (PROC 19) - transfer of mixture at non-dedicated facilities (PROC 8a) <p>Product Category used: PC 9a: Coatings and paints, thinners, paint removes ; PC 18: Ink and toners</p> <p>Sector of end use: SU 7: Printing and reproduction of recorded media ; SU 15: Manufacture of fabricated metal products, except machinery and equipment ; SU 19: Building and construction work</p> <p>Technical function of the substance: absorbent ; adhesion promotor ; anticaking agent ; antistatic agent ; corrosion inhibitor ; filler ; flame retardant ; gelling modifier ; impregnation agent ; processing aid ; surface modifier ; thickener / thickening agent ; viscosity modifier ; waterproofing agent ; scratch resistance, reinforcing filler</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life: Service life of painted/coated articles</p> <p>Related assessment: use assessed in a joint CSR</p>
PW-3	<p>professional use of washing and cleaning products <u>Further description of the use:</u> Washing and cleaning products are regulated by Regulation (EC) No 648/2004 on detergents and amendments and are not covered under REACH No. 1907/2006</p> <p>Contributing activity/technique for the environment :</p>

	<p>- widespread use of non-reactive processing aid leading to inclusion into/onto articles (outdoor) (ERC8f)</p> <p>- widespread use of non-ractive processing aid, no inclusion, indoor (ERC8a)</p> <p>Contributing activity/technique for the workers :</p> <p>- transfer of mixture at non-dedicated facilities (PROC 8a)</p> <p>- non industrial spraying (PROC 11)</p> <p>- roller application or brushing (PROC 10)</p> <p>- hand-mixing with intimate contact (PROC 19)</p> <p>Product Category used: PC 31: Polishes and wax blends ; PC 35: Washing and cleaning products</p> <p>Sector of end use: SU 20: Health services ; SU 0: Other: washing and cleaning products, polishes and wax blends</p> <p>Technical function of the substance: abrasive ; absorbent ; adsorbent ; anticaking agent ; cleaning agent ; filler ; solubility enhancer ; thickener / thickening agent ; vehicle (carrier) ; viscosity modifier</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life: Hygiene and sanitary products</p> <p>Remarks:</p> <p>Washing and cleaning products are regulated by EC Detergent Regulation No. 648/2004</p> <p>Related assessment: use not assessed</p>
PW-	<p>Professional use in hygiene and sanitary products</p> <p><u>Further description of the use:</u></p> <p>Contributing activity/technique for the environment :</p> <p>- ERC8b: Widespread use of reactive processing aid (no inclusion into or onto article, indoor)</p> <p>Contributing activity/technique for the workers :</p> <p>- PROC 1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions ; PROC 2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions ; PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions ; PROC 4: Chemical production where opportunity for exposure arises ; PROC 5: Mixing or blending in batch processes ; PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities [EU REACH]</p> <p>Product Category used: PC 2: Adsorbents ; PC 3: Air care products ; PC 8: Biocidal products (e.g. disinfectants, pest control) ; PC 9a: Coatings and paints, thinners, paint removes ; PC 14: Metal surface treatment products ; PC 15: Non-metal-surface treatment products ; PC 24: Lubricants, greases, release products ; PC 0: Other: Abrasive, adsorbent or absorbent, binding agent, desiccant, excipient, extraction agent, filler, flow modifier/free-flow agent, wetting agent, solubility enhancer, viscosity control agent/rheology control</p> <p>Sector of end use: SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) ; SU 9: Manufacture of fine chemicals ; SU 20: Health services ; SU 0: Other: (NACE code to be used only): SU 3 - Industrial Manufacturing</p> <p>Technical function of the substance: vehicle (carrier)</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life: Hygiene and sanitary products</p>
PW-	<p>Professional use in water treatment</p> <p><u>Further description of the use:</u></p> <p>Contributing activity/technique for the environment :</p>

	<p>- ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ; ERC8b: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) ; ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) ; ERC8e: Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) ; ERC8f: Widespread use leading to inclusion into/ onto article (outdoor) ; ERC9a: Widespread use of functional fluid (indoor) ; ERC9b: Widespread use of functional fluid (outdoor)</p> <p>Contributing activity/technique for the workers :</p> <p>- PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions ; PROC 5: Mixing or blending in batch processes ; PROC 8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities ; PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities [EU REACH]</p> <p>Product Category used: PC 2: Adsorbents ; PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents ; PC 37: Water treatment chemicals</p> <p>Sector of end use: SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) ; SU 9: Manufacture of fine chemicals ; SU 20: Health services</p> <p>Technical function of the substance: deflocculant ; flocculating agent</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: no</p>
PW-4	<p>use in feed and food products</p> <p><u>Further description of the use:</u> Food and feed products and food and feed additives are regulated by the EU Regulations No. 178/2002; No. 1831/2003 and No. 1333/2008 and amendments and are not covered under REACH No. 1907/2006</p> <p>Contributing activity/technique for the environment :</p> <p>- widespread use of non-reactive processing aid (ERC8a)</p> <p>Contributing activity/technique for the workers :</p> <p>- transfer of mixture at non-dedicated facilities (PROC 8a)</p> <p>- transfer of mixture including weighing (PROC 9)</p> <p>- hand-mixing with intimate contact (PROC 19)</p> <p>Product Category used: PC 0: Other: feed and food products</p> <p>Sector of end use: SU 0: Other: food and feed products</p> <p>Technical function of the substance: anticaking agent ; thickener / thickening agent ; vehicle (carrier)</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Regulatory status: use in feed and food products.</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: no</p> <p>Remarks: Food and feed products and food and feed additives are regulated by the EU Regulations No. 178/2002; No. 1831/2003 and No. 1333/2008 and are not covered under REACH</p> <p>Related assessment: use not assessed</p>
PW-6	<p>professional use in biocidal products</p> <p><u>Further description of the use:</u> The use is regulated by the following EU Regulations: BPR (EU) No. 528/2012 and amendments and is not covered under REACH No. 1907/2006</p> <p>Contributing activity/technique for the environment :</p> <p>- Widespread use of non-reactive processing aid (no inclusion into or onto articles, indoor) (ERC8a)</p>

	<p>- Widespread use of non-reactive processing aid (no inclusion into or onto articles, outdoor) (ERC8d)</p> <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - Mixing in batch processes (PROC 5) - transfer of substance or mixture at non-dedicating facilities (PROC 8a) - Non industrial spraying (PROC 11) - hand-mixing with intimate contact and only PPE available (PROC 19) <p>Product Category used: PC 8: Biocidal products (e.g. disinfectants, pest control) ; PC 27: Plant protection products</p> <p>Sector of end use: SU 1: Agriculture, forestry and fishing</p> <p>Technical function of the substance: biocide ; filler ; thickener / thickening agent ; vehicle (carrier)</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Regulatory status: use in biocidal products [EU REACH].</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: no</p> <p>Remarks:</p> <p>The use is regulated by the following EU Regulations: BPR (EU)No. 528/2012and amendments and is not covered under REACH No. 1907/2006</p> <p>Related assessment: use not assessed</p>
PW-5	<p>professional use in cosmetic products</p> <p><u>Further description of the use:</u></p> <p>The use is regulated by the following Regulation (EC) No 1223/2009 on cosmetic products and amendments and is not covered under REACH No. 1907/2006</p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - widespread use of non-reactive processing aid (no inclusion into or onto articles, indoor) (ERC8a) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - Hand-mixing with intimate contact and only PPE available (PROC 19) <p>Product Category used: PC 39: Cosmetics, personal care products</p> <p>Sector of end use: SU 0: Other: cosmetics</p> <p>Technical function of the substance: abrasive ; absorbent ; adsorbent ; anticaking agent ; cleaning agent ; filler ; thickener / thickening agent ; vehicle (carrier) ; viscosity modifier ; peeling agent</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant</p> <p>Regulatory status: use in cosmetics products [EU REACH].</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: no</p> <p>Remarks:</p> <p>The use is regulated by the following Regulation (EC) No 1223/2009 on cosmetic products and amendmentsand is not covered under REACH No. 1907/2006</p> <p>Related assessment: use not assessed</p>
PW-7	<p>professional use in pharmaceutical products</p> <p><u>Further description of the use:</u></p> <p>The use is regulated by following: Directive 2001/83/EC and Regulation (EC) No 726/2004and amendments and is not covered under REACH No. 1907/2006</p> <p>Contributing activity/technique for the environment :</p> <ul style="list-style-type: none"> - widespread use leading to inclusion into/onto article (indoor) (ERC8c) <p>Contributing activity/technique for the workers :</p> <ul style="list-style-type: none"> - PROC 5: Mixing or blending in batch processes - hand-mixing with intimate contact and only PPE available (PROC 19) - tableting (PROC 14) <p>Product Category used: PC 29: Pharmaceuticals</p>

<p>Sector of end use: SU 20: Health services</p> <p>Technical function of the substance: anticaking agent ; thickener / thickening agent ; vehicle (carrier)</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant</p> <p>Regulatory status: use in pharmaceutical products.</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: no</p> <p>Remarks:</p> <p>The use is regulated by following: Directive 2001/83/EC and Regulation (EC) No 726/2004and amendments and is not covered under REACH No. 1907/2006</p> <p>Related assessment: use not assessed</p>
--

Table 2.6. Consumer uses

Consumer uses	
C-5	<p>use in food and feed products</p> <p><u>Further description of the use:</u></p> <p>Food and feed products and food and feed additives are regulated by the EU Regulations No. 178/2002; No. 1831/2003 and No. 1333/2008 and amendments and are not covered under REACH No. 1907/2006</p> <p>Contributing activity/technique for the environment:</p> <ul style="list-style-type: none"> - widespread use of non-reactive processing aid (ERC8a) <p>Contributing activity/technique for consumers:</p> <ul style="list-style-type: none"> - use of food and feed products (PC 0) <p>Technical function of the substance: anticaking agent ; thickener / thickening agent ; vehicle (carrier)</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant</p> <p>Regulatory status: use in food products.</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: no</p> <p>Remarks:</p> <p>Food and feed products and food and feed additives are regulated by the EU Regulations No. 178/2002; No. 1831/2003 and No. 1333/2008 and amendments and are not covered under REACH No. 1907/2006</p> <p>Related assessment: use not assessed</p>
C-6	<p>use of washing and cleaning products</p> <p><u>Further description of the use:</u></p> <p>Washing and cleaning products are regulated by Regulation (EC) No 648/2004 on detergents and amendments and are not covered under REACH No. 1907/2006.</p> <p>Contributing activity/technique for the environment:</p> <ul style="list-style-type: none"> - widespread use of non-reactive processing aid (ERC8a) - ERC8b: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) <p>Contributing activity/technique for consumers:</p> <ul style="list-style-type: none"> - use of polishes/wax blend and washing and cleaning products (PC 31 ; PC 35) <p>Technical function of the substance: abrasive ; absorbent ; adsorbent ; anticaking agent ; cleaning agent ; filler ; solubility enhancer ; thickener / thickening agent ; vehicle (carrier) ; viscosity modifier</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant</p> <p>Regulatory status: other washing and cleaning products.</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: yes</p> <p>Link to the subsequent service life: Hygiene and sanitary products</p>

	<p>Remarks: Washing and cleaning products are regulated by EC Detergent Regulation No. 648/2004 Related assessment: use not assessed</p>
C-2	<p>Consumer use of sealants <u>Further description of the use:</u> Contributing activity/technique for the environment: <ul style="list-style-type: none"> - ERC8c: Widespread use leading to inclusion into/onto article (indoor) (ERC8c) - ERC8f: Widespread use leading to inclusion into/onto article (outdoor) (ERC8f) Contributing activity/technique for consumers: <ul style="list-style-type: none"> - Consumer use of adhesives and sealants (PC 1) Technical function of the substance: filler ; Crosslinker use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Subsequent service life relevant for that use: yes Link to the subsequent service life: Service life of adhesives and sealants Related assessment: use assessed in a joint CSR</p>
C-1	<p>Consumer use of coatings <u>Further description of the use:</u> Contributing activity/technique for the environment: <ul style="list-style-type: none"> - Widespread use leading to inclusion into/onto article (indoor) (ERC8c) - Widespread use leading to inclusion into/onto article (outdoor) (ERC8f) Contributing activity/technique for consumers: <ul style="list-style-type: none"> - Coatings and paints, thinners, paint removers (PC 9a ; PC 18) Technical function of the substance: corrosion inhibitor ; filler ; flow promoter ; process regulator ; stabilising agent ; viscosity modifier ; waterproofing agent ; cross-linker, scratch resistance, reinforcing filler; water repellent, matting agent use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant Tonnage of substance for that use: tonnes/year Subsequent service life relevant for that use: yes Link to the subsequent service life: Service life of painted/coated articles Related assessment: use assessed in a joint CSR</p>
C-4	<p>consumer use of cosmetic and hygiene products <u>Further description of the use:</u> The use is regulated by the following Regulation (EC) No 1223/2009 on cosmetic products and amendments and is not covered under REACH No. 1907/2006</p> <p>Contributing activity/technique for the environment: <ul style="list-style-type: none"> - use of cosmetic, hygiene products (ERC8a) Contributing activity/technique for consumers: <ul style="list-style-type: none"> - use of cosmetic, hygiene products (PC 0) Technical function of the substance: abrasive ; absorbent ; adsorbent ; anticaking agent ; cleaning agent ; filler ; thickener / thickening agent ; vehicle (carrier) ; viscosity modifier ; peeling use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant Regulatory status: use in cosmetics products [EU REACH]. Tonnage of substance for that use: tonnes/year Subsequent service life relevant for that use: no Remarks: The use is regulated by the following Regulation (EC) No 1223/2009 on cosmetic products and amendments and is not covered under REACH No. 1907/2006</p> <p>Related assessment: use not assessed</p>

C-3	<p>Consumer use of pharmaceutical products</p> <p><u>Further description of the use:</u> The use is regulated by following: Directive 2001/83/EC and Regulation (EC) No 726/2004 and amendments and is not covered under REACH No. 1907/2006</p> <p>Contributing activity/technique for the environment:</p> <p style="padding-left: 20px;">- use of pharmaceutical products (ERC8a)</p> <p>Contributing activity/technique for consumers:</p> <p style="padding-left: 20px;">- use of pharmaceutical products (PC 29)</p> <p>Technical function of the substance: anticaking agent ; thickener / thickening agent ; vehicle (carrier)</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant</p> <p>Regulatory status: use in pharmaceutical products.</p> <p>Tonnage of substance for that use: tonnes/year</p> <p>Subsequent service life relevant for that use: no</p> <p>Remarks:</p> <p>The use is regulated by following regulations: No. 2001/83/EC; No. 2004/726/EC; No 2011/62/EC; No. 2012/24/EC and is not covered under REACH</p> <p>Related assessment: use not assessed</p>
-----	--

Table 2.7. Article service life

Article service life	
SL-	<p>Service life of painted/coated articles</p> <p><u>Further description of the use:</u> Article used by: workers ; consumers</p> <p>Substance intended to be released from article: no</p> <p>Article category related to subsequent service life (AC): AC 1: Vehicles ; AC1a: Vehicles covered by End of Life Vehicles (ELV) directive ; AC1b: Other vehicles ; AC 2: Machinery, mechanical appliances, electrical/electronic articles ; AC2a: Machinery, mechanical appliances, electrical/electronic articles covered by the Waste Electrical and Electronic Equipment (WEEE) directive ; AC2b: Other machinery, mechanical appliances, electrical/electronic articles ; AC 3: Electrical batteries and accumulators ; AC 4: Stone, plaster, cement, glass and ceramic articles ; AC4a: Stone, plaster, cement, glass and ceramic articles: Large surface area articles ; AC4b: Stone, plaster, cement, glass and ceramic articles: Toys intended for children's use (and child dedicated articles) ; AC4c: Stone, plaster, cement, glass and ceramic articles: Packaging (excluding food packaging) ; AC4e: Stone, plaster, cement, glass and ceramic articles: Furniture & furnishings ; AC4g: Other articles made of stone, plaster, cement, glass or ceramic ; AC 7: Metal articles ; AC7a: Metal articles: Large surface area articles ; AC7b: Metal articles: Toys intended for children's use (and child dedicated articles) ; AC7c: Metal articles: Packaging (excluding food packaging) ; AC7e: Metal articles: Furniture & furnishings ; AC7f: Metal articles: Articles with intense direct dermal contact during normal use ; AC7g: Other metal articles ; AC 8: Paper articles ; AC8a: Paper articles: Large surface area articles ; AC8b: Paper articles: Toys intended for children's use (and child dedicated articles) ; AC8c: Paper articles: Packaging (excluding food packaging) ; AC8e: Paper articles: Furniture & furnishings ; AC8f2: Paper articles: Articles with intense direct dermal contact during normal use: printed articles with dermal contact in normal conditions of use ; AC8g: Other paper articles ; AC 11: Wood articles ; AC11a: Wood articles: Large surface area articles ; AC11b: Wood articles: Toys intended for children's use (and child dedicated articles) ; AC11c: Wood articles: Packaging (excluding food packaging) ; AC11e: Wood articles: Furniture & furnishings ; AC11f: Wood articles: Articles with intense direct dermal contact during normal use ; AC11g: Other wood articles ; AC 13: Plastic articles ; AC13a: Plastic articles: Large surface area articles ; AC13b: Plastic articles: Toys intended for children's use (and child dedicated articles) ; AC13c: Plastic articles: Packaging (excluding food packaging) ; AC13e: Plastic articles: Furniture & furnishings, including furniture coverings ; AC13f: Plastic articles: Articles with intense direct dermal contact during normal use ; AC13g: Other plastic articles</p> <p>Contributing activity/technique for the environment:</p>

	<p>- ERC10a: Widespread use of articles with low release (outdoor) ; ERC11a: Widespread use of articles with low release (indoor)</p> <p>Contributing activity/technique for consumers:</p> <p>- AC 1: Vehicles ; AC1a: Vehicles covered by End of Life Vehicles (ELV) directive ; AC1b: Other vehicles ; AC 2: Machinery, mechanical appliances, electrical/electronic articles ; AC2a: Machinery, mechanical appliances, electrical/electronic articles covered by the Waste Electrical and Electronic Equipment (WEEE) directive ; AC2b: Other machinery, mechanical appliances, electrical/electronic articles ; AC 3: Electrical batteries and accumulators ; AC 4: Stone, plaster, cement, glass and ceramic articles ; AC4a: Stone, plaster, cement, glass and ceramic articles: Large surface area articles ; AC4b: Stone, plaster, cement, glass and ceramic articles: Toys intended for children's use (and child dedicated articles) ; AC4c: Stone, plaster, cement, glass and ceramic articles: Packaging (excluding food packaging) ; AC4e: Stone, plaster, cement, glass and ceramic articles: Furniture & furnishings ; AC4g: Other articles made of stone, plaster, cement, glass or ceramic ; AC 7: Metal articles ; AC7a: Metal articles: Large surface area articles ; AC7b: Metal articles: Toys intended for children's use (and child dedicated articles) ; AC7c: Metal articles: Packaging (excluding food packaging) ; AC7e: Metal articles: Furniture & furnishings ; AC7f: Metal articles: Articles with intense direct dermal contact during normal use ; AC7g: Other metal articles ; AC 8: Paper articles ; AC8a: Paper articles: Large surface area articles ; AC8b: Paper articles: Toys intended for children's use (and child dedicated articles) ; AC8c: Paper articles: Packaging (excluding food packaging) ; AC8e: Paper articles: Furniture & furnishings ; AC8f2: Paper articles: Articles with intense direct dermal contact during normal use: printed articles with dermal contact in normal conditions of use ; AC8g: Other paper articles ; AC 11: Wood articles ; AC11a: Wood articles: Large surface area articles ; AC11b: Wood articles: Toys intended for children's use (and child dedicated articles) ; AC11c: Wood articles: Packaging (excluding food packaging) ; AC11e: Wood articles: Furniture & furnishings ; AC11f: Wood articles: Articles with intense direct dermal contact during normal use ; AC11g: Other wood articles ; AC 13: Plastic articles ; AC13a: Plastic articles: Large surface area articles ; AC13b: Plastic articles: Toys intended for children's use (and child dedicated articles) ; AC13c: Plastic articles: Packaging (excluding food packaging) ; AC13e: Plastic articles: Furniture & furnishings, including furniture coverings ; AC13f: Plastic articles: Articles with intense direct dermal contact during normal use ; AC13g: Other plastic articles</p> <p>Contributing activity/technique for the workers: Technical function of the substance: adsorbent use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant Tonnage of substance for that use: tonnes/year</p>
SL-	<p>Service life of various articles by workers and consumers</p> <p><u>Further description of the use:</u> Article used by: workers ; consumers Substance intended to be released from article: no</p> <p>Article category related to subsequent service life (AC): AC1a: Vehicles covered by End of Life Vehicles (ELV) directive ; AC1b: Other vehicles ; AC 2: Machinery, mechanical appliances, electrical/electronic articles ; AC2a: Machinery, mechanical appliances, electrical/electronic articles covered by the Waste Electrical and Electronic Equipment (WEEE) directive ; AC 3: Electrical batteries and accumulators ; AC4a: Stone, plaster, cement, glass and ceramic articles: Large surface area articles ; AC 5: Fabrics, textiles and apparel ; AC7a: Metal articles: Large surface area articles ; AC7e: Metal articles: Furniture & furnishings ; AC 10: Rubber articles ; AC10e: Rubber articles: Furniture & furnishings, including furniture coverings ; AC 11: Wood articles ; AC13a: Plastic articles: Large surface area articles ; AC13b: Plastic articles: Toys intended for children's use (and child dedicated articles) ; AC13d: Plastic articles: Articles intended for food contact ; AC13e: Plastic articles: Furniture & furnishings, including furniture coverings ; AC 0: Other: Photographic and reprographic articles: films, printed photographs; AC 12-1 Constructional articles and building material; wall construction material, ceramic, metal, plastic and wood construction material, insulating material</p> <p>Contributing activity/technique for the environment:</p>

	<p>- ERC10a: Widespread use of articles with low release (outdoor) ; ERC11a: Widespread use of articles with low release (indoor) ; ERC12a: Processing of articles at industrial sites with low release ; ERC12b: Processing of articles at industrial sites with high release ; ERC12c: Use of articles at industrial sites with low release</p> <p>Contributing activity/technique for consumers:</p> <p>- AC1a: Vehicles covered by End of Life Vehicles (ELV) directive ; AC1b: Other vehicles ; AC2a: Machinery, mechanical appliances, electrical/electronic articles covered by the Waste Electrical and Electronic Equipment (WEEE) directive ; AC2b: Other machinery, mechanical appliances, electrical/electronic articles ; AC4a: Stone, plaster, cement, glass and ceramic articles: Large surface area articles ; AC5a: Fabrics, textiles and apparel: Large surface area articles ; AC7a: Metal articles: Large surface area articles ; AC7e: Metal articles: Furniture & furnishings ; AC10a: Rubber articles: Large surface area articles ; AC10e: Rubber articles: Furniture & furnishings, including furniture coverings ; AC13a: Plastic articles: Large surface area articles ; AC13e: Plastic articles: Furniture & furnishings, including furniture coverings</p> <p>Contributing activity/technique for the workers:</p> <p>- PROC 6: Calendering operations ; PROC 14: Tableting, compression, extrusion, pelletisation, granulation ; PROC 21: Low energy manipulation of substances bound in materials and/or articles ; PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles ; PROC 0: Other: handling of electronic materials</p> <p>Technical function of the substance: abrasive ; absorbent ; adsorbent ; anticaking agent ; barrier (sealant) ; binder ; biocide ; drier ; filler ; vehicle (carrier)</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p>
SL-	<p>Service life for Paper Articles</p> <p><u>Further description of the use:</u></p> <p>Article used by: consumers</p> <p>Substance intended to be released from article: no</p> <p>Article category related to subsequent service life (AC):</p> <p>Contributing activity/technique for the environment:</p> <p>- ERC10a: Widespread use of articles with low release (outdoor) ; ERC11a: Widespread use of articles with low release (indoor)</p> <p>Contributing activity/technique for consumers:</p> <p>- AC 8: Paper articles ; AC8a: Paper articles: Large surface area articles</p> <p>Contributing activity/technique for the workers:</p> <p>Technical function of the substance: adsorbent ; drier ; filler ; processing aid</p> <p>use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10tonnes/year per registrant</p> <p>Tonnage of substance for that use: tonnes/year</p>
SL-1	<p>Service life of Coatings for articles</p> <p><u>Further description of the use:</u></p> <p>Article used by: workers ; consumers</p> <p>Substance intended to be released from article: no</p> <p>Article category related to subsequent service life (AC): AC 4: Stone, plaster, cement, glass and ceramic articles ; AC 5: Fabrics, textiles and apparel ; AC 6: Leather articles ; AC 7: Metal articles ; AC 11: Wood articles ; AC 13: Plastic articles</p> <p>Contributing activity/technique for the environment:</p> <p>- ERC10a: Widespread use of articles with low release (outdoor) ; ERC11a: Widespread use of articles with low release (indoor)</p> <p>Contributing activity/technique for consumers:</p> <p>- AC 4: Stone, plaster, cement, glass and ceramic articles ; AC 5: Fabrics, textiles and apparel ; AC 6: Leather articles ; AC 7: Metal articles ; AC 11: Wood articles ; AC 13: Plastic articles</p> <p>Contributing activity/technique for the workers:</p>

	<p>- PROC 21: Low energy manipulation of substances bound in materials and/or articles Technical function of the substance: barrier (sealant) ; filler ; flame retardant ; insulators ; waterproofing agent use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant Tonnage of substance for that use: tonnes/year</p>
SL-	<p>Plastic articles <u>Further description of the use:</u> Article used by: workers ; consumers Substance intended to be released from article: no Article category related to subsequent service life (AC): AC 1: Vehicles ; AC 13: Plastic articles Contributing activity/technique for the environment: - ERC10a: Widespread use of articles with low release (outdoor) ; ERC11a: Widespread use of articles with low release (indoor) ; ERC12a: Processing of articles at industrial sites with low release ; ERC12b: Processing of articles at industrial sites with high release ; ERC12c: Use of articles at industrial sites with low release Contributing activity/technique for consumers: - AC 13: Plastic articles ; AC13d: Plastic articles: Articles intended for food contact Contributing activity/technique for the workers: - PROC 21: Low energy manipulation of substances bound in materials and/or articles Technical function of the substance: filler use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant Tonnage of substance for that use: tonnes/year</p>
SL-	<p>Refractories <u>Further description of the use:</u> Article used by: workers Substance intended to be released from article: no Article category related to subsequent service life (AC): AC 1: Vehicles ; AC 4: Stone, plaster, cement, glass and ceramic articles ; AC 7: Metal articles ; AC7g: Other metal articles Contributing activity/technique for the environment: - ERC10a: Widespread use of articles with low release (outdoor) ; ERC11a: Widespread use of articles with low release (indoor) ; ERC12a: Processing of articles at industrial sites with low release Contributing activity/technique for consumers: Contributing activity/technique for the workers: - PROC 21: Low energy manipulation of substances bound in materials and/or articles ; PROC 24: High (mechanical) energy work-up of substances bound in materials and/or articles Technical function of the substance: insulators use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/year per registrant Tonnage of substance for that use: tonnes/year</p>
SL-	<p>Catalyst <u>Further description of the use:</u> Article used by: workers Substance intended to be released from article: no Article category related to subsequent service life (AC): AC 0: Other: (non intended to be released): catalyst Contributing activity/technique for the environment: - Metal oxide catalyst (ERC11a ; ERC12a) Contributing activity/technique for consumers: Contributing activity/technique for the workers: - Metal oxide catalyst (PROC 5 ; PROC 14 ; PROC 22 ; PROC 26)</p>

	<p>Technical function of the substance: adsorbent ; binder ; processing aid ; vehicle (carrier) use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/ year per registrant Tonnage of substance for that use: tonnes/year Related assessment: use assessed in a joint CSR but not a lead's own use</p>
SL-	<p>Hygiene and sanitary products <u>Further description of the use:</u> Article used by: consumers Substance intended to be released from article: no Article category related to subsequent service life (AC): Contributing activity/technique for the environment: - ERC11a: Widespread use of articles with low release (indoor) Contributing activity/technique for consumers: - AC 5: Fabrics, textiles and apparel Contributing activity/technique for the workers: Technical function of the substance: abrasive ; absorbent ; adsorbent ; binder ; filler ; flocculating agent ; flow promoter ; solubility enhancer ; viscosity modifier use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/ year per registrant Tonnage of substance for that use: tonnes/year</p>
SL-	<p>Service life of electrical and optical products <u>Further description of the use:</u> Article used by: workers ; consumers Substance intended to be released from article: no Article category related to subsequent service life (AC): AC 1: Vehicles ; AC 2: Machinery, mechanical appliances, electrical/electronic articles ; AC 0: Other: Optical products Contributing activity/technique for the environment: - ERC10a: Widespread use of articles with low release (outdoor) ; ERC11a: Widespread use of articles with low release (indoor) ; ERC12a: Processing of articles at industrial sites with low release Contributing activity/technique for consumers: - AC 2: Machinery, mechanical appliances, electrical/electronic articles ; AC2b: Other machinery, mechanical appliances, electrical/electronic articles ; AC 0: Other: Optical products Contributing activity/technique for the workers: - PROC 21: Low energy manipulation of substances bound in materials and/or articles ; PROC 0: Other: handling of electronic materials Technical function of the substance: semiconductor and photovoltaic agent ; diffuser use registered according to REACH Article 10; total tonnage manufactured/imported \geq10tonnes/ year per registrant Tonnage of substance for that use: tonnes/year</p>
SL-	<p>Ceramics base for catalysts <u>Further description of the use:</u> Article used by: workers ; consumers Substance intended to be released from article: no Article category related to subsequent service life (AC): AC 2: Machinery, mechanical appliances, electrical/electronic articles ; AC 4: Stone, plaster, cement, glass and ceramic articles Contributing activity/technique for the environment: - Ceramics (ERC10b) - Ceramics (ERC11a) Contributing activity/technique for consumers: - Ceramics (AC 2) - Ceramics (AC 4) Contributing activity/technique for the workers:</p>

- Ceramics (PROC 14)

- Ceramics (PROC 21)

- Ceramics (PROC 24)

Technical function of the substance: adsorbent ; binder ; processing aid ; vehicle (carrier)
use registered according to REACH Article 10; total tonnage manufactured/imported ≥ 10 tonnes/
year per registrant
Tonnage of substance for that use: tonnes/year