2.1. Manufacture

Table 2.2. Manufacture

	Manufacture
M-1	**Zinc chloride production** Further description of manufacturing process: Zinc Chloride Manufacturing process •Reaction of Zinc bearing materials with chlorohydric acid solutions with the production of a zinc chloride solution. • Reception of the Intermediate Zinc chloride solution in the reaction tank • Sequential addition of reagents for purification steps and filtration on press filter, when needed. Ventilation is adapted • Concentration by water evaporation, under exhaust hood. • Pouring on a cooling belt • Discharge and packaging of produced zinc chloride crystals. Workers have to place and adjust the bag or drum under the discharge pipe and to set the process in motion. Filled bags or drums are subsequently closed and carried to the storage area. • Exposure to dust can occur during packing of the powder in 25 kg bags or in 50 Kg drum or in 200 Kg drum or in 1000Kg big bag. Solutions are packed in intermediate bulk containers (ca. 1 m3 capacity). • Maintenance activities Contributing activity/technique for the environment : - **Direct discharge to water after on-site treatment** **(ERC1)** - **Discharge via additional off-site sewage treatment plant** **(ERC1)** Contributing activity/technique for the workers : - **Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions** **(PROC 2)** -

	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions **(PROC 3)** - **Chemical production where opportunity for exposure arises** **(PROC 4)** - **Transfer of substance or mixture (charging and discharging) at dedicated facilities** **(PROC 8b)** - **Transfer of substance or mixture into small containers (dedicated filling line, including weighing)** **(PROC 9)** - **Manufacturing and processing of minerals and/or metals at substantially elevated temperature** **(PROC 22)** - **Handling of solid inorganic substances at ambient temperature** **(PROC 26)** - **Production of metal powders (wet processes)** **(PROC 27b)** - **Manual maintenance (cleaning and repair) of machinery** **(PROC28)** registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for this use: <=1670 Tonnage (tonnes/year) *Related assessment: use assessed in a joint CSR*

2.2. Identified uses

Table 2.3. Formulation

	Formulation
F-1	**Generic formulation of zinc chloride into mixtures** Further description of the use: This scenario is valid for formulations that are put on the market, it is not intended for situations where formulation is a pre-step during an industrial use. Also note that there is no chemical transformation during formulation. Zinc Chloride can be used in the formulation of water-based preparations by mixing the starting materials in a water or solvent based matrix. Includes packaging, labelling and distribution to customers. Contributing activity/technique for the environment : - **Direct discharge to water after on-site treatment** **(ERC2)** - **Discharge via additional off-site sewage treatment plant** **(ERC2)** Contributing activity/technique for the workers : - **Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions** **(PROC 3)** - **Mixing or blending in batch processes** **(PROC 5)** - **Transfer of substance or mixture (charging and discharging) at non-dedicated facilities** **(PROC 8a)** - **Transfer of substance or mixture (charging and discharging) at dedicated facilities** **(PROC 8b)** - **Transfer of substance or mixture into small containers (dedicated filling line, including weighing)** **(PROC 9)**

	- **Tabletting, compression, extrusion, pelletisation, granulation** **(PROC 14)** - **Handling of solid inorganic substances at ambient temperature** **(PROC 26)** **Product Category formulated:** PC 14: Metal surface treatment products ; PC 15: Non-metal-surface treatment products ; PC 26: Paper and board treatment products ; PC 31: Polishes and wax blends **Technical function of the substance:** no specific technical function registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for this use: <=25 Tonnage (tonnes/year) Substance supplied to that use: *Related assessment: use assessed in a joint CSR*
F-2	**Formulation of zinc chloride in cosmetics** Further description of the use: Use of ZnCl2 as an active component in the manufacturing of cosmetics preparations by mixing or blending of solid or liquid materials Contributing activity/technique for the environment : - **Formulation of ZnCl2 in cosmetic products involving cleaning with organic solvents (varnish, removers, decorative cosmetics, spray, lacquer, fine fragrance, solar oil, solid products) (medium scale)** **(ERC2)** Contributing activity/technique for the workers : - **Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions** **(PROC 2)** - **Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions** **(PROC 3)** -

	Chemical production where opportunity for exposure arises **(PROC 4)** - **Mixing or blending in batch processes** **(PROC 5)** - **Transfer of substance or mixture (charging and discharging) at non-dedicated facilities** **(PROC 8a)** - **Transfer of substance or mixture (charging and discharging) at dedicated facilities** **(PROC 8b)** - **Transfer of substance or mixture into small containers (dedicated filling line, including weighing)** **(PROC 9)** - **Tabletting, compression, extrusion, pelletisation, granulation** **(PROC 14)** - **Use as laboratory reagent** **(PROC 15)** **Product Category formulated:** PC 39: Cosmetics, personal care products **Technical function of the substance:** no specific technical function registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for this use: <=540 Tonnage (tonnes/year) Substance supplied to that use: *Related assessment: use assessed in a joint CSR*

Table 2.4. Uses at industrial sites

	Uses at industrial sites
IW-1	**Industrial use of zinc chloride in metal surface treatment.** Further description of the use:

	Industrial use of zinc chloride or ZnCl2-formulations in fluxing agents intended for metal surface treatment. Industrial use of Zinc Chloride-based fluxing agents for surface treatment of steel articles before coating by the hot-dip galvanizing process. Industrial use of zinc chloride solution in electro-galvanizing. Industrial use of Zinc Chloride solution in electroplating. Contributing activity/technique for the environment : - **Direct discharge to water after on-site treatment (ERC5)** - **Discharge via additional off-site sewage treatment plant (ERC5)** Contributing activity/technique for the workers : - **Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)** - **Transfer and dilution of concentrated product by using dedicated dosing system (PROC 8b)** - **Industrial spraying; Automated task; Open systems; Long term (PROC 7)** - **Brushing; Automated task; medium RMM (PROC 10)** - **Industrial uses; Treatment of articles by dipping and pouring (PROC 13)** - **Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC 21)** - **Other hot work operation with metals (PROC 25)**

	- **Handling of solid inorganic substances at ambient temperature** **(PROC 26)** **Product Category used:** PC 14: Metal surface treatment products ; PC 38: Welding and soldering products, flux products **Sector of end use:** SU 14: Manufacture of basic metals, including alloys ; SU 15: Manufacture of fabricated metal products, except machinery and equipment ; SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment ; SU 23: Electricity, steam, gas water supply and sewage treatment **Technical function of the substance:** antiscaling agent ; corrosion inhibitor ; flux agent ; plating agent registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for this use: <=2,5 Tonnage for this use (tonnes/year) Substance supplied to that use: Subsequent service life relevant for that use: yes Link to the subsequent service life: Article service life of coated items *Related assessment: use assessed in a joint CSR*
IW-2	**Industrial use of zinc chloride for production of inorganic and organic compounds** <u>Further description of the use:</u> Industrial use of ZnCl2 or formulations in the manufacture of organic substances by mixing the starting materials in an organic-based matrix and other inorganic zinc-substances in a water-based matrix, with potentially filtering and packaging. Contributing activity/technique for the environment : - **Direct discharge to water after on-site treatment** **(ERC6a)** - **Discharge via additional off-site sewage treatment plant** **(ERC6a)** Contributing activity/technique for the workers : - **Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions**

	(PROC 2) - **Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions** **(PROC 3)** - **Transfer of substance or mixture (charging/discharging) at dedicated facilities** **(PROC 8b)** - **Transfer of substance or mixture into small containers (dedicated filling line, including weighing)** **(PROC 9)** - **Manufacturing and processing of minerals and/or metals at substantially elevated temperature** **(PROC 22)** - **Open processing and transfer operations at substantially elevated temperature** **(PROC 23)** - **Handling of solid inorganic substances at ambient temperature** **(PROC 26)** - **Use as laboratory reagent** **(PROC 15)** **Product Category used:** PC 9a: Coatings and paints, thinners, paint removers ; PC 9b: Fillers, putties, plasters, modelling clay ; PC 9c: Finger paints ; PC 21: Laboratory chemicals **Sector of end use:** SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) ; SU 9: Manufacture of fine chemicals ; SU 13: Manufacture of other non-metallic mineral products, e.g. plasters, cement **Technical function of the substance:** intermediate registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for this use: <=25 Tonnage for this use (tonnes/year) Substance supplied to that use: Subsequent service life relevant for that use: no *Related assessment: use assessed in a joint CSR*

IW-3	**Industrial use of zinc chloride as flux in alloy production** Further description of the use: The flux (solid salts mix) is poured on a zinc alloy melt in order to deoxidize it Contributing activity/technique for the environment : - **No emissions to water and air** **(ERC6b)** Contributing activity/technique for the workers : - **Mixing or blending in batch processes** **(PROC 5)** - **Transfer of substance or mixture (charging/discharging) at non dedicated-facilities** **(PROC 8a)** - **Open processing and transfer operations at substantially elevated temperature** **(PROC 23)** - **Manual maintenance (cleaning and repair) of machinery** **(PROC28)** **Product Category used:** PC 7: Base metals and alloys ; PC 38: Welding and soldering products, flux products **Sector of end use:** SU 9: Manufacture of fine chemicals ; SU 14: Manufacture of basic metals, including alloys **Technical function of the substance:** stabilising agent ; melting point modifier registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for this use: <=1 Tonnage for this use (tonnes/year) Substance supplied to that use: Subsequent service life relevant for that use: no *Related assessment: use assessed in a joint CSR*
IW-4	**Zinc chloride as laboratory reagent**

	Further description of the use: Use of zinc chloride as active laboratory reagent in aqueous or organic media, for analysis or synthesis Contributing activity/technique for the environment : - **Discharge via either on-site or off-site sewage treatment plant** **(ERC6a)** Contributing activity/technique for the workers : - **Use as laboratory reagent** **(PROC 15)** **Product Category used:** PC 21: Laboratory chemicals **Technical function of the substance:** intermediate registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for this use: <=0,05 Tonnage for this use (tonnes/year) Substance supplied to that use: Subsequent service life relevant for that use: no *Related assessment: use assessed in a joint CSR*
IW-5	**Inclusion of zinc chloride in respirator cartridges / filters** Further description of the use: Contributing activity/technique for the environment : - **No emissions to water and air** **(ERC5)** Contributing activity/technique for the workers : - **Mixing or blending in batch processes** **(PROC 5)** - **Transfer of substance or mixture (charging and discharging) at dedicated facilities**

	(PROC 8b) - **Transfer of substance or mixture into small containers (dedicated filling line, including weighing)** **(PROC 9)** **Product Category used:** PC 0: Other: UCN A05100, Filtration materials **Technical function of the substance:** absorbent ; catalyst ; reducing agent registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for this use: <=50 Tonnage for this use (tonnes/year) Substance supplied to that use: Subsequent service life relevant for that use: yes Link to the subsequent service life: Use of sealed respirator cartridge *Related assessment: use assessed in a joint CSR*

Table 2.5. Uses by professional workers

	Uses by professional workers
PW-1	**Professional use of zinc chloride in metal surface treatment** <u>Further description of the use:</u> Professional use of zinc chloride-based fluxing agents for surface treatment of metallic articles before a welding, soldering process Contributing activity/technique for the environment : - **Professional use of zinc chloride in metal surface treatment** **(ERC8c)** - **Professional use of zinc chloride in metal surface treatment** **(ERC8f)** Contributing activity/technique for the workers : - **Transfer of substance or mixture (charging and discharging) at non-dedicated facilities**

	(PROC 8a) - **Transfer of substance or mixture (charging/discharging) at dedicated facilities** **(PROC 8b)** - **Transfer of substance or mixture into small containers (dedicated filling line, including weighing)** **(PROC 9)** - **Roller application or brushing** **(PROC 10)** - **Treatment of articles by dipping and pouring** **(PROC 13)** - **Other hot work operation with metals** **(PROC 25)** **Product Category used:** PC 14: Metal surface treatment products ; PC 38: Welding and soldering products, flux products **Sector of end use:** SU 15: Manufacture of fabricated metal products, except machinery and equipment ; SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment **Technical function of the substance:** antiscaling agent ; corrosion inhibitor registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for this use: <=2,5 Tonnage (tonnes/year) Subsequent service life relevant for that use: yes Link to the subsequent service life: Article service life of coated items *Related assessment: use assessed in a joint CSR*

Table 2.6. Consumer uses

	Consumer uses
C-1	**Consumer use of ZnCl2-containing cosmetics** Further description of the use:

	Contributing activity/technique for the environment: - **Consumer use of ZnCl2-containing cosmetics** **(ERC8a)** Contributing activity/technique for consumers: - **Use of cosmetics** **(PC 39)** **Technical function of the substance:** deodoriser ; pigment ; stabilising agent ; UV blocker, skin care registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Regulatory status: use in cosmetics products within the scope of Directive 76/768/EEC (REACH Art. 14(5), 56(5)(a) and 67(2)). Tonnage of substance for this use: <=540 Tonnage (tonnes/year) Subsequent service life relevant for that use: no *Related assessment: use assessed in a joint CSR*

Table 2.7. Article service life

	Article service life
SL-1	**Article service life of coated items** Further description of the use: 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: - **Article service life of coated items** **(ERC10a ; ERC11a)** Contributing activity/technique for consumers: - **Vehicles**

	(AC 1) - **Machinery, mechanical appliances, electrical/electronic articles** **(AC 2)** - **Metal articles** **(AC 7)** Contributing activity/technique for the workers: **Technical function of the substance:** antiscaling agent ; corrosion inhibitor ; pigment ; plating agent registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for this use: <=2,5 Tonnage (tonnes/year) *Related assessment: use assessed in a joint CSR*
SL-2	**Use of sealed respirator cartridge** <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: - **Use of sealed respirator cartridge** **(ERC10a ; ERC11a)** Contributing activity/technique for consumers: - **Service life of sealed respirator cartridges** **(AC8g)** Contributing activity/technique for the workers: **Technical function of the substance:** absorbent ; catalyst ; reducing agent registration according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant Tonnage of substance for this use: <=50 Tonnage (tonnes/year) *Related assessment: use assessed in a joint CSR*
