# 2.1. Manufacture

### Table 2.2. Manufacture

| | Manufacture |
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| M-1 | **Diammonium tetrachlorozincate production and refining**<br><br>Further description of manufacturing process:<br><br>•Reception of zinc-bearing materials, if applicable, and transfer to the reaction tank (chloride and ammonia media)<br><br>•Reception of the Intermediate Ammonium zinc chloride solution in the reaction tank, if applicable<br><br>•Sequential addition of reagents for purification steps and filtration on press filter, when needed. Ventilation is adapted.<br><br>•Concentration by water evaporation, under exhaust hood.<br><br>•Pouring on a cooling belt<br><br>•Discharge and packaging of produced Zn(NH4)Clx 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.<br><br>•Exposure to dust can occur during packing of the powder. Solutions are packed in intermediate bulk containers (ca. 1 m3 capacity); solids are packed in bags or drums.<br><br>•Maintenance activities<br><br>Contributing activity/technique for the environment :<br><br>**- Direct discharge to water after on-site treatment (ERC1)**<br><br>**- Discharge via additional off-site sewage treatment plant (ERC1)**<br><br>Contributing activity/technique for the workers :<br><br>**- Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)**<br><br>**- Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)**<br><br>**- Chemical production where opportunity for exposure arises (PROC 4)**<br><br>**- Mixing or blending in batch processes (PROC 5)**<br><br>**- Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)**<br><br>**- Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)** |

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| | **- Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)**<br><br>**- Use as laboratory reagent (PROC 15)**<br><br>**- Manufacturing and processing of minerals and/or metals at substantially elevated temperature (PROC 22)**<br><br>**- Handling of solid inorganic substances at ambient temperature (PROC 26)**<br><br>**- Manual maintenance (cleaning and repair) of machinery (PROC28)**<br><br>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant<br><br>Tonnage of substance for that use: <=500 tonnes/year<br><br>*Related assessment: use assessed in a joint CSR* |

# 2.2. Identified uses

### Table 2.3. Formulation

| | **Formulation** |
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| F-1 | **Formulation of diammonium tetrachlorozincate(2-)**<br><br>Further description of the use:<br><br>Contributing activity/technique for the environment :<br><br>**- Formulation of diammonium tetrachlorozincate(2-) (ERC2)**<br><br>Contributing activity/technique for the workers :<br><br>**- Mixing or blending in batch processes (PROC 5)**<br><br>**- Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)**<br><br>**- Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC 8b)**<br><br>**- Use as laboratory reagent (PROC 15)**<br><br>**- Handling of solid inorganic substances at ambient temperature (PROC 26)**<br><br>**- Manual maintenance (cleaning and repair) of machinery (PROC28)**<br><br>**Product Category formulated:** PC 14: Metal surface treatment products<br><br>**Technical function of the substance:** no technical function<br><br>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant |

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| | Tonnage of substance for that use: <=100 tonnes/year<br><br>Substance supplied to that use:<br><br>*Related assessment: use assessed in a joint CSR* |

## Table 2.4. Uses at industrial sites

| | **Uses at industrial sites** |
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| IW-1 | **Industrial use of diammonium tetrachlorozincate in metal surface treatment.**<br><br>Further description of the use:<br><br>Industrial use of diammonium tetrachlorozincate in fluxing agents intended for metal surface treatment.<br><br>Industrial use of diammonium tetrachlorozincate-based fluxing agents for surface treatment of steel articles before coating by the hot-dip galvanizing process.<br><br>Industrial use of diammonium tetrachlorozincate solution in electro-galvanizing.<br><br>Industrial use of diammonium tetrachlorozincate solution in electroplating.<br><br>Contributing activity/technique for the environment :<br><br>**- Direct discharge to water after on-site treatment (ERC5)**<br><br>**- Discharge via additional off-site sewage treatment plant (ERC5)**<br><br>Contributing activity/technique for the workers :<br><br>**- Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC 3)**<br><br>**- Transfer and dilution of concentrated product by using dedicated dosing system (PROC 8b)**<br><br>**- Industrial spraying; Automated task; Open systems; Long term (PROC 7)**<br><br>**- Brushing; Automated task; medium RMM (PROC 10)**<br><br>**- Industrial uses; Treatment of articles by dipping and pouring (PROC 13)**<br><br>**- Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC 21)**<br><br>**- Other hot work operation with metals (PROC 25)**<br><br>**- Handling of solid inorganic substances at ambient temperature (PROC 26)**<br><br>**Product Category used:** PC 14: Metal surface treatment products ; PC 38: Welding and soldering products, flux products |

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| | **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<br><br>**Technical function of the substance:** antiscaling agent ; corrosion inhibitor ; flux agent ; plating agent<br><br>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant<br><br>Tonnage of substance for that use: <=2.5 tonnes/year<br><br>Substance supplied to that use:<br><br>Subsequent service life relevant for that use: yes<br>Link to the subsequent service life: Article service life of coated items<br><br>*Related assessment: use assessed in a joint CSR* |
| IW-2 | **Industrial use of diammonium tetrachlorozincate for production of inorganic and organic compounds**<br><br>Further description of the use:<br><br>Industrial use of diammonium tetrachlorozincate 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.<br><br>Contributing activity/technique for the environment :<br><br>**- Direct discharge to water after on-site treatment (ERC6a)**<br><br>**- Discharge via additional off-site sewage treatment plant (ERC6a)**<br><br>Contributing activity/technique for the workers :<br><br>**- Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC 2)**<br><br>**- Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC 3)**<br><br>**- Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC 8b)**<br><br>**- Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)**<br><br>**- Manufacturing and processing of minerals and/or metals at substantially elevated temperature (PROC 22)**<br><br>**- Open processing and transfer operations at substantially elevated temperature (PROC** |

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| | **23)**<br><br>**- Handling of solid inorganic substances at ambient temperature (PROC 26)**<br><br>**- Use as laboratory reagent (PROC 15)**<br><br>**Product Category used:** PC 14: Metal surface treatment products<br><br>**Sector of end use:** SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) ; SU 9: Manufacture of fine chemicals<br><br>**Technical function of the substance:** intermediate (precursor)<br><br>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant<br><br>Tonnage of substance for that use: <=25 tonnes/year<br><br>Substance supplied to that use:<br><br>Subsequent service life relevant for that use: no<br><br>*Related assessment: use assessed in a joint CSR* |
| IW-3 | **Use of diammonium tetrachlorozincate as laboratory reagent**<br><br>Further description of the use:<br><br>Use of diammonium tetrachlorozincate as active laboratory reagent in aqueous or organic media, for analysis or synthesis<br><br>Contributing activity/technique for the environment :<br><br>**- Discharge via either on-site or off-site sewage treatment plant (ERC6a)**<br><br>Contributing activity/technique for the workers :<br><br>**- Use as laboratory reagent (PROC 15)**<br><br>**Product Category used:** PC 21: Laboratory chemicals<br><br>**Technical function of the substance:** intermediate (precursor)<br><br>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant<br><br>Tonnage of substance for that use: <=0.05 tonnes/year<br><br>Substance supplied to that use:<br><br>Subsequent service life relevant for that use: no<br><br>*Related assessment: use assessed in a joint CSR* |

## Table 2.5. Uses by professional workers

| | Uses by professional workers |
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| PW-1 | **Professional use of diammonium tetrachlorozincate in metal surface treatment**<br><br>Further description of the use:<br><br>Professional use of diammonium tetrachlorozincate-based fluxing agents for surface treatment of metallic articles before a welding, soldering process<br><br>Contributing activity/technique for the environment :<br><br>**- Professional use of diammonium tetrachlorozincate in metal surface treatment - indoor (ERC8c)**<br><br>**- Professional use of diammonium tetrachlorozincate in metal surface treatment - outdoor (ERC8f)**<br><br>Contributing activity/technique for the workers :<br><br>**- Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC 8a)**<br><br>**- Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC 8b)**<br><br>**- Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC 9)**<br><br>**- Roller application or brushing (PROC 10)**<br><br>**- Treatment of articles by dipping and pouring (PROC 13)**<br><br>**- Other hot work operation with metals (PROC 25)**<br><br>**Product Category used:** PC 14: Metal surface treatment products ; PC 38: Welding and soldering products, flux products<br><br>**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<br><br>**Technical function of the substance:** antiscaling agent ; corrosion inhibitor<br><br>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant<br><br>Tonnage of substance for that use: <=2.5 tonnes/year<br><br>Subsequent service life relevant for that use: yes<br>Link to the subsequent service life: Article service life of coated items<br><br>*Related assessment: use assessed in a joint CSR* |

## Table 2.6. Article service life

| | Article service life |
|---|---|
| SL-1 | **Article service life of coated items**<br><br>Further description of the use:<br><br>Article used by: consumers<br><br>Substance intended to be released from article: no<br><br>**Article category related to subsequent service life (AC):**<br><br>Contributing activity/technique for the environment:<br><br>**- Article service life of coated items (ERC10a ; ERC11a)**<br><br>Contributing activity/technique for consumers:<br><br>**- Vehicles (AC 1)**<br><br>**- Machinery, mechanical appliances, electrical/electronic articles (AC 2)**<br><br>**- Metal articles (AC 7)**<br><br>Contributing activity/technique for the workers:<br><br>**Technical function of the substance:** antiscaling agent ; corrosion inhibitor ; pigment ; plating agent<br><br>use registered according to REACH Article 10; total tonnage manufactured/imported >=10tonnes/year per registrant<br><br>Tonnage of substance for that use: <=2.5 tonnes/year<br><br>*Related assessment: use assessed in a joint CSR* |