Generic exposure scenarios for cadmium hydroxide

Number	Sector	Uses	Code
0	Cadmium hydroxide production	Manufacture Substance	$GES_{Cd(OH)2}$ 0
1	Formulation step	Forrmulation general	$GES_{Cd(OH)2}$ 1
2	First tier applications	Manufacturing of other cadmium compounds	$GES_{Cd(OH)2}$ 2
3		Laboratory reagent	$GES_{Cd(OH)2}$ 3
4		As component for solid blends & matrices	$GES_{Cd(OH)2}$ 4
5		As component for production of dispersions, pastes and other viscous matrices	$GES_{Cd(OH)2}$ 5
6	Second tier applications	DU of Cd(OH)2-containing solid preparations	$GES_{Cd(OH)2}$ 6
7		DU of Cd(OH)2-containing liquid & pasty preparations	$GES_{Cd(OH)2}$ 7

Several uses were identified for $Cd(OH)_2$. These are listed in table below, with the indication of the Generic Exposure Scenario (GES) that is relevant to these identified uses.

Identified uses for $Cd(OH)_2$ and corresponding Generic Exposure Scenario (GES)

IU number	Identified Use (IU) name	GES code
1	Cadmium hydroxide production -Wet	GESCd(OH)2 0
5	Component for production of inorganic Cadmium compounds	GESCd(OH)2 2
6	Electro-galvanizing	GESCd(OH)2 2
7	Electroplating	GESCd(OH)2 2
8	Laboratory reagent	GESCd(OH)2 3
9	Cadmium production by pyrometallurgy	GESCd(OH)2 2
10	Component for production of organic Cadmium compounds	GESCd(OH)2 2
11	Component for production of Inorganic pigments	GESCd(OH)2 1, GESCd(OH)2 4
12	Batteries/Fuel cells	GESCd(OH)2 1, GESCd(OH)2 4, GESCd(OH)2 5

Uses by workers in industrial settings

IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
1	Cadmium hydroxide production -Wet	as such (substance itself)	**Process category (PROC):** PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting PROC 26: Handling of solid inorganic substances at ambient temperature **Market sector by type of chemical product:** PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents **Environmental release category (ERC):** ERC 1: Manufacture of substances **Sector of end use (SU):** SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals **Subsequent service life relevant for that use?:** yes
5	Component for production of inorganic Cadmium compounds	as such (substance itself) in a mixture	**Process category (PROC):** PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 15: Use as laboratory reagent PROC 21: Low energy manipulation of substances bound in materials and/or articles PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting **Market sector by type of chemical product:** PC 19: Intermediate PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents PC 21: Laboratory chemicals **Environmental release category (ERC):** ERC 1: Manufacture of substances ERC 2: Formulation of preparations ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)

IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
			Sector of end use (SU): SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) **Subsequent service life relevant for that use?:** yes
6	Electrogalvanizing	as such (substance itself)	**Process category (PROC):** PROC 13: Treatment of articles by dipping and pouring PROC 21: Low energy manipulation of substances bound in materials and/or articles **Market sector by type of chemical product:** PC 7: Base metals and alloys PC 14: Metal surface treatment products, including galvanic and electroplating products **Environmental release category (ERC):** ERC 2: Formulation of preparations ERC 5: Industrial use resulting in inclusion into or onto a matrix **Sector of end use (SU):** SU 15: Manufacture of fabricated metal products, except machinery and equipment SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU 0: Other: Nace C25.6.1: Treatment and coating of metals **Subsequent service life relevant for that use?:** yes **Article category related to subsequent service life (AC):** AC 2: Machinery, mechanical appliances, electrical/electronic articles AC 7: Metal articles
7	Electroplating	as such (substance itself)	**Process category (PROC):** PROC 3: Use in closed batch process (synthesis or formulation) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 21: Low energy manipulation of substances bound in materials and/or articles **Market sector by type of chemical product:** PC 7: Base metals and alloys PC 14: Metal surface treatment products, including galvanic and electroplating products **Environmental release category (ERC):**

IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
			ERC 2: Formulation of preparations ERC 5: Industrial use resulting in inclusion into or onto a matrix **Sector of end use (SU):** SU 15: Manufacture of fabricated metal products, except machinery and equipment SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU 0: Other: Nace C25.6.1: Treatment and coating of metals **Subsequent service life relevant for that use?:** yes **Article category related to subsequent service life (AC):** AC 2: Machinery, mechanical appliances, electrical/electronic articles AC 7: Metal articles
8	Laboratory reagent	as such (substance itself)	**Process category (PROC):** PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 15: Use as laboratory reagent **Market sector by type of chemical product:** PC 19: Intermediate PC 21: Laboratory chemicals PC 28: Perfumes, fragrances PC 39: Cosmetics, personal care products **Environmental release category (ERC):** ERC 1: Manufacture of substances ERC 2: Formulation of preparations ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC 6b: Industrial use of reactive processing aids ERC 8a: Wide dispersive indoor use of processing aids in open systems ERC 8d: Wide dispersive outdoor use of processing aids in open systems

IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
			Sector of end use (SU): SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU 24: Scientific research and development **Subsequent service life relevant for that use?:** yes
9	Cadmium production by pyrometallurgy	as such (substance itself)	**Process category (PROC):** PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 23: Open processing and transfer operations with minerals/metals at elevated temperature PROC 26: Handling of solid inorganic substances at ambient temperature **Market sector by type of chemical product:** PC 7: Base metals and alloys **Environmental release category (ERC):** ERC 1: Manufacture of substances **Sector of end use (SU):** SU 14: Manufacture of basic metals, including alloys SU 0: Other: Nace C24.4.5: Other non-ferrous metal production, E38.3: Materials recovery **Subsequent service life relevant for that use?:** yes
10	Component for production of organic Cadmium compounds	as such (substance itself) in a mixture	**Process category (PROC):** PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 15: Use as laboratory reagent **Market sector by type of chemical product:** PC 19: Intermediate PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents PC 21: Laboratory chemicals PC 24: Lubricants, greases, release products PC 29: Pharmaceuticals

IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
			PC 39: Cosmetics, personal care products **Environmental release category (ERC):** ERC 1: Manufacture of substances ERC 2: Formulation of preparations ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates) **Sector of end use (SU):** SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) **Subsequent service life relevant for that use?:** yes
11	Component for production of Inorganic pigments	in a mixture	**Process category (PROC):** PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting **Market sector by type of chemical product:** PC 9a: Coatings and paints, thinners, paint removes PC 9b: Fillers, putties, plasters, modelling clay PC 9c: Finger paints **Environmental release category (ERC):** ERC 1: Manufacture of substances ERC 2: Formulation of preparations ERC 5: Industrial use resulting in inclusion into or onto a matrix **Sector of end use (SU):** SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU 13: Manufacture of other non-metallic mineral products, e.g. plasters, cement

IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
			Subsequent service life relevant for that use?: yes
12	Batteries/Fuel cells	as such (substance itself) in a mixture	**Process category (PROC):** PROC 3: Use in closed batch process (synthesis or formulation) PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC 13: Treatment of articles by dipping and pouring **Market sector by type of chemical product:** PC 14: Metal surface treatment products, including galvanic and electroplating products PC 19: Intermediate PC 20: Products such as ph-regulators, flocculants, precipitants, neutralisation agents PC 21: Laboratory chemicals **Environmental release category (ERC):** ERC 2: Formulation of preparations ERC 5: Industrial use resulting in inclusion into or onto a matrix **Sector of end use (SU):** SU 16: Manufacture of computer, electronic and optical products, electrical equipment SU 0: Other: Nace C27.2: Manufacture of batteries and accumulators **Subsequent service life relevant for that use?:** yes **Article category related to subsequent service life (AC):** AC 3: Electrical batteries and accumulators

Uses by professional workers

IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
8	Laboratory reagent	as such (substance itself)	**Process category (PROC):** PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 15: Use as laboratory reagent **Market sector by type of chemical product:** PC 19: Intermediate PC 21: Laboratory chemicals PC 28: Perfumes, fragrances PC 39: Cosmetics, personal care products **Environmental release category (ERC):** ERC 1: Manufacture of substances ERC 2: Formulation of preparations ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC 6b: Industrial use of reactive processing aids ERC 8a: Wide dispersive indoor use of processing aids in open systems ERC 8d: Wide dispersive outdoor use of processing aids in open systems **Sector of end use (SU):** SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU 24: Scientific research and development **Subsequent service life relevant for that use?:** yes