21. ES 21: Service life (worker at industrial site); Industrial handling of surface treated articles (passivated/plated/sprayed)

21.1. Title section

Article category: Machinery, mechanical appliances, electrical/electronic articles (AC 2), Metal articles (AC 7)

Environment	
1: Handling of surface treated articles (passivated/plated/sprayed)	ERC 12a
Worker	
2: Handling of articles	PROC 21
Exposure scenario of the uses leading to the inclusion of the substance into the article	
ES 17: Use at industrial sites; Metal surface treatment products; Industrial use of cobalt in passivation processes in surface treatment	
ES 18: Use at industrial sites; Metal surface treatment products; Manufacture of fabricated metal products, except machinery and equipment; Passivation processes in surface treatment at large industrial sites with continuous processes	
ES 19: Use at industrial sites; Metal surface treatment products; Industrial use of cobalt in plating processes in surface treatment	
ES 20: Use at industrial sites; Metal surface treatment products; Industrial use of cobalt in thermal spraying in surface treatment	

21.2. Conditions of use affecting exposure

21.2.1. Control of environmental exposure: Handling of surface treated articles (passivated/plated/sprayed) (ERC 12a)

Amount used, frequency and duration of use (or from service life)
Daily amount per site <= 6E-3 tonnes/day
Annual amount per site <= 2.007 tonnes/year
Conditions and measures related to biological sewage treatment plant
Municipal sewage treatment plant is assumed.
Assumed domestic sewage treatment plant flow >= 2E3 m3/day
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.

21.2.2. Control of worker exposure: Handling of articles (PROC 21)

Product (article) characteristics
Maximum emission potential covered in this ES: Very low.
Concentration of the substance in mixture is not restricted.
Physical form covered in this ES: Massive object.
Amount used (or contained in articles), frequency and duration of use/exposure
Duration of exposure: Not restricted.
Technical and organisational conditions and measures

Room volume is >= 1000 m³.
Process is carried out at ambient temperature.
Outdoor use is not permitted.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.; For further specification, refer to section 8 of the SDS.
Wear respiratory protection providing a minimum assigned protection factor of 10 (a minimum efficiency of 90%) unless inhalation exposure to the substance can be excluded. For further specification, refer to section 8 of the SDS.

21.3. Exposure estimation and reference to its source

21.3.1. Environmental release and exposure: Handling of surface treated articles (passivated/plated/sprayed) (ERC 12a)

Release route	Release rate	Release estimation method
Water	0 kg/day	Estimated release factor
Air	0 kg/day	Estimated release factor
Soil	0 kg/day	Estimated release factor

21.3.2. Worker exposure: Handling of articles (PROC 21)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	8.6 µg/m³ (Measured data)	0.215

21.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Guidance: Please refer to Section 0.3 of this “ES for Communication”.
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