

16. ES 16: Use at industrial sites; Use of nickel-containing alloys for sand blasting in industrial settings

16.1. Title section

Product category: Base metals and alloys (PC 7)

Sector of use: Manufacture of fabricated metal products, except machinery and equipment (SU 15)

Environment	
1: Use of nickel-containing alloys for sand blasting in industrial settings - only air ERC 4	
Worker	
2: Raw material handling	PROC 26
3: Blasting operations	PROC 7
4: Wet cleaning	PROC 28
5: Cleaning/removal of dust	PROC 28

16.2. Conditions of use affecting exposure

16.2.1. Control of environmental exposure: Use of nickel-containing alloys for sand blasting in industrial settings - only air (ERC 4)

Amount used, frequency and duration of use (or from service life)
Daily amount per site \leq 0.032 tonnes/day (All the amounts and concentrations are expressed as Ni as this is the driver for the environmental risk assessment.)
Annual amount per site \leq 7 tonnes/year
Emission days \geq 216 days/year
Technical and organisational conditions and measures
Electrostatic precipitator or wet electrostatic precipitator or cyclones or fabric/bag filter or ceramic/metal mesh filter or wet scrubber
The substance should not be released to water
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.

16.2.2. Control of worker exposure: Raw material handling (PROC 26)

Product (article) characteristics
Maximum emission potential covered in this ES: High.
Physical form of product: Solid, powder / dust, granules.
Amount used (or contained in articles), frequency and duration of use/exposure
Covers daily exposures up to 8 hours
Technical and organisational conditions and measures
Local exhaust ventilation
Semi-closed system
Conditions and measures related to personal protection, hygiene and health evaluation

APF of RPE = 10 (90% respiratory protection). For further specification, refer to section 8 of the SDS.

Wear suitable gloves tested to EN374.; For further specification, refer to section 8 of the SDS.
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16.2.3. Control of worker exposure: Blasting operations (PROC 7)

Product (article) characteristics
Physical form of product: Solid, powder / dust, granules.
Maximum emission potential covered in this ES: High (abrasion based).
Amount used (or contained in articles), frequency and duration of use/exposure
Covers daily exposures up to 8 hours
Technical and organisational conditions and measures
Use in closed process
Use of an integrated local exhaust ventilation with high efficiency is required.
Automated task

16.2.4. Control of worker exposure: Wet cleaning (PROC 28)

Product (article) characteristics
Maximum emission potential covered in this ES: Very low.
Physical form of product: Solution and other liquid materials, e.g. suspensions are also covered.
Amount used (or contained in articles), frequency and duration of use/exposure
Covers daily exposures up to 8 hours
Technical and organisational conditions and measures
Cleaning machines such as power sweeper, no direct manual cleaning.
Covers use at ambient temperatures.
Conditions and measures related to personal protection, hygiene and health evaluation
APF of RPE = 10 (90% respiratory protection).

16.2.5. Control of worker exposure: Cleaning/removal of dust (PROC 28)

Product (article) characteristics
Physical form of product: Residual dust.
Amount used (or contained in articles), frequency and duration of use/exposure
Covers daily exposures up to 8 hours
Technical and organisational conditions and measures
Cleaning is conducted using cleaning machines, in particular hovering is applied and the use of compressed air is omitted.
Conditions and measures related to personal protection, hygiene and health evaluation
APF of RPE = 20 (95% respiratory protection). For further specification, refer to section 8 of the SDS.

16.3. Exposure estimation and reference to its source

16.3.1. Environmental release and exposure: Use of nickel-containing alloys for sand blasting in industrial settings - only air (ERC 4)

Release route	Release rate	Release estimation method
Water	0 kg/day	Estimated release factor
Air	0.065 kg/day	Estimated release factor
Soil	0 kg/day	Estimated release factor

Protection target	Exposure estimate	RCR
Agricultural soil	16.20 mg/kg dw (EUSES 2.1.2)	0.542

16.3.2. Worker exposure: Raw material handling (PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.014 mg/m ³ (Measured data)	0.28
Inhalation, local, long term	0.014 mg/m ³ (Measured data)	0.28
Inhalation, local, acute	0.071 mg/m ³ (Measured data)	< 0.01
Dermal, local, long term	5.18 µg/cm ² (Measured data)	0.148
Combined, systemic, long term		0.28

16.3.3. Worker exposure: Blasting operations (PROC 7)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.031 mg/m ³ (Measured data)	0.62
Inhalation, local, long term	0.031 mg/m ³ (Measured data)	0.62
Inhalation, local, acute	0.157 mg/m ³ (Measured data)	0.013
Dermal, local, long term	0.76 µg/cm ² (Measured data)	0.022
Combined, systemic, long term		0.62

16.3.4. Worker exposure: Wet cleaning (PROC 28)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	6E-3 mg/m ³ (Measured data)	0.12
Inhalation, local, long term	6E-3 mg/m ³ (Measured data)	0.12
Inhalation, local, acute	0.026 mg/m ³ (Measured data)	< 0.01
Dermal, local, long term	0.76 µg/cm ² (Measured data)	0.022
Combined, systemic, long term		0.12

16.3.5. Worker exposure: Cleaning/removal of dust (PROC 28)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.032 mg/m ³ (Measured data)	0.64
Inhalation, local, long term	0.032 mg/m ³ (Measured data)	0.64
Inhalation, local, acute	0.189 mg/m ³ (Measured data)	0.016
Dermal, local, long term	0.76 µg/cm ² (Measured data)	0.022

Route of exposure and type of effects	Exposure estimate	RCR
Combined, systemic, long term		0.64

16.4. 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”.