

35. ES 35: Service life (professional worker); Service life of nickel alloys and nickel-coated metal objects (machining and handling) in professional settings

35.1. Title section

Article category: Machinery, mechanical appliances, electrical/electronic articles (AC 2), Metal articles (AC 7), Plastic articles (AC 13)

Environment	
1: Service life of nickel alloys and nickel-coated objects (machining and handling) in professional settings	ERC 11a
Worker	
2: Low energy handling of massive objects	PROC 21
3: Abrasive processes	PROC 24
4: Hot work operations	PROC 25

35.2. Conditions of use affecting exposure

35.2.1. Control of environmental exposure: Service life of nickel alloys and nickel-coated objects (machining and handling) in professional settings (ERC 11a)

Technical and organisational conditions and measures
The substance should not be released to air
The substance should not be released to water
Conditions and measures related to biological sewage treatment plant
Municipal sewage treatment plant is assumed.
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.

35.2.2. Control of worker exposure: Low energy handling of massive objects (PROC 21)

Product (article) characteristics
Maximum emission potential covered in this ES: Very low.
Physical form of product; Massive object
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.

35.2.3. Control of worker exposure: Abrasive processes (PROC 24)

Product (article) characteristics
Physical form of product; Massive object
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.

35.2.4. Control of worker exposure: Hot work operations (PROC 25)

Product (article) characteristics
Maximum emission potential covered in this ES: High.
Physical form of product: Molten.
Technical and organisational conditions and measures
High temperature
Conditions and measures related to personal protection, hygiene and health evaluation
Dermal contact with the substance has to be excluded.
APF of RPE = 10 (90% respiratory protection). For further specification, refer to section 8 of the SDS.
Clothing and personal protective equipment that shields from the heat and other hazards of the specific task and welding method conducted. Such PPE may include fire-retardant clothing, heavy gloves, safety shoes, helmet or hair protection, and protective apron/leggings. Eye protection is also mandatory, both for reducing the effects of radiant energy and stopping any chips or fragments that may fly off the workpieces. Workers should also not carry flammable or explosive items such as butane cigarette lighters. Best practice advice for risk management measures can be found in a Communication statement from the European Welding Association, available at: https://european-welding.org/wp-content/uploads/2016/10/Communication-statements_july_2010.pdf .

35.3. Exposure estimation and reference to its source

35.3.1. Environmental release and exposure: Service life of nickel alloys and nickel-coated objects (machining and handling) in professional settings (ERC 11a)

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

35.3.2. Worker exposure: Low energy handling of massive objects (PROC 21)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	9E-3 mg/m ³ (Measured data)	0.18
Inhalation, local, long term	9E-3 mg/m ³ (Measured data)	0.18
Inhalation, local, acute	0.037 mg/m ³ (Measured data)	< 0.01
Dermal, local, long term	5.18 µg/cm ² (Measured data)	0.148
Combined, systemic, long term		0.18

35.3.3. Worker exposure: Abrasive processes (PROC 24)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	5E-3 mg/m ³ (Measured data)	0.1
Inhalation, local, long term	5E-3 mg/m ³ (Measured data)	0.1
Inhalation, local, acute	0.014 mg/m ³ (Measured data)	< 0.01
Dermal, local, long term	0.76 µg/cm ² (Measured data)	0.022
Combined, systemic, long term		0.1

35.3.4. Worker exposure: Hot work operations (PROC 25)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.041 mg/m ³ (Measured data)	0.82
Inhalation, local, long term	0.041 mg/m ³ (Measured data)	0.82
Inhalation, local, acute	0.122 mg/m ³ (Measured data)	0.01
Dermal, local, long term	0.76 µg/cm ² (Measured data)	0.022
Combined, systemic, long term		0.82

35.4. 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".