

14. ES 14: Service life (professional worker); Service life of dental alloys containing cobalt in professional settings

14.1. Title section

Article category: Metal articles (AC 7)

Environment	
1: Service life of dental alloys containing cobalt in professional settings	ERC 11a
Worker	
2: Handling of ingots	PROC 21
3: Melting and casting	PROC 23, PROC 22
4: Hand fettling	PROC 24
Exposure scenario of the uses leading to the inclusion of the substance into the article	
ES 7: Use at industrial sites; Various products; Various sectors; Production and industrial use of cobalt containing alloys, steels and tools	

14.2. Conditions of use affecting exposure

14.2.1. Control of environmental exposure: Service life of dental alloys containing cobalt in professional settings (ERC 11a)

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.

14.2.2. Control of worker exposure: Handling of ingots (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
Process is carried out at ambient temperature.
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.

14.2.3. Control of worker exposure: Melting and casting (PROC 23, PROC 22)

Product (article) characteristics
Maximum emission potential covered in this ES: Low (temperature based).
Concentration of the substance in mixture is not restricted.
Physical form covered in this ES: Molten.
Physical form of product; 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
Limit the process temperature to 1.4E3 °C.
Use of closed furnace or extracted furnace.
Use of an integrated local exhaust ventilation with an efficiency of at least 80% is required.
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.

14.2.4. Control of worker exposure: Hand fettling (PROC 24)

Product (article) characteristics
Maximum emission potential covered in this ES: Medium (abrasion based).
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
Integrated tool / machine extraction with an efficiency of at least 80.0% is required.
Process is carried out at ambient temperature.
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.

14.3. Exposure estimation and reference to its source

14.3.1. Environmental release and exposure: Service life of dental alloys containing cobalt 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

14.3.2. Worker exposure: Handling of ingots (PROC 21)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	25 µg/m ³ (Measured data)	0.625

14.3.3. Worker exposure: Melting and casting (PROC 23, PROC 22)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	25 µg/m ³ (Measured data)	0.625

14.3.4. Worker exposure: Hand fettling (PROC 24)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	25 µg/m ³ (Measured data)	0.625

14.4. 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".