

34. ES 34: Use at industrial sites; Production of hardmetal powder for surface technology

34.1. Title section

Product category: Base metals and alloys (PC 7)

Environment	
1: Production of hardmetal powder for surface technology ES1 STP Discharge	ERC 6a
2: Production of hardmetal powder for surface technology ES2 Marine Discharge	ERC 6a
Worker	
3: Weighing powders for suspension	PROC 26
4: Agglomeration	PROC 3
5: Sieving	PROC 3
6: Sintering	PROC 22
7: Classifying of powder	PROC 3
8: Packaging	PROC 26
9: Cleaning & Maintenance	PROC 28
Subsequent service life exposure scenario(s)	
ES 35: Service life (worker at industrial site); Machinery, mechanical appliances, electrical/electronic articles; Service life of hardmetal articles in industrial settings	

34.2. Conditions of use affecting exposure

34.2.1. Control of environmental exposure: Production of hardmetal powder for surface technology ES1 STP Discharge (ERC 6a)

Amount used, frequency and duration of use (or from service life)
Daily amount per site <= 0.654 tonnes/day
Annual amount per site <= 170 tonnes/year
Emission days >= 260 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
Chemical precipitation or sedimentation or filtration or electrolysis or reverse osmosis or ion exchange
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.
Other conditions affecting environmental exposure
No discharge to marine water assumed
Local freshwater dilution factor 100

34.2.2. Control of environmental exposure: Production of

hardmetal powder for surface technology ES2 Marine Discharge (ERC 6a)

Amount used, frequency and duration of use (or from service life)
Daily amount per site <= 0.654 tonnes/day
Annual amount per site <= 170 tonnes/year
Emission days >= 260 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
Chemical precipitation or sedimentation or filtration or electrolysis or reverse osmosis or ion exchange
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.
Other conditions affecting environmental exposure
Assumed effluent discharge flow from site >= 2E3 m3/day
Local marine water dilution factor 100

34.2.3. Control of worker exposure: Weighing powders for suspension (PROC 26)

Product (article) characteristics
Maximum emission potential covered in this ES: Medium.
Physical form covered in this ES: Solid, powder / dust.
Limit the concentration of the substance in mixture to <= 25 %.
Amount used (or contained in articles), frequency and duration of use/exposure
Duration of exposure: Not restricted.
Technical and organisational conditions and measures
Use of a local exhaust ventilation with an efficiency of at least 78% 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.
APF of RPE = 20 (95% respiratory protection).
Wear protective suit conforming to EN 13982 in cases where direct contact with the substance cannot be avoided.

34.2.4. Control of worker exposure: Agglomeration (PROC 3)

Product (article) characteristics
Maximum emission potential covered in this ES: Medium.
Physical form covered in this ES: Solid, powder / dust.
Limit the concentration of the substance in mixture to <= 25 %.
Amount used (or contained in articles), frequency and duration of use/exposure
Duration of exposure: Not restricted.
Technical and organisational conditions and measures
Ensure full containment of the process.
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.
APF of RPE = 10 (90% respiratory protection).
Wear protective suit conforming to EN 13982 in cases where direct contact with the substance cannot be avoided.

34.2.5. Control of worker exposure: Sieving (PROC 3)

Product (article) characteristics
Maximum emission potential covered in this ES: Medium.
Physical form covered in this ES: Solid, powder / dust.
Limit the concentration of the substance in mixture to <= 25 %.
Amount used (or contained in articles), frequency and duration of use/exposure
Duration of exposure: Not restricted.
Technical and organisational conditions and measures
Ensure full containment of the process.
Use of a local exhaust ventilation with an efficiency of at least 78% 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.
Wear protective suit conforming to EN 13982 in cases where direct contact with the substance cannot be avoided.

34.2.6. Control of worker exposure: Sintering (PROC 22)

Product (article) characteristics
Maximum emission potential covered in this ES: Low (temperature based).
Physical form covered in this ES: Solid, powder / dust.
Limit the concentration of the substance in mixture to <= 25 %.
Amount used (or contained in articles), frequency and duration of use/exposure
Duration of exposure: Not restricted.
Technical and organisational conditions and measures
Ensure full containment of the process.
Use of an integrated local exhaust ventilation with an efficiency of at least 84% is required.
Covers use at temperatures below melting point / degradation 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.
Wear protective suit conforming to EN 13982 in cases where direct contact with the substance cannot be avoided.

34.2.7. Control of worker exposure: Classifying of powder

(PROC 3)

Product (article) characteristics
Maximum emission potential covered in this ES: Medium.
Physical form covered in this ES: Solid, powder / dust.
Limit the concentration of the substance in mixture to <= 25 %.
Amount used (or contained in articles), frequency and duration of use/exposure
Duration of exposure: Not restricted.
Technical and organisational conditions and measures
Ensure full containment of the process.
Use of a local exhaust ventilation with an efficiency of at least 78% 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.
Wear protective suit conforming to EN 13982 in cases where direct contact with the substance cannot be avoided.

34.2.8. Control of worker exposure: Packaging (PROC 26)

Product (article) characteristics
Maximum emission potential covered in this ES: Medium.
Physical form covered in this ES: Solid, powder / dust.
Limit the concentration of the substance in mixture to <= 25 %.
Amount used (or contained in articles), frequency and duration of use/exposure
Duration of exposure: Not restricted.
Technical and organisational conditions and measures
Use of general ventilation with an efficiency of at least 17% 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.
Wear protective suit conforming to EN 13982 in cases where direct contact with the substance cannot be avoided.

34.2.9. Control of worker exposure: Cleaning & Maintenance (PROC 28)

Product (article) characteristics
Maximum emission potential covered in this ES: Medium.
Physical form covered in this ES: Solid, powder / dust.
Amount used (or contained in articles), frequency and duration of use/exposure
Duration of exposure: Not restricted.
Technical and organisational conditions and measures

Use of a local exhaust ventilation with an efficiency of at least 78% 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.
APF of RPE = 20 (95% respiratory protection).
Wear protective suit conforming to EN 13982 in cases where direct contact with the substance cannot be avoided.

34.3. Exposure estimation and reference to its source

34.3.1. Environmental release and exposure: Production of hardmetal powder for surface technology ES1 STP Discharge (ERC 6a)

Release route	Release rate	Release estimation method
Water	0.065 kg/day	Estimated release factor
Air	0.196 kg/day	Estimated release factor
Soil	0 kg/day	Estimated release factor

Protection target	Exposure estimate	RCR
Fresh water	2.24E-4 mg/L (EUSES 2.1.2)	0.361
Sediment (freshwater)	9.02 mg/kg dw (PEC sediment calculation method for metals)	0.168
Sewage Treatment Plant	0.02 mg/L (EUSES 2.1.2)	0.053
Agricultural soil	0.791 mg/kg dw (EUSES 2.1.2)	0.073
Man via environment - Inhalation	3.88E-5 mg/m ³ (EUSES 2.1.2)	< 0.01

34.3.2. Environmental release and exposure: Production of hardmetal powder for surface technology ES2 Marine Discharge (ERC 6a)

Release route	Release rate	Release estimation method
Water	0.065 kg/day	Estimated release factor
Air	0.196 kg/day	Estimated release factor
Soil	0 kg/day	Estimated release factor

Protection target	Exposure estimate	RCR
Marine water	0.157 µg/L (Clocal calculation with Kp susp. matter marine)	0.067
Sediment (marine water)	26.9 mg/kg dw (PEC sediment calculation method for metals)	0.385
Agricultural soil	0.24 mg/kg dw (EUSES 2.1.2)	0.022
Man via environment - Inhalation	3.88E-5 mg/m ³ (EUSES 2.1.2)	< 0.01

34.3.3. Worker exposure: Weighing powders for suspension (PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	27 µg/m ³ (Measured data)	0.675

34.3.4. Worker exposure: Agglomeration (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	6.4 µg/m ³ (Measured data)	0.16

34.3.5. Worker exposure: Sieving (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	16 µg/m ³ (Measured data)	0.4

34.3.6. Worker exposure: Sintering (PROC 22)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	18.6 µg/m ³ (Measured data)	0.465

34.3.7. Worker exposure: Classifying of powder (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	16 µg/m ³ (Measured data)	0.4

34.3.8. Worker exposure: Packaging (PROC 26)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	5.8 µg/m ³ (Measured data)	0.145

34.3.9. Worker exposure: Cleaning & Maintenance (PROC 28)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, local, long term	18.55 µg/m ³ (Measured data)	0.464

34.4. 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".