

SPERC fact sheet – *Manufacture and recycling of massive metal and metal powder*

General information																			
Title of specific ERC	Manufacture and recycling of massive metal, metal powder																		
Based on ERC	1 – Manufacture of substances																		
Version	1.2																		
Scope	Manufacture and recycling of massive metal or metal powder. This definition includes refining, smelting, melting and electrolytic processes.																		
Coverage	<p>Metal representativeness of background data:</p> <table border="1"> <caption>Metal representativeness of background data</caption> <thead> <tr> <th>Metal</th> <th>Color</th> </tr> </thead> <tbody> <tr> <td>Cadmium</td> <td>Dark Blue</td> </tr> <tr> <td>Chromium</td> <td>Red</td> </tr> <tr> <td>Cobalt</td> <td>Light Green</td> </tr> <tr> <td>Copper</td> <td>Purple</td> </tr> <tr> <td>Lead</td> <td>Blue</td> </tr> <tr> <td>Nickel</td> <td>Light Blue</td> </tr> <tr> <td>Tin</td> <td>Pink</td> </tr> <tr> <td>Zinc</td> <td>Green</td> </tr> </tbody> </table>	Metal	Color	Cadmium	Dark Blue	Chromium	Red	Cobalt	Light Green	Copper	Purple	Lead	Blue	Nickel	Light Blue	Tin	Pink	Zinc	Green
Metal	Color																		
Cadmium	Dark Blue																		
Chromium	Red																		
Cobalt	Light Green																		
Copper	Purple																		
Lead	Blue																		
Nickel	Light Blue																		
Tin	Pink																		
Zinc	Green																		
Narrative description	<p>Following processes can be used to retrieve massive metals from ore concentrates: hydrometallurgical and pyrometallurgical processes. The hydrometallurgical winning process involves roasting, leaching, purification and electrolysis. The pyrometallurgical winning process involves roasting, sintering, blast furnacing, condensing and refining/casting.</p> <p>Loading of anodes in tank. Deposition of powder on cathodes. Discharge of powder, washing and drying. Removal of spent anodes.</p> <p>Raw materials handling and storing of produced massive metal and metal powders are also included in the scope.</p>																		
Substance use rate	Assessment defaults as set by ERC ¹																		

¹ ECHA Guidance on information requirements and chemical safety assessment, Chapter R.16: Environmental Exposure Estimation, Table R.16-23

Other operational conditions	Open and closed systems, wet and dry processes	
Environment Parameters for Fate Calculation	Assessment defaults as set by ERC Assumed data for receiving water and for the municipal sewage treatment plant are 18 000 m ³ /d and 2000 m ³ /d, respectively (resulting dilution factor 10). For marine assessments an additional tenfold dilution is assumed.	
	Typical observed efficiency from background data	Type of RMM
Appropriate Risk management measures (RMM) that may be used to achieve required emission reduction	Air:	
	90% - 99.98%	RMMs for air are present in >90% of the sites: <ul style="list-style-type: none"> • Electrostatic precipitation (not common) • Fabric or bag filters (reported most common) • Ceramic filters • Wet scrubbers (reported second most common) • Dry or semi-dry scrubbers
	Water:	
	90% - 99.98%	RMMs for water are present in >90% of the sites for massive metal production and in >50% of the sites for metal compound production: <ul style="list-style-type: none"> • Chemical precipitation • Sedimentation • Filtration • Electrolysis (not common)
	Characteristics of specific ERC	Justification
Number of emission days	220 days/year	The 10 th percentile of reported site-specific number of emission days for 94 sites from production of massive metal and metal powder (220 days/year)

Emission fractions	air: 0.03% (release after RMM)	The 90 th percentile of reported site-specific release factors to air for 94 sites from the production of massive metal and metal powder (0.03%)
	water: 0.01% (release after on-site RMM)	The 90 th percentile of reported site-specific release factors to wastewater for 91 sites from the production of massive metal and metal powder (0.007%)
	soil: n.a.	Assessment default as set by ERC