

2.C.7.a - Copper Production

Short description

Within this NFR sub-category, SO₂, PM_{2.5}, PM₁₀, TSP, PCDD/F, HCB, As, Cd, Cu, Hg, and Pb emissions from the production of copper are reported.

Category Code	Method					AD					EF				
2.C.7.a	T1					AS					D, CS				
Key Category	SO ₂	NO _x	NH ₃	NM VOC	CO	BC	Pb	Hg	Cd	Diox	PAH	HCB	TSP	PM ₁₀	PM _{2.5}
2.C.7.a	-	-	-	-	-	-	-	-	L/-	-	-	-	-	-	-

Method

Activity data

The yearly production figures were taken from the annual statistical report of the German association for non-ferrous metals [\[Lit. 1\]](#).

Emission factors

The emission factors are either default values according to the 2019 EMEP/EEA air pollutant emission inventory guidebook [\[Lit. 2\]](#) or determined in several research projects or from companies environmental reports [\[Lit. 3\]](#).

Table 1: Tier1 emission factors applied for entire time series (primary and secondary copper production)

Pollutant	EF	Unit	Source
HCB	1	mg/t	
PCDD/F	2.9	µg/t	

Table 2: Emission factors applied for primary copper production in 2019

Pollutant	EF	Unit	Source
TSP	0.09	kg/t	
PM ₁₀	0.0765	kg/t	
PM _{2.5}	0.063	kg/t	
SO ₂	3.6	kg/t	
As	0.8	g/t	
Cd	15	g/t	
Cu	13.8	g/t	
Hg	0.031	g/t	
Pb	3.1	g/t	

Table 3: Emission factors applied for secondary copper production in 2019

Pollutant	EF	Unit	Source
TSP	0.100	kg/t	
PM ₁₀	0.085	kg/t	
PM _{2.5}	0.07	kg/t	
SO ₂	3.0	kg/t	
As	2	g/t	
Cd	486.428	mg/t	
Cu	46,088.62	mg/t	

Pollutant	EF	Unit	Source
Hg	2.644	mg/t	
Pb	21,977.15	mg/t	

Recalculations

Recalculations were necessary



For pollutant-specific information on recalculated emission estimates for Base Year and 2018, please see the pollutant specific recalculation tables following [chapter 8.1 - Recalculations](#).

Planned improvements

No category specific improvements are planned.

Bibliography

Lit. 1: German association for non-ferrous metals (WirtschaftsVereinigung Metalle): Annual statistical report:

<https://www.wvmetalle.de>

Lit. 2: Ökopol, IER, IZT, IfG: Bereitstellung einer qualitätsgesicherten Datengrundlage für die Emissionsberichterstattung zur Umsetzung von internationalen Luftreinhalte- und Klimaschutzvereinbarungen für ausgewählte Industriebranchen
Teilvorhaben 2: NE-Metallindustrie, Kalkindustrie, Gießereien.

Lit. 3: Lit. 4: