

## 2.C.6 - Zinc Production

### Short description

Within this NFR subcategory, SO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, TSP, As, Cd, Hg, Pb, Zn, PCDD/F, and PCB emissions from the production of zinc are reported.

| Category Code | Method          |                 |                 |       |    | AD |    |    |    |      | EF   |     |     |                  |                   |
|---------------|-----------------|-----------------|-----------------|-------|----|----|----|----|----|------|------|-----|-----|------------------|-------------------|
| 2.C.6         | T1              |                 |                 |       |    | AS |    |    |    |      | D,CS |     |     |                  |                   |
| Key Category  | SO <sub>2</sub> | NO <sub>x</sub> | NH <sub>3</sub> | NMVOC | CO | BC | Pb | Hg | Cd | Diox | PAH  | HCB | TSP | PM <sub>10</sub> | PM <sub>2.5</sub> |
| 2.C.6         | -               | -               | -               | -     | -  | -  | -  | -  | -  | -    | -    | -   | -   | -                | -                 |

### 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. The EF for the heavy metals (HM) are taken from a research project [\[Lit. 3\]](#).

Table 1: Tier 2 emission factors applied for primary zinc production

| Pollutant         | EF         | Unit |
|-------------------|------------|------|
| SO <sub>2</sub>   | 1.35       | kg/t |
| PM <sub>2.5</sub> | 0.0385     | kg/t |
| PM <sub>10</sub>  | 0.0613     | kg/t |
| TSP               | 0.100      | kg/t |
| As                | 123.882    | mg/t |
| Cd                | 1,085.046  | mg/t |
| Hg                | 0.5        | g/t  |
| Pb                | 19,604.578 | mg/t |
| Zn                | 51.968     | mg/t |
| PCDD/F            | 0.15       | µg/t |

Table 2: Tier 2 emission factors applied for secondary zinc production

| Pollutant       | EF   | Unit |
|-----------------|------|------|
| SO <sub>2</sub> | 1.35 | kg/t |

| Pollutant         | EF     | Unit |
|-------------------|--------|------|
| PM <sub>2.5</sub> | 0.0385 | kg/t |
| PM <sub>10</sub>  | 0.0613 | kg/t |
| TSP               | 0.100  | kg/t |
| As                | 0.03   | g/t  |
| Cd                | 0.23   | g/t  |
| Hg                | 1.5    | mg/t |
| Pb                | 0.95   | g/t  |
| Zn                | 9      | g/t  |
| PCDD/F            | 0.15   | µg/t |

## Recalculations

With activity data and emission factors remaining unrevised, no recalculations have been carried out compared to last year's submission.



For more 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:** EMEP/EEA, 2019: EMEP/EEA air pollutant emission inventory guidebook 2019, Copenhagen, 2019.

<https://www.eea.europa.eu/publications/emep-eea-guidebook-2019/part-b-sectoral-guidance-chapters/2-industrial-processes/2-c-metal-production/2-c-6-zinc-production-2016/view>

**Lit. 3:** 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.