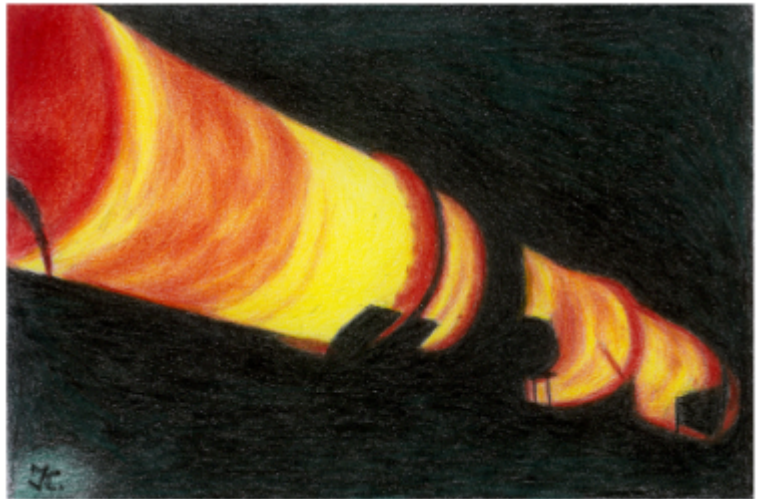


### Short Description

| Category Code                                                                             | Method                               | AD | EF |  |  |  |
|-------------------------------------------------------------------------------------------|--------------------------------------|----|----|--|--|--|
| 1.A.2.f                                                                                   | T1                                   | NS | CS |  |  |  |
| <b>Method(s) applied</b>                                                                  |                                      |    |    |  |  |  |
| <b>D</b>                                                                                  | Default                              |    |    |  |  |  |
| <b>T1</b>                                                                                 | Tier 1 / Simple Methodology *        |    |    |  |  |  |
| <b>T2</b>                                                                                 | Tier 2*                              |    |    |  |  |  |
| <b>T3</b>                                                                                 | Tier 3 / Detailed Methodology *      |    |    |  |  |  |
| <b>C</b>                                                                                  | CORINAIR                             |    |    |  |  |  |
| <b>CS</b>                                                                                 | Country Specific                     |    |    |  |  |  |
| <b>M</b>                                                                                  | Model                                |    |    |  |  |  |
| * as described in the EMEP/EEA Emission Inventory Guidebook - 2019, in category chapters. |                                      |    |    |  |  |  |
| <b>(source for) Activity Data</b>                                                         |                                      |    |    |  |  |  |
| <b>NS</b>                                                                                 | National Statistics                  |    |    |  |  |  |
| <b>RS</b>                                                                                 | Regional Statistics                  |    |    |  |  |  |
| <b>IS</b>                                                                                 | International Statistics             |    |    |  |  |  |
| <b>PS</b>                                                                                 | Plant Specific                       |    |    |  |  |  |
| <b>As</b>                                                                                 | Associations, business organisations |    |    |  |  |  |
| <b>Q</b>                                                                                  | specific Questionnaires (or surveys) |    |    |  |  |  |
| <b>M</b>                                                                                  | Model / Modelled                     |    |    |  |  |  |
| <b>C</b>                                                                                  | Confidential                         |    |    |  |  |  |
| <b>(source for) Emission Factors</b>                                                      |                                      |    |    |  |  |  |
| <b>D</b>                                                                                  | Default (EMEP Guidebook)             |    |    |  |  |  |
| <b>CS</b>                                                                                 | Country Specific                     |    |    |  |  |  |
| <b>PS</b>                                                                                 | Plant Specific                       |    |    |  |  |  |
| <b>M</b>                                                                                  | Model / Modelled                     |    |    |  |  |  |
| <b>C</b>                                                                                  | Confidential                         |    |    |  |  |  |

| NO <sub>x</sub> | NMVOC | SO <sub>2</sub> | NH <sub>3</sub> | PM <sub>2.5</sub>                                                                               | PM <sub>10</sub> | TSP | BC  | CO | Pb | Cd | Hg | As | Cr | Cu | Ni | Se | Zn | PCDD/F | B(a)P | B(b)F | B(k)F | I(x)P | PAH1-4 | HCB | PCBs |
|-----------------|-------|-----------------|-----------------|-------------------------------------------------------------------------------------------------|------------------|-----|-----|----|----|----|----|----|----|----|----|----|----|--------|-------|-------|-------|-------|--------|-----|------|
| -/-             | -/-   | -/-             | IE              | IE                                                                                              | IE               | IE  | -/- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA     | NA    | NA    | NA    | NA    | NA     | NA  | NA   |
|                 |       |                 |                 | L/- key source by <b>L</b> evel only                                                            |                  |     |     |    |    |    |    |    |    |    |    |    |    |        |       |       |       |       |        |     |      |
|                 |       |                 |                 | -/T key source by <b>T</b> rend only                                                            |                  |     |     |    |    |    |    |    |    |    |    |    |    |        |       |       |       |       |        |     |      |
|                 |       |                 |                 | L/T key source by both <b>L</b> evel and <b>T</b> rend                                          |                  |     |     |    |    |    |    |    |    |    |    |    |    |        |       |       |       |       |        |     |      |
|                 |       |                 |                 | -/- no key source for this pollutant                                                            |                  |     |     |    |    |    |    |    |    |    |    |    |    |        |       |       |       |       |        |     |      |
|                 |       |                 |                 | IE emission of specific pollutant <b>I</b> ncluded <b>E</b> lsewhere (i.e. in another category) |                  |     |     |    |    |    |    |    |    |    |    |    |    |        |       |       |       |       |        |     |      |
|                 |       |                 |                 | NE emission of specific pollutant <b>N</b> ot <b>E</b> stimated (yet)                           |                  |     |     |    |    |    |    |    |    |    |    |    |    |        |       |       |       |       |        |     |      |
|                 |       |                 |                 | NA specific pollutant not emitted from this source or activity = <b>N</b> ot <b>A</b> pplicable |                  |     |     |    |    |    |    |    |    |    |    |    |    |        |       |       |       |       |        |     |      |
|                 |       |                 |                 | * no analysis done                                                                              |                  |     |     |    |    |    |    |    |    |    |    |    |    |        |       |       |       |       |        |     |      |



In order of significance relating energy use and emissions, the covered industries are:

- burning of cement clinker,
- burning of quicklime,
- melting of glass,
- burning of ceramics.

## Method

Regarding the burning processes emissions can be allocated to the use of fuels or to the production process. Current allocation is regarding the main importance of the production process.

## Activity data

The key source of all conventional fuel data is the national energy balance. Moreover the use of additional statistical data is necessary in order to disaggregate data. Data source for fuel inputs for energy-related process combustion in cement industry are manufacturing-sector statistics (Statistik des produzierenden Gewerbes); reporting number (Melde-Nr.) 23.51, Cement production. Furthermore the cement industry uses significant amounts of substitute fuels that do not appear in national statistics and in the Energy Balance. Relevant production figures and fuel-use amounts have been taken from statistics of the VDZ cement-industry association. The fuel-input data for ceramics production has also been taken from manufacturing industry statistics (Statistik des produzierenden Gewerbes); reporting no. (Melde-Nr.) 23.32, brickworks (Ziegelei), production of other construction ceramics. The same statistic is also used as source for fuel input of glass (reporting number: 23.1, Production of glass and glassware) and lime production (reporting number: 23.52, Lime).

## Emissions

Due to allocating emissions to process part we have removed most of time series inconsistencies. The current situation is the following:

Table 1: relevance of emission sources regarding the fuel use due to burning processes in 1.A.2.f

|                 | SO <sub>x</sub> | NO <sub>x</sub> | CO              | NMVOC           | NH <sub>3</sub> | TSP             | BC |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----|
| <b>cement</b>   | IE <sup>1</sup> | IE <sup>1</sup> | medium          | IE <sup>1</sup> | IE <sup>1</sup> | IE <sup>2</sup> | NE |
| <b>lime</b>     | IE <sup>1</sup> | IE <sup>1</sup> | IE <sup>1</sup> | IE <sup>1</sup> | low             | IE <sup>2</sup> | NE |
| <b>glass</b>    | IE <sup>2</sup> | IE <sup>1</sup> | IE <sup>1</sup> | IE <sup>1</sup> | IE <sup>1</sup> | IE <sup>2</sup> | NE |
| <b>ceramics</b> | IE <sup>3</sup> | IE <sup>3</sup> | low             | IE <sup>1</sup> | IE <sup>1</sup> | IE <sup>1</sup> | NE |

<sup>1</sup> Included in process related emissions, in all cases it is the link to complementary source category.

<sup>2</sup> Some artifacts occur for 1990 emissions that cannot be shifted.

<sup>3</sup> Inclusion in process related emissions occurs from different time points onwards.

The entire appraisal of the emissions situation succeeds only in connection with the process related emissions. Especially further relevant pollutants as heavy metals or persistent organics are shown as process related generally.

## Recalculations

Recalculations were necessary for most recently year due to the implementation of the now finalised National Energy Balance.



For **pollutant-specific information on recalculated emission estimates for Base Year and 2023**, please see the recalculation tables following [chapter 9.1 - Recalculations](#).

## Planned improvements



At the moment, no category-specific improvements are planned.