



2.B.6 - Titanium Dioxide Production

Short description

Category Code	Method					AD					EF				
2.B.6	T3					C					C				
Key Category	SO ₂	NO _x	NH ₃	NMVOC	CO	BC	Pb	Hg	Cd	Diox	PAH	HCb	TSP	PM ₁₀	PM _{2.5}
2.B.6	-/-	-/-	-	-	-/-	-	-	-	-	-	-	-	-/-	-	-

T = key source by Trend **L** = key source by Level

Methods	
D	Default
RA	Reference Approach
T1	Tier 1 / Simple Methodology *
T2	Tier 2*
T3	Tier 3 / Detailed Methodology *
C	CORINAIR
CS	Country Specific
M	Model

* as described in the EMEP/CORINAIR Emission Inventory Guidebook - 2007, in the group specific chapters.

AD - Data Source for Activity Data	
NS	National Statistics
RS	Regional Statistics
IS	International Statistics
PS	Plant Specific data
AS	Associations, business organisations
Q	specific questionnaires, surveys
EF - Emission Factors	
D	Default (EMEP Guidebook)
C	Confidential
CS	Country Specific
PS	Plant Specific data

In *NFR 2.B.6*, SO₂,CO,NO_x and TSP emissions from the production of titanium dioxide are reported.

Method

Activity Data

There are two kinds of processes called chloride process and sulfate process for the production of titanium dioxide. The total production amount is attained from the German Federal Statistical Office¹⁾. For the calculation of individual production of each process, the fraction of chloride process is determined based on the estimated total production capacity in Germany (480kt/y) and the production capacity via chloride process (165kt/y)²⁾³⁾.

Emission Factors

Emission factors for Titanium dioxide production are the Tier 2 emission factors from EMEP Guidebook: NO_x, CO, and TSP are provided for the chloride process, while only factors for NO_x and TSP are available for the sulfate process. The applied Tier 2 emission factors are listed in Table 1 ⁴⁾.

Table 1: Tier 2 emission factors for Titanium dioxide production

Pollutant	Name of process	EF	Unit
CO	Chloride	159	kg/t
NO _x	Chloride	0.1	kg/t
TSP	Chloride	0.2	kg/t
NO _x	Sulfate	0.108	kg/t
TSP	Sulfate	0.3	kg/t

Emissions

The association of the titanium producers reports the sum of SO₂-emissions from both processes directly to the UBA. Since the Submission 2022 the SO₂-emissions are no longer confidential.

Except for SO₂ emission, emissions of the mentioned pollutants are calculated through the multiplication of activity data and corresponding emission factors.

As the emission factors are constant over the time the emission trend is influenced only by the development of the production.



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.

¹⁾ Production statistics: Until 1994 GP89 - 4612 50, 1995 until 2008 GP241211500 and GP201211500 from 2009 onwards

²⁾ <https://forum-titandioxid.de/2020/03/12/sachlage-zu-titandioxid-und-titandioxidhaltigen-farben-und-lacken/>

³⁾ <https://kronostio2.com/en/manufacturing-facilities/leverkusen-germany>

⁴⁾ European Environment Agency: EMEP/EEA air pollutant emission inventory guidebook 2019, Part B: sectoral guidance chapters, 2.B Chemical industry (Oct 2019): pp.25-26, table 3.19 and table 3.20