

## 2.D.3.c - Asphalt Roofing

### Short description

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

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

Methods	
<b>D</b>	Default
<b>RA</b>	Reference Approach
<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/CORINAIR Emission Inventory Guidebook - 2007, in the group specific chapters.	
AD - Data Source for Activity Data	
<b>NS</b>	National Statistics
<b>RS</b>	Regional Statistics
<b>IS</b>	International Statistics
<b>PS</b>	Plant Specific data
<b>AS</b>	Associations, business organisations
<b>Q</b>	specific questionnaires, surveys
EF - Emission Factors	
<b>D</b>	Default (EMEP Guidebook)
<b>C</b>	Confidential
<b>CS</b>	Country Specific
<b>PS</b>	Plant Specific data

Bitumen is used in production and laying of roof and sealing sheeting. Roof and sealing sheeting is laid by means of both hot and cold processes.

The hot process, involving welding of sheeting, produces significant emissions of organic substances.

The relevant emissions trends depend primarily on trends in quantities of polymer bitumen sheeting produced. Use of solvent-containing primers is not considered here; it is covered via the solvents model – cf. 2.D.3.a Domestic Solvent Use.

Because of importance from other sources as solvents use, NMVOC emissions are considered and taken into account in this part of the emissions inventory.

### Method

#### Activity data

The quantity of roof and sealing sheeting produced (activity rate) has been provided by the Verband der Dachbahnenindustrie, the roof-sheeting manufacturers association (VDD, actual table exchanged with UBA) ever since a relevant cooperation agreement was concluded.

## Emission factors

In the process, a distinction is made between emissions from production and emissions from laying of roof and sealing sheeting. The emission factor for production of roof and sealing sheeting was obtained via a calculation in accordance with current technological standards of German manufacturers (VDD, see activity data). The emission factor for laying of polymer bitumen sheeting has been taken from an ecological balance sheet<sup>1)</sup>. The implied emission factor for the source category has been increasing slightly, as a result of the increasing importance of polymer bitumen sheeting. NMVOC emissions are calculated in keeping with a Tier 1 method, since no pertinent detailed data are available.

Table 1: Overview of applied emission factors, in kg/m<sup>2</sup>

pollutant	source of emissions	EF value	EF trend
NMVOC	Production of roofing materials	0.00035795	constant
NMVOC	roofing of sheeting and shingle	0.000027 to 0.000040	rising

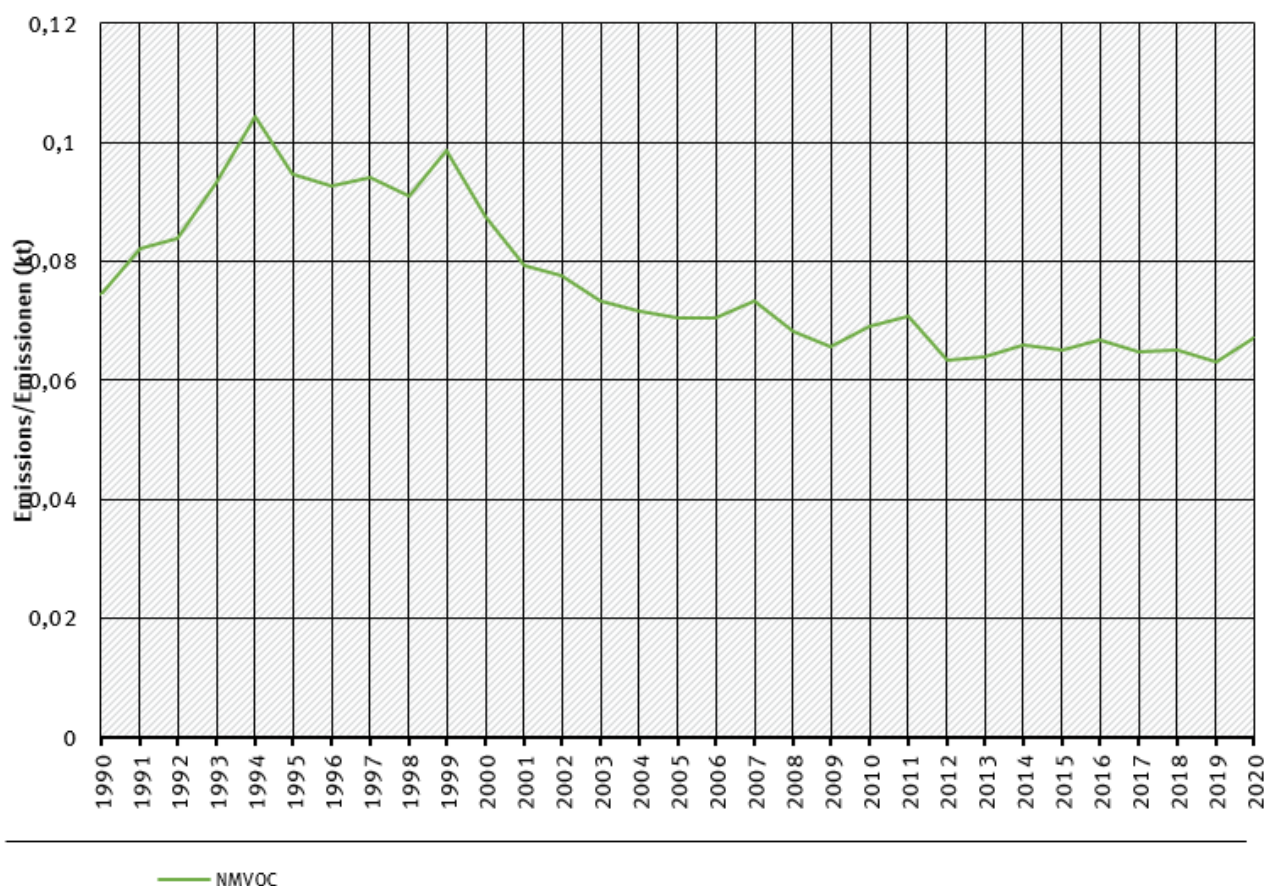
Emissions from the use of solvents are reported under specific categories of solvents use model, therefore the emission factors used are on a low level. The trend of emission is not influenced importantly by the changing use of material types.

## Trends in emissions

The trend of NMVOC emissions corresponds to trend of production amount. No rising trends are to identify.

### trends of emissions of asphalt roofing

Emissions by pollutant / Emissionen nach Schadstoff



\* Base Year for PM = 1995 / Basisjahr für Feinstäube (PM) ist 1995

Source: German Emission Inventory (03.12.2021)

### Emission trends of road paving

## Recalculations

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

## Planned improvements

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

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<sup>1)</sup> Kreißig, J. (1996): Ganzheitliche Bilanzierung von Dachbahnen aus Bitumen : Kurzbericht. Frankfurt am Main.