

Annex 1: The ESD Matrix

Results of part B1 of the OECD Matrix Project

This matrix shows for each industrial category, which A- and B-tables of the EU TGD are relevant and whether there are additional information available from OECD emission scenario documents. If this is the case, a short description of the emission estimation module as well as the reference are provided as foot notes.

For further information see the detailed reports of the project parts A, B1, and B2.

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Introduction to the use of the ESD Matrix

The following matrix has been developed in the framework of the OECD Matrix Project. The aim of the OECD Matrix Project is to support the use of already-existing emission estimation data for the exposure assessment which is required under REACH. The results of the project are documented in the Matrix Summary Report with six supplements.

Within the EU TGD (Technical Guidance Document on Risk Assessment) and the OECD emission scenario documents, a large amount of branch-specific emission data has been published. These data can be a valuable starting point for the exposure assessment which is required under REACH. Unfortunately, the EU TGD and the OECD ESDs are rarely known or used in the existing supply chains – in spite of the fact, that the OECD ESDs have been developed in cooperation with companies and industry associations.

The ESD Matrix aims to give an overview, which data sets referring to emission estimation are available in the TGD and the OECD emission scenario documents. In order to simplify the use of these documents, the information in OECD Emission Scenario Documents has been unitised into smaller data sets called “Emission Estimation Modules (EEM)”. Each Emission Estimation Module refers to a specific emission situation.

In order to structure the matrix, the system of industrial categories of the TGD is used. It distinguishes between 15 industrial categories. As a second structural element, eight life cycle stages are used.

For each industrial category (e.g. IC 7, Leather processing industry), the corresponding first two lines of the Matrix indicate in which tables of the TGD information on release factors (A-table), on the size of a local source and on the number of release days (B-table) can be found. (The A-tables of the EU TGD contain release factors for 16 industrial categories regarding the different life cycle stages. The B-tables of the EU TGD give default values for the size of a local source (fraction of the main source) and the number of release days per year. In total, the EU TGD contains 31 A-tables and 47 B-tables.)

For a number of industrial branches additional information is available from OECD emission scenario documents. If this is the case, it is indicated in the third line of the matrix part. A short description of the module as well as the reference are provided.

In order to use the matrix, it should be identified in a first step which industrial categories are of relevance for the final use of a substance (as such, in a preparation or an article). In a second step it should be clarified which life cycle steps are of importance.

For further information regarding the use of the ESD matrix and the selection of the appropriate emission estimation module, see the Matrix Summary Report and its supplements.

Annex 1: The ESD Matrix

IC	Allocation of A- and B-tables, EE Modules, and References	Production				Formulation			Industrial use	Prof. use	Private use	Service life	Recovery	Waste disposal	TGD ESD and others	OECD ESD
1	Agricultural industry															
	A-tables	A1.1				A2.1			A3.1							
	B-tables	B1.1	B1.2	B1.3	B1.4	B2.1	B2.2	B2.3	B3.1							
	EE Modules															
2	Chem. industry: basic chemicals															
	A-tables	A1.1				A2.1			A3.2							
	B-tables	B1.1	B1.5			B2.5	B2.4		B3.2							
	EE Modules															
3	Chem. industry: chemicals used in synthesis														T_E 3 ¹	
	A-tables	A1.1	A1.2			A2.1			A3.3							
	B-tables	B1.2	B1.6			B2.3	B2.4		B3.2							
	EE Modules															
4	Electrical / electronic engineering industry															
	A-tables	A1.1				A2.1			A3.4							
	B-tables	B1.6	B1.7			B2.3	B2.4		B3.2							
	EE Modules								EEM 4.1 ² EEM 4.3 ⁵	EEM 4.2 ³ EEM 4.4 / 4.5 ⁶						OECD _9 ⁴
5	Personal/domestic														T_E 5 ⁷	
	A-tables	A1.1	A1#			A2.1	A2#				A4.1					
	B-tables	B1.6	B1.7			B2.1	B2.3				B4.1	B4#				
	EE Modules															
6	Public domain														T_E 6 ⁸	
	A-tables	A1.1	A1#			A2.1	A2#		A3.5							
	B-tables	B1.6	B1.7			B2.1	B2.3		B3.3							
	EE Modules															
7	Leather processing industry														T_E 7 ⁹	
	A-tables	A1.1	A1.3			A2.1			A3.6							

IC	Allocation of A- and B-tables, EE Modules, and References	Production				Formulation			Industrial use	Prof. use	Private use	Service life	Recovery	Waste disposal	TGD and others	ESD	OECD ESD
		or															
	B-tables	B1.4	B1.8	B1.9		B2.6	B2.3	B2.4	B3.4								
	EE Modules								EEM 7.1 ¹⁰								OECD _8 ¹¹
8	Metal extraction industry, refining and processing industry														T_E_8 ¹²		
	A-tables	A1.1				A2.1	A2.2		A3.7								
	B-tables	B1.2	B1.4	B1.6	B1.10	B2.3	B2.4		B3.5	B3.6							
	EE Modules								EEM 8.1 ¹³								OECD _10 ¹⁴ OEC D_12 ¹⁵
	EE Modules, Lubricants					EEM 8.2 ¹⁶					EEM 8.3						OECD _10 ¹⁷
9	Mineral oil and fuel industry																
	A-tables	A1.1				A2.1			A3.8			A4.2					
	B-tables	B1.1	B1.2	B1.4	B1.11	B2.6	B2.7	B2.8	B3.7			B4.1					
	EE Modules																
10	Photographic industry														T_E_10 ¹⁸		
	A-tables	A1.1				A2.1	A2.3		A3.9			A4.3			A5.1		
	B-tables	B1.4	B1.12			B2.3	B2.8		B3.8			B4.2			B5.1		
	EE Modules								EEM 10.1 ¹⁹	EEM 10.2 ²⁰				EEM 10.3 ²¹			OECD _5 ²²
11	Polymers industry														T_E_16R ²³		
	A-tables	A1.1				A2.1			A3.10	A.3.1 1							
	B-tables	B1.4	B1.9	B1.13	B1.14	B2.3	B2.8	B2.9	B3.9								
	EE Modules, Plastic Additives					EEM 11.1 ²⁴	EEM 11.2 ²⁵		EEM 11.5 ²⁶	EEM 11.6 ²⁷		EEM 11.7 ²⁸		EEM 11.9 ²⁹			OECD _3 ³⁰
						EEM 11.3 ³¹	EEM 11.4 ³²					EEM 11.8 ³³		EEM 11.10 ³⁴			
	EE Modules, Rubber Additives					EEM 11.R. 1 ³⁵	EEM 11.R. 2 ³⁶		EEM 11.R. 1 ³⁷	EEM 11.R. 2 ³⁸		EEM 11.R.3 ³⁹					OECD _6 ⁴⁰
12	Pulp, paper, and board industry														T_E_12 ⁴¹		
	A-tables	A1.1	A1.3			A2.1			A3.12	A3.13					A5.2		
	B-tables	B1.4	B1.8	B1.9		B2.1	B2.3	B2.8	B3.10					B5.2			

IC	Allocation of A- and B-tables, EE Modules, and References	Production				Formulation			Industrial use		Prof. use	Private use		Service life	Recovery	Waste disposal	TGD	ESD and others	OECD ESD	
	EE Modules																		OECD	
13	Textile processing industry																	T_E_13 ⁴²		
	A-tables	A1.1	A1.3			A2.1			A3.14			A4.4								
	B-tables	B1.2	B1.6			B2.3	B2.10		B3.11	B3.12		B4.3								
	EE Modules								EEM 13.1 ⁴³	EEM 13.2 ⁴⁴				EEM 13.5 ⁴⁵					OECD	
									EEM 13.3 ⁴⁷	EEM 13.4 ⁴⁸									_7 ⁴⁶	
14	Paints, lacquers, and varnishes industry																	T_E_14 ⁴⁹		
	A-tables	A1.1				A2.1			A3.15			A4.5								
	B-tables	B1.2	B1.6			B2.3	B2.10		B3.13			B4.4	B4.5							
	EE Modules					EEM 14.1-9 ⁵⁰			EEM 14.10-23 ⁵¹			EEM 14.12 ⁵²		EEM 14.10-23 ⁵⁰		EEM 14.1-23 ^{50,51} 14.24 ⁵³			OECD	
	EE Modules, Automotive coating ¹								EEM 14.A1-A6 ⁵⁵										_20 ⁵⁴	
16	Engineering industry: Civil and mechanical																			
	A-tables	A1.1				A2.1			A3.16			A3.16								
	B-tables	B1.2	B1.6			B2.3	B2.8		B3.14			B4.5								
	EE Modules, Automotive coating: see under IC 14.																		OECD	
																			_11 ⁵⁶	
0/15	Others																	T_E-16_R ⁵⁷		
	A-tables	A1.1				A2.1			A3.16											
	B-tables	B1.2	B1.6			B2.3	B2.8		B3.14			B4.5				B5.3				
	EE Modules																			

¹ The Emission Estimation Modules (EEMs) regarding automotive coating can be related to industrial category 14 as well as to industrial category 16.

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- ¹ T_E_3: IC 3: Emission scenario document “Chemical Industry: chemicals used in synthesis”, TGD 2003, chapter 7, part IV.
- ² **EE module IC 4.1:** Emission scenario for release of photoresist from transport container residues. Emission collected as waste (OECD ESD No. 9, 2004/D9, p. 13).
- ³ **EE module IC 4.2:** Emission scenario for release of photoresist from equipment cleaning. Emission collected as waste (OECD ESD No. 9, 2004/D9, p. 13).
- ⁴ OECD 2004/D9: OECD Series on Emission Scenario Documents, No. 9, Emission scenario document on photoresist use in semiconductor manufacturing. OECD, Environment Directorate, June 2004.
- ⁵ **EE module IC 4.3:** Emission scenario for release of photoresist from dispensed photoresist. Emission to waste (OECD ESD No. 9, 2004/D9, p. 14).
- ⁶ **EE module IC 4.4:** Emission scenario for release of photoresist from developing the wafer. Emission collected as waste water (OECD ESD No. 9, 2004/D9, p. 15).
- EE module IC 4.5:** Emission scenario for release of photoresist from etching and stripping of wafer. Emission collected as waste (OECD ESD No. 9, 2004/D9, p. 15).
- ⁷ T_E_5: IC-5,6 Emission scenario document “Personal/Domestic and Public domain”, TGD 2003, chapter 7, part IV.
- ⁸ T_E_5: IC-5,6 Emission scenario document “Personal/Domestic and Public domain”, TGD 2003, chapter 7, part IV.
- ⁹ T_E_7: IC-7 Emission scenario document “Leather processing industry”, TGD 2003, chapter 7, part IV.
- ¹⁰ **EE module IC 7.1:** Emission scenario for release of chemicals used in leather processing. Emission to waste water (OECD ESD No. 8, 2004/D8, p. 27).
- ¹¹ OECD 2004/D8: OECD Series on Emission Scenario Documents, No. 8, Emission scenario document on leather processing. OECD, Environment Directorate, June 2004.
- ¹² T_E_8: IC-8 Emission scenario document “Metal extraction industry, refining and processing industry”, TGD 2003, chapter 7, part IV.
- ¹³ **EE module IC 8.1:** Release of a water-miscible cooling lubricant emulsion in the watery phase during waste / recovery treatment (Baumann, 1999, p. 15 – 17).
- ¹⁴ OECD 2004/D10: OECD Series on Emission Scenario Documents, No. 10, Emission scenario document on lubricants and lubricant additives. OECD, Environment Directorate, November 2004.
- ¹⁵ OECD 2004/D12: OECD Series on Emission Scenario Documents, No. 12, Emission scenario document on metal finishing. OECD, Environment Directorate, November 2004.
- ¹⁶ **EE module IC 8.2:** Release of an aqueous cooling lubricant solution in the watery phase during waste / recovery treatment (Baumann, 1999, p. 19).
- ¹⁷ OECD 2004/D10: OECD Series on Emission Scenario Documents, No. 10, Emission scenario document on lubricants and lubricant additives. OECD, Environment Directorate, November 2004.
- ¹⁸ T_E_10: IC-10 Emission scenario document “Photographic industry”, TGD 2003, chapter 7, part IV.
- ¹⁹ **EE module IC 10.1:** Release of photochemicals by the use of processing solutions (OECD ESD No. 5, 2004/D3, p. 11 – 21).

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- ²⁰ **EE module IC 10.2:** Release of ingredients of the emulsion layer of the photographic material during processing. (OECD ESD No. 5, 2004/D3, p. 25 – 26).
- ²¹ **EE module IC 10.3:** Release of photochemicals during waste disposal of used processing baths by specialised disposal companies (OECD ESD No. 5, 2004/D3, p. 22-25).
- ²² OECD 2004/D3: OECD Series on Emission Scenario Documents, No. 5, Emission Scenario Document on Photographic Industry. OECD, Environment Directorate, June 2004.
- ²³ T_E_16: IC-16 Emission scenario document “Others: Rubber industry”, TGD 2003, chapter 7, part IV.
- ²⁴ **EE module IC 11.1:** Release of additives from materials handling to water (OECD ESD No. 3, 2004/D4, p. 32).
- ²⁵ **EE module IC 11.2:** Release of additives from materials handling to air (OECD ESD No. 3, 2004/D4, p. 32).
- ²⁶ **EE module IC 11.5:** Release of additives from conversion to water (OECD ESD No. 3, 2004/D4, p. 32).
- ²⁷ **EE module IC 11.6:** Release of additives from conversion to air (OECD ESD No. 3, 2004/D4, p. 32).
- ²⁸ **EE module IC 11.7:** Release of additives during the service life of polymers to water (OECD ESD No. 3, 2004/D4, p. 35).
- ²⁹ **EE module IC 11.9:** Release of additives during the service life of polymers to air (OECD 2004/D4, p. 35).
- ³⁰ OECD 2004/D4: OECD Series on Emission Scenario Documents, No. 3, Emission Scenario Document on Plastics Additives. OECD, Environment Directorate, June 2004.
- ³¹ **EE module IC 11.3:** Release of additives from compounding to water (OECD ESD No. 3, 2004/D4, p. 32).
- ³² **EE module IC 11.4:** Release of additives from compounding to air (OECD ESD No. 3, 2004/D4, p. 32).
- ³³ **EE module IC 11.8:** Release of additives during the service life of polymers to air (OECD ESD No. 3, 2004/D4, p. 35).
- ³⁴ **EE module IC 11.10:** Release of additives from disposal of a polymer product, to water (OECD 2004/D4, p.36).
- ³⁵ **EE module IC 11R.1:** Emission scenario for release of additives during formulation / processing of rubber. Emission to waste water (OECD ESD No. 6, 2004/D7, p. 25).
- ³⁶ **EE module IC 11R.2:** Emission scenario for release of additives during formulation / processing of rubber. Emission to air and soil (OECD ESD No. 6, 2004/D7, p. 30 et sqq.).
- ³⁷ **EE module IC 11R.1:** Emission scenario for release of additives during formulation / processing of rubber. Emission to waste water (OECD ESD No. 6, 2004/D7, p. 25).
- ³⁸ **EE module IC 11R.2:** Emission scenario for release of additives during formulation / processing of rubber. Emission to air and soil (OECD ESD No. 6, 2004/D7, p. 30 et sqq.).
- ³⁹ **EE module IC 11R.3:** Emission scenario for release of rubber additive breakdown production by abrasion of tyres. Emission to soil (OECD ESD No. 6, 2004/D7, p. 31 et sqq.).
- ⁴⁰ OECD 2004/D7: OECD Series on Emission Scenario Documents, No. 6, Emission scenario document on additives in rubber industry. OECD, Environment Directorate, June 2004.

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- ⁴¹ T_E_12: IC-12 Emission scenario document “Pulp, paper and board industry”, TGD 2003, chapter 7, part IV.
- ⁴² T_E_13: IC-13 Emission scenario document “Textile processing industry”, TGD 2003, chapter 7, part IV.
- ⁴³ **EE module IC 13.1:** Local emission of substances emitted in pre-treatment processes (preparation agents, sizing agents, biozides; from imported fabrics/fibres). Emissions to water. Daily emission rates (OECD ESD No. 7, 2004/D5, chap. 10.1.1, p. 49).
- ⁴⁴ **EE module IC 13.2:** Local emission of substances emitted in exhaust processes (basic chemicals, dyestuffs, auxiliaries). Emissions to water. Daily emission rates (OECD ESD No. 7, 2004/D5, chap. 10.1.2, p. 50).
- ⁴⁵ **EE module IC 13.5:** Continental/regional emission of substances from articles during their service life. Emissions to water. Yearly emission rates (OECD ESD No. 7, 2004/D5, chap. 10.3, OECD 2004/D5, p. 55).
- ⁴⁶ OECD 2004/D5: OECD Series on Emission Scenario Documents, No. 7, Emission Scenario Document on Textile Finishing Industry. OECD, Environment Directorate, June 2004.
- ⁴⁷ **EE module IC 13.3:** Local emission of substances emitted in padding processes, printing and coating (basic chemicals, dyestuffs, auxiliaries). Emissions to water. Daily emission rates (OECD ESD No. 7, 2004/D5, chap. 10.1.3, p. 51).
- ⁴⁸ **EE module IC 13.4:** Local emission of substances emitted in the off-gas of finishing recipes (from a stenter) and emissions of preparation agents. Emissions to air. Daily emission rates (OECD ESD No. 7, 2004/D5, chap. 10.2, p. 52).
- ⁴⁹ T_E_14: IC-14 Emission scenario document “Paints, lacquers and varnishes industry”, TGD 2003, chapter 7, part IV.
- ⁵⁰ **EE module IC 14.1:** Emission calculation (release factors) for formulation of organic solvent-borne coatings, standard batch. Emission to air, water and waste (RPA 2003, p.35 et sqq., table 4.3, p. 42).
- EE module IC 14.2:** Emission calculation (release factors) for formulation of organic solvent-borne coatings, large batch (10.000 l). Emission to air, water and waste (RPA 2003, p.44 et sqq., table 4.6, p. 46).
- EE module IC 14.3:** Emission calculation (release factors) for formulation of water-borne, aqueous dispersion coatings, standard batch. Air, water and waste (RPA 2003, p.51 et sqq., table 5.6, p. 54).
- EE module IC 14.4:** Emission calculation (release factors) for formulation of water-borne, aqueous dispersion coatings, large batch. Air, water and waste (RPA 2003, p.56 et sqq., table 5.9, p. 57).
- EE module IC 14.5:** Emission calculation (release factors) for formulation of water-borne, water-reducible coatings and colloidal dispersions, standard batch. Air, water and waste (RPA 2003, p.58 et sqq., table 5.12, p. 61).
- EE module IC 14.6:** Emission calculation (release factors) for formulation of water-borne, water-reducible coatings and colloidal dispersions, large batch. Air, water and waste (RPA 2003, p.62 et sqq., table 5.15, p. 63).
- EE module IC 14.7:** Emission calculation (release factors) for formulation of melt-blend powder coatings, standard batch. Air, water and waste (RPA 2003, p.67 et sqq., table 6.1, p. 71).
- EE module IC 14.8:** Emission calculation (release factors) for formulation of melt-blend powder coatings, large batch. Air, water and waste (RPA 2003, p.75 et sqq., table 6.5, p. 76).

EE module IC 14.9: Emission calculation (release factors) for formulation of dry-blend powder coatings, standard batch. Air, water and waste (RPA 2003, p.79 et sqq., table 6.7, p. 82).

⁵¹ **EE module IC 14.10:** Emission estimate for application of wooden furniture coatings, spray application (RPA 2003, p.94 et sqq., fig. 3.1, p. 97).

EE module IC 14.11: Emission estimate for application of wooden furniture coatings, flat line application (RPA 2003, fig. 3.2, p. 99).

EE module IC 14.12: Emission estimate for application of decorative paints, general public use (RPA 2003, fig. 4.1, p. 104).

EE module IC 14.13: Emission estimate for application of decorative paints, professional use (RPA 2003, fig. 4.1, p. 104).

EE module IC 14.14: Emission estimate for application in automotive coating, original automotive equipment manufacture (OEM), (RPA 2003, fig. 5.2, p. 114).

EE module IC 14.15: Emission estimate for application in automotive coating, refinishing, dry back booth (RPA 2003, fig. 5.3, p. 115).

EE module IC 14.16: Emission estimate for application in automotive coating, refinishing, wet back booth (RPA 2003, fig. 5.4, p. 116).

EE module IC 14.17: Emission estimate for application of metal packaging coatings, 2-piece-beer/beverage can, external coating (RPA 2003, fig. 6.3, p. 123).

EE module IC 14.18: Emission estimate for application of metal packaging coatings, 2-piece-beer/beverage can, internal lacquering (RPA 2003, fig. 6.4, p. 123).

EE module IC 14.19: Emission estimate for application of metal packaging coatings, 3-piece-food/ general line can (RPA 2003, fig. 6.5, p. 124).

EE module IC 14.20: Emission estimate for application of coil coatings (RPA 2003, fig. 7.2, p. 130).

EE module IC 14.21: Emission estimate for application of marine coatings (non-antifoulant) (RPA 2003, fig. 8.1, p. 135).

EE module IC 14.22: Emission estimate for application of coatings for aircrafts painting (RPA 2003, fig. 9.1, p. 140).

EE module IC 14.23: Emission estimate for application of coatings for rail vehicle painting (RPA 2003, fig. 10.2, p. 146).

⁵² **EE module IC 14.12:** Emission estimate for application of decorative paints, general public use (RPA, 2003/D6, fig. 4.1, p. 104).

⁵³ **EE module IC 14.24:** Emission estimate for the treatment of coatings wastes (RPA 2003, fig. 11.2, p. 150).

⁵⁴ OECD 2003/D6: RPA (Risk&Policy Analysts Limited); Emission Scenario Document Chemicals used in the coatings industry: paints, lacquers and varnishes. Draft, June 2003. OECD.

⁵⁵ **EE module IC 14A.1:** Emission scenario for release of coatings by spray-application from captured overspray. Emission collected as waste (OECD ESD No. 11, 2004/D 11, p.19).

EE module IC 14A.2: Emission scenario for release of coatings by spray-application from gun cleaning. Emission collected as waste (OECD ESD No. 11, 2004/D 11, p.19).

EE module IC 14A.3: Emission scenario for release of coatings by spray-application from container residue. Emission collected as waste (OECD ESD No. 11, 2004/D 11, p.20).

EE module IC 14A.4: Emission scenario for release of coatings by spray-application from overspray. Emission to air (OECD ESD No. 11, 2004/D 11, p.21).

EE module IC 14A.5: Emission scenario for release of coatings by spray-application from clean-up of mixing apparatus and guns. Emission to water (OECD ESD No. 11, 2004/D 11, p.21).

EE module IC 14A.6: Emission scenario for release of coatings by spray-application from clean-up of mixing apparatus and guns using water back booths. Emission to water (OECD ESD No. 11, 2004/D 11, p.21).

⁵⁶ OECD 2004/D11: OECD Revised draft emission scenario document on coating application via spray-painting in the automotive refinishing industry. OECD, Environment Directorate, August 2004.

⁵⁷ T_E_16: IC-16 Emission scenario document "Others: Rubber industry", TGD 2003, chapter 7, part IV.