

A Basic requirements

- Full declaration of materials
- Minimisation requirements for substances with dangerous properties according to dangerous substances regulations.
- Compliance with requirements for harmful substances (refer to **C laboratory examinations**)
- Compliance with the provisions of the European (e.g. REACH Regulation (EC) No. 1907/2006 and Biocidal Products Regulation (EU) 528/2012) and German chemicals legislation
- Materials with the following classifications may not be used in the product:

Substances according to Regulation (EC) No. 1272/2008 Category Carc. 1A and 1B, Muta. 1A and 1B, Repr. 1A and 1B

Substances according to national law (TRGS 905): Category K1A and K1B, M1A and M1B, R1A and R1B

Substances according to MAK lists III1 and III2

Substances according to IARC groups 1 and 2A

Substances requiring official approval as per Appendix XIV of the REACH regulations

Substances of very high concern according to REACH Regulation (EC) No. 1907/2006, Article 59, paragraph 1 (SVHC, Candidate List)

POPs (Persistent Organic Pollutants) according to Regulation (EC) No 850/2004

Arsenic, lead, cadmium, mercury and compounds

Organic compounds of tin

Antimony trioxide

HFC

Organophosphates

Organic halogenated compounds

Pyrethroids

Phthalic acid esters, Terephthalic acid esters (apart from PET); DINCH

- Substances with the following classification (H-phrase) must not be used in the product¹:

Description		H-Statement
Fatal	Fatal if swallowed.	H300
	Fatal in contact with skin.	H310
	Fatal if inhaled.	H330
Toxic	Toxic if swallowed.	H301
	Toxic in contact with skin.	H311
	Toxic if inhaled.	H331
Specific target organ toxicity	Cause damage to organs.	H370
	May cause damage to organs.	H371
	Causes damage to organs through prolonged or repeated exposure.	H372
	May cause damage to organs through prolonged or repeated exposure.	H373
Sensitization of respiratory tract	May cause allergy or asthma symptoms or breathing difficulties if inhaled.	H334
Carcinogenicity	May cause cancer.	H350
	Suspected of causing cancer.	H351
Mutagenicity	May cause genetic defects.	H340
	Suspected of causing genetic defects.	H341
Reproductive toxicity	May damage fertility or the unborn child.	H360
	Suspected of damaging fertility or the unborn child.	H361
	May cause harm to breast-fed children.	H362
Acute hazardous to water	Very toxic to aquatic life.	H400
Chronically hazardous to water	Very toxic to aquatic life with long lasting effects.	H410
	Toxic to aquatic life with long lasting effects.	H411 (> 1 %)
Hazardous to ozone layer	Hazardous to the ozone layer.	EUH 059

B Special requirements

- Photoinitiators are allowed.

¹ For homogeneous substance mixtures, all input substances > 0.1 % (except for H411) are evaluated. For articles, the overall classification of the input substance or substance mixture (e.g. adhesive, varnish, etc.) is evaluated.

Inputs that have critical hazard characteristics (H-phrase) due to respirable wood dusts or mineral dusts are allowed, provided the overall product does not have a critical hazard characteristic.

Input materials with critical hazard characteristics (H-phrase) for which a requirement value is defined in the laboratory test are permissible, provided that the requirement for emission behaviour or content is met and the requirement value was derived from the property that the H-phrase also addresses.

C Laboratory examinations

Painting and coating materials		
Test parameter	Requirements	Test method
Emission test		
TVOC (total volatile organic compounds)	$\leq 3000 \mu\text{g}/\text{m}^3$ (3 days after test chamber loading) $\leq 300 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	DIN EN 16516 DIN ISO 16000-3 DIN ISO 16000-6 DIN EN ISO 16000-9 Test chamber conditions: cf. testing manual
VOC (incl. VVOC and SVOC) with the following categorisations: Regulation (EC) No. 1272/2008: Category Carc. 1A and 1B, Muta. 1A and 1B, Repr. 1A and 1B; TRGS 905: K1A, K1B, M1A, M1B, R1A, R1B; IARC: Group 1 and 2A; DFG (MAK list): Categories III1, III2	$\leq 1 \mu\text{g}/\text{m}^3$ (3 and 28 days after test chamber loading)	
VOC (sum) without NIK	$\leq 100 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
VOC (individual values):		
Sum of bicyclic terpenes	$\leq 200 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Sum of sensitising materials with the following categorisations: DFG (MAK lists): Category IV, TRGS 907	$\leq 100 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Sum of VOC (incl. VVOC and SVOC) with the following categorisations: Regulation (EC) No. 1272/2008: Category Carc. 2, Muta. 2, Repr. 2; TRGS 905: K2, M2, R2; IARC: Group 2B; DFG (MAK list): Category III3	$\leq 50 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Sum C9 – C14 Alkanes / Isoalkanes	$\leq 200 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Sum C4 – C11 Aldehydes, acyclic, aliphatic	$\leq 100 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Sum C6 – C15 Alkyl benzenes	$\leq 100 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Sum Cresols	$\leq 5 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Sum Xylenes	$\leq 100 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Sum Naphthalene and naphthalene-like subst.	$\leq 10 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
VOC (individual substances):		
Methylisothiazolinone (MIT)	$\leq 1 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Octylisothiazolinone (OIT)	$\leq 1 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Benzaldehyde	$\leq 20 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
2-Ethyl-1-hexanol, Ethylene glycol mono-butyl ether, 2-Hexoxyethanol (Requirements per single substance)	$\leq 100 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
2-Butoxyethyl acetate	$\leq 200 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Glycol ethers with insufficient data ² (Requirements per single substance)	0.005 ppm (28 days after test chamber loading)	
Propane-1,2-diol	$\leq 60 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
2-Phenoxyethanol	$\leq 30 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Phenol	$\leq 20 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Benzothiazole ³	$\leq 15 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Ethyl acetate (VVOC)	$\leq 600 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
Acetophenone	$\leq 66 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	
TSVOC (total semi-volatile organic compounds)	$\leq 100 \mu\text{g}/\text{m}^3$ (28 days after test chamber loading)	

² cf. announcement of the Federal Environment Agency: guideline values for glycol ethers and glycol esters in indoor air, Bundesgesundheitsblatt, February 2013, Volume 56, Issue 2, pp 286-320.

³ preliminary, exceeding the limit does not lead to devaluation at present

Painting and coating materials		
Test parameter	Requirements	Test method
Emission test		
R-value	≤ 1.0 (28 days after test chamber loading)	
Isocyanate monomers (only when utilising relevant substances)	≤ 1 µg/m³ (TDI, HDI) ≤ 2 µg/m³ (MDI) (24 hours after test chamber loading)	Extraction, HPLC/UV detection
Formaldehyde	≤ 24 µg/m³ (28 days after test chamber loading)	DIN EN 16516, DIN ISO 16000-3
Acetaldehyde	≤ 24 µg/m³ (28 days after test chamber loading)	
Odour	≤ Grade 4 (3 days after test chamber loading) ≤ Grade 3 (28 days after test chamber loading at the latest)	cf. testing manual
Content analysis⁴		
AOX (adsorbable organic halogenated compounds)	≤ 1.0 mg/kg	DIN EN ISO 9562
EOX (extractable organic halogenated compounds)	≤ 2 mg/kg	following DIN 38414-S17
Heavy metals (total content) ⁵		Total disintegration, analysis ICP/MS
Arsenic (As)	≤ 20 mg/kg	
Cadmium (Cd)	≤ 1 mg/kg	
Chrome total (Cr)	≤ 100 mg/kg	
Mercury (Hg)	≤ 0.5 mg/kg	
Nickel (Ni)	≤ 100 mg/kg	
Lead (Pb)	≤ 20 mg/kg	
Tin (Sn)	≤ 5.0 mg/kg	
Kupfer (Cu)	≤ 100 mg/kg	
Heavy Metals (eluate) ⁶		Eluate, EN 71-3
Arsenic (As)	≤ 0.05 mg/L	
Cadmium (Cd)	≤ 0.004 mg/L	
Chromium total (Cr)	≤ 0.05 mg/L	
Mercury (Hg)	≤ 0.001 mg/L	
Nickel (Ni)	≤ 0.04 mg/L	
Lead (Pb)	≤ 0.05 mg/L	
Copper (Cu)	≤ 0.2 mg/L	
Phthalates (sum) DMP, DEP, DPP, DBP, BBP, DEHP, DNOP, DIBP, BMEP, DHP, DNPP, DIPP, PIPP, DINP, DIDP, DIHP, DHNUP, DIHPxP	≤ 100 mg/kg	following DIN EN 15777
Terephthalate DEHT	≤ 100 mg/kg	following DIN EN 15777
Diisononyl cyclohexane-1,2-dicarboxylate, DINCH	≤ 100 mg/kg	following DIN EN 15777
Organotin compounds (requirement per single substance) TBT, DBT, TeBT, MBT, MOT, DOT, TcyT, TPhT	≤ 0.05 mg/kg	Extraction, analysis following DIN EN ISO 17353
Isothiazolinones (requirements per single substance) BIT, CIT, MIT	≤ 0.1 mg/kg (CIT) ≤ 10 mg/kg (BIT, MIT)	Extraction, HPLC-MS/MS

⁴ If there are indications that the basic requirements (exclusion of the substance groups listed there) are not met or if there is insufficient information on the substances used, additional content analysis may be necessary.

⁵ If the requirements are not met, the products can be certified if there is evidence that the finding can be traced back to the mineral raw materials and that the impurities are naturally occurring. In addition, compliance with the requirements for the eluate analysis is required.

⁶ only required if the total content requirement values are not met