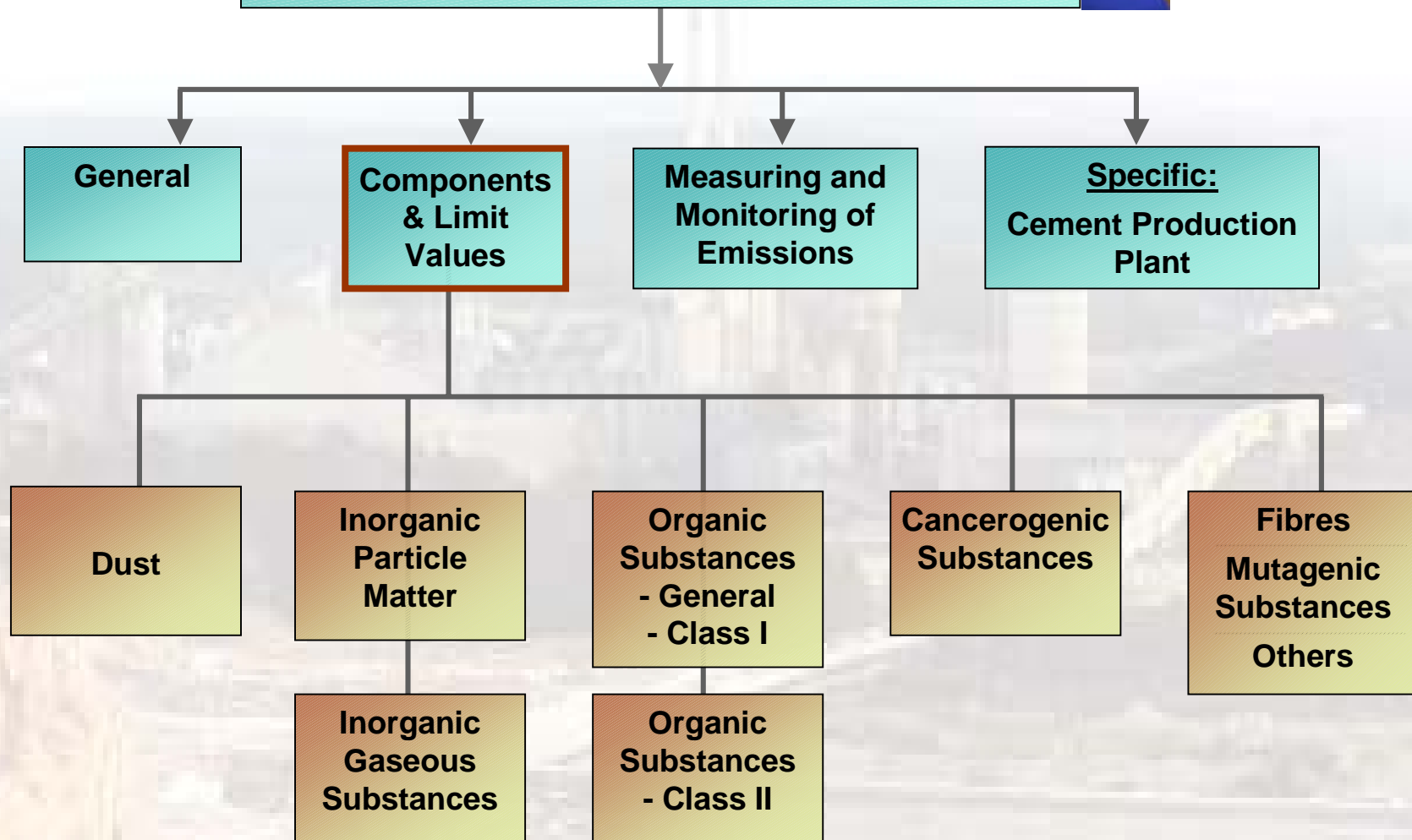


Emission – German Legislation

Technical Instructions on Air Quality Control „TA Luft“



Technical Instructions on Air Quality Control „TA Luft“



Emission – German Legislation

First General Administrative Regulation Pertaining the Federal Immission Control Act (Technical Instructions on Air Quality Control – „TA Luft“)

The TA-Luft substantiates the interpretation of the requirements for installations subject to licensing for administration

The following provisions contain

- emission standards which can be avoided by applying the best available techniques (BAT),
- requirements to emission reduction in compliance with BAT,
- other requirements to provide precautions against harmful effects of air pollutants on the environment,
- methods to determine emissions and
- requirements to the disposal of waste gases.

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5.2 General Requirements to Emission Limits

5.2.1 **Total Dust, including Micro Dust**

The dust emissions contained in waste gas may not exceed a mass flow of 0.20 kg/h or a mass concentration of 20 mg/m^3 .

Even with a mass flow smaller than or equal to 0.20 kg/h , a mass concentration of 0.15 g/m^3 in the waste gas may not be exceeded.

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5.2.2 Inorganic Particle Matter

Class I

- mercury and thallium and their compounds,
to be indicated as Hg and Tl
mass flow, per substance 0.25 g/h
or mass concentration, per substance 0.05 mg/m³;

Class II

- lead, cobalt, nickel, selenium and tellurium and their compounds,
to be indicated as Pb, Co, Ni, Se, Te
mass flow 2.5 g/h
or mass concentration 0.5 mg/m³;

Class III

- antimony, chromium, easily soluble cyanides and fluorides (e.g. NaCN, NaF),
copper, manganese, vanadium, tin and their compounds,
to be indicated as Sb, Cr, CN, F, Cu, Mn, V and Sn
mass flow 5 g/h
or mass concentration 1 mg/m³.

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5.2.4 Inorganic Gaseous Substances

Class I

- arsine, cyanogen chloride, phosgene, phosphine
mass flow per substance 2.5 g/h
or mass concentration per substance 0.5 mg/m³;

Class II

- bromine and its gaseous compounds (as HBr), chlorine, hydrocyanic acid, fluorine and its gaseous compounds (as HF), hydrogen sulphide
mass flow per substance 15 g/h
or mass concentration per substance 3 mg/m³;

Class III

- ammonia, gaseous inorganic compounds of chlorine,
mass flow per substance 0.15 kg/h
or mass concentration per substance 30 mg/m³;

Class IV

- sulphur oxides (SO₂ + SO₃, as SO₂), nitrogen oxides (NO + NO₂ as NO₂)
mass flow per substance 1.8 kg/h
or mass concentration per substance 0.35 g/m³.

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5.2.5 Organic Substances

With regard to organic substances contained in waste gas, except organic particle matter, a total mass flow of 0.50 kg/h or a total mass concentration of 50 mg/m³, each of which to be indicated as total carbon, may not be exceeded.

Within the mass flow or the mass concentration for total carbon, the organic substances allocated to classes I or II, may not exceed the following mass concentrations or mass flows, each of which to be indicated as mass of organic substances:

Class I (components of Annex 4 TA-Luft)

mass flow 0.10 kg/h
or mass concentration 20 mg/m³;

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5.2.5 Organic Substances

Class II

- 1-bromo-3-chloropropane
- 1,1-dichloroethane
- 1,2-dichloroethylene, cis and trans
- ethanoic acid
- methyl formiate
- nitroethane
- nitromethane
- octamethylcyclotetrasiloxane
- 1,1,1-trichloroethane
- 1,3,5-trioxane

mass flow 0.50 kg/h

or mass concentration 0.10 g/m³.

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5.2.7.1.1 Carcinogenic Substances

Class I

- arsenic and cadmium and their compounds (except for arsine, as As, as Cd)
 - water-soluble compounds of cobalt (as Co), chromium (VI) compounds (as Cr)
 - benzo(a)pyrene
- mass flow 0.15 g/h
or mass concentration 0.05 mg/m³;

Class II

- acrylamide, acrylonitrile, dinitrotoluenes, ethylene oxide
 - nickel and some nickel compounds
 - 4-vinyl-1,2-cyclohexene-diepoxyd
- mass flow 1.5 g/h
or mass concentration 0.5 mg/m³;

Class III

- benzene, bromoethane, 1,3-butadiene, 1,2-dichloroethane, 1,2-propylene oxide, styrene oxide, o-toluidine, trichloroethene, vinyl chloride
- mass flow 2.5 g/h
or mass concentration 1 mg/m³.

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Fibres

- asbestos fibres 1×10^4 fibres/m³
(e.g. chrysotile, crocidolite, amosite),
- biopersistent ceramic fibres 1.5×10^4 fibres/m³
(e.g. consisting of aluminium silicate, aluminium oxide,
silicon carbide, potassium titanate)
- biopersistent mineral fibres 5×10^4 fibres/m³,

5.2.7.1.2 Mutagenic Substances

5.2.7.1.3 Reproduction Toxic Substances

5.2.7.2 Slowly Degradable, Accumulative and Highly Toxic Organic Substances

The dioxins and furans listed in Annex 5, to be indicated as totals pursuant
a mass flow in waste gas of $0.25 \mu\text{g/h}$
or a mass concentration in waste gas of 0.1 ng/m^3 ,
as a minimum requirement.

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5.3 **Measuring and Monitoring Emissions**

5.3.3.2 Mass flow thresholds for continuous monitoring

Facilities with particles mass flows of 1 to 3 kg/h shall be equipped with measuring instruments at their relevant sources which are capable of continuously monitoring the functioning of the waste gas purification facility and the established emission limits (qualitative measuring instruments).

Facilities with particles mass flows of over 3 kg/h shall be equipped with measuring instruments at their relevant sources which continuously determine dust emission mass concentrations.

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5.3 Measuring and Monitoring Emissions

5.3.3.2 Mass flow thresholds for continuous monitoring

At facilities emitting gaseous substances in excess of the following mass flows, relevant sources shall be equipped with measuring instruments which continuously determine the mass concentrations of the respective substances:

- SO₂ 30 kg/h,
- NO + NO₂, to be indicated as NO₂ 30 kg/h,
- CO as lead substance for evaluating the efficiency of combustion processes 5 kg/h,
- CO, all other cases 100 kg/h,
- fluorine and gaseous inorganic fluorine compounds (as HF) 0.3 kg/h,
- gaseous inorganic chlorine compounds (as HCl) 1.5 kg/h,
- chlorine 0.3 kg/h,
- hydrogen sulphide 0.3 kg/h.

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Measuring and Monitoring Emissions

Facilities with mass flows of organic substances, to be indicated as total carbon, exceeding for

- substances under 5.2.5 Class I 1 kg/h,
- substances under 5.2.5 2.5 kg/h

shall be equipped with measuring instruments at their relevant sources which continuously determine the total carbon.

Facilities with mass flows of mercury and its compounds of over 2.5 g/h, to be indicated as Hg, shall be equipped with measuring instruments at their relevant sources which continuously determine mercury mass concentrations, unless it has been reliably proven that the mass concentrations are less than 20 per cent of those specified in 5.2.2 Class I.

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5.4 Special Provisions for Certain Types of Facilities

5.4.2 Rock and Soil, Glass, Ceramics and Building Materials

5.4.2.3 Facilities under 2.3:

Facilities for the Production of Cement Clinkers or Cements, insofar as Fuels under 1.2 are Used Exclusively

STORAGE

Clinker materials shall be stored in silos or enclosed areas equipped with exhaust and dedusting systems.

REFERENCE VALUES

Emission standards shall refer to a volume content of oxygen in the waste gas of 10 per cent.

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5.4.2.3 Facilities under 2.3: (Production of Cement Clinkers or Cements)

AMMONIA

The requirements in 5.2.4 shall not apply to ammonia emissions. If wastes with relevant quantities of substances containing ammonium are used as raw materials and their use is not regulated by the Ordinance on Incinerators for Waste and Similar Combustible Materials, as currently applicable, the materials shall be put into the furnace entrance or the calcinator.

NITROGEN OXIDES

Emissions of nitrogen monoxide and nitrogen dioxide in the waste gas from cement furnaces shall not exceed a mass concentration of 0.50 g/m^3 , to be indicated as nitrogen dioxide.

The best available techniques to further reduce emissions, particularly by using improved combustion, shall be applied.

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5.4.2.3 Facilities under 2.3: (Production of Cement Clinkers or Cements)

ORGANIC SUBSTANCES

The requirements under 5.2.5 shall not apply. Insofar as wastes containing relevant quantities of organic substances are used as raw materials and their use is not regulated by the 17. BImSchV, as currently applicable, the materials shall be put into the furnace entrance or the calcinator.

CARCINOGENIC SUBSTANCES

5.2.7.1.1 shall apply, provided that emissions of benzene in the waste gas from cement furnaces shall not exceed a mass concentration of 1 mg/m³ if possible, and shall not exceed a mass concentration of 5 mg/m³.

CONTINUOUS MEASURING

The requirements under 5.3.3.2 shall not apply to emissions of carbon monoxide, fluorine and inorganic gaseous fluorine compounds and inorganic gaseous chlorine compounds.

End

