

Environment Information

**Substances contained in
of the electrical and**

**products
electronics industry**

- **Text blocks**
- **Extract from legal provisions**

August 2002

Substances contained in products of the electrical/electronics industry

On the tide of growing eco-consciousness and against the background of a widening producer responsibility, customer inquiries about substances contained in products have become common practice. Often lists of substances are sent to manufacturers with the request for legally binding answers. The expenditure in time and money involved is considerable, especially for small companies.

The ZVEI has taken up the subject and proposes a unified scheme. This both takes account of the customer's wish for information and offers the manufacturer a rationalization tool for the handling of such inquiries.

The proposed scheme consists of two elements: Prefabricated text blocks of which a reply letter can be composed (Annex 1) and a list of legal restrictions and bans relating to specific substances (Annex 2, in German language).

For the sake of completeness, it is pointed out that, independently of an information request, a product placed on the market must, of course, comply with the legal provisions concerning the substances it contains.

Instructions for the use of text blocks (Annex 1)

1. Depending on the contents of the inquiry and types of substances contained in a product (part, equipment, installation...), it is recommended to use text blocks from groups A and B and combine them appropriately.
2. If the inquirer sends whole lists of substances with the request to confirm that these are not contained in the product (part, equipment, installation...) concerned, a reply may refer to the substances regulated by the Chemicals Prohibition Ordinance. Depending on the circumstances, the text blocks of groups A and B may then be used and combined appropriately.
3. Where the questions concern concrete substances, either a text block from group A or B may be used or a positive or negative reply formulated directly.

If the addressee of the inquiry first needs to inform himself (about purchased parts etc.), the following text is recommended (Note.- This text block should be used only when, in fact, nothing is known about the substances contained in a product):

To what extent the products (*parts, equipment, installations ...*) supplied to you contain (*substances forming the subject of the inquiry*) is presently unknown to us. But we shall do our best to provide the information as soon as possible.

4. The text blocks of Group C answer the questions after a fire event, especially in respect of dioxin formation.

5. Text block D which may be modified according to a firm's specific needs and illustrated with examples, can be used to show a company's own awareness of the problem as well as its commitment to environmental matters.
6. Text block E may be added to answer questions relating to recycling/recovery and disposal.
7. Text block F suggests a closing formulation.

Notes concerning the list of legal provisions (Annex 2)

In Annex 2 you will find an extract from the German legal provisions which either prohibit or restrict the bringing to market of substances in specific applications. The list does not claim to be exhaustive. As regards questions of detail, e.g. concerning statutory exemptions or transitional arrangements, it is recommended to refer to the complete text of the law. The official texts can be obtained from the

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Postfach 13 20
D-53003 Bonn
Telephone: +49 (228) 3 82 08-0, Fax -36.

Availability / Ordering

The contents of this publication are available on floppy disk in the format *Word for Windows* and as *pdf-file(Acrobat)*. The floppy disk can be obtained against payment of a fee of € 20.-- for ZVEI members and € 30.-- for non-members (plus VAT, respectively) from:

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Imprint

Substances contained in products of the electrical / electronical industry - Extract from German legal provisions - Text blocks

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Text blocks

A. Substances in general

I. General inquiries about substances

1. Short reply:

To our knowledge, our products (*parts, equipment, installations...*) supplied to you contain no substances whose bringing to market is prohibited under the german *Chemicals Prohibition Ordinance*.

2. Answer detailing substances contained in a product:

To our knowledge, our products (*parts, equipment, installations...*) supplied to you contain no substances whose bringing to market is prohibited under the german *Chemicals Prohibition Ordinance*.

In addition, we would inform you about substances contained in our products (*parts, equipment, installations...*) which it may be useful to know, e.g. under recycling/recovery, disposal or occupational safety and health aspects. These are in particular:

Product (<i>part, equipment...</i>)	Substance (<i>of the following list</i>)
.....
.....

The following list provides information about what substances frequently inquired about occur in what applications. The applications mentioned for the individual substances listed are given as examples and do not claim to be complete.

*The list contains substances which to know may be useful under recycling/recovery and disposal aspects. However, the bringing to market of these substances in common electro-technical applications is not regulated by the ordinances mentioned at the end of **Annex 2**.*

Antimony and antimony compounds: e.g. in soft solders, bearing metals, plastics and flame retardants in plastics

Aromatic amines: e.g. ageing inhibitors for oils and lubricants

Aromatic hydrocarbons: e.g. in oils and lubricants

Arsenic and arsenic compounds: e.g. in lead and copper alloys, LEDs

Benzotriazole and derivatives: e.g. in oils and lubricants

Beryllium and beryllium compounds: e.g. in contact and spring materials, elastic packings

Lead: e.g. in solders, batteries

Cadmium and cadmium compounds: e.g. in primary and storage batteries

Chromium (VI) compounds: e.g. in coatings, as colouring agents in plastics, in technical tubes

Cyanides and cyanide compounds: e.g. in electrolytic capacitors

Glycol ether acetate : e.g. in solvents and varnishes

Synthetic mineral fibres: e.g. for thermal insulation

Phenol and phenol compounds: e.g. as ageing inhibitors for oils and lubricants

Phosphoric acid tributyl ester: e.g. in oils and lubricants

Phtalates: e.g. as softener for plastics

Polybrominated diphenyl ether: e.g. as flame retardant in plastics

Polyvinylchloride (PVC): e.g. as plastics

Mercury and mercury compounds: e.g. in plastics, discharge lamps, relays

Heavy metals: e.g. in oils and lubricants

Selenium and selenium compounds: e.g. in plastics, photoelectric coatings, diodes and rectifiers

Sulphones: e.g. in oils and lubricants

Thorium oxide: e.g. as additive to electrode material

3. If applicable, the following text may be added:

- However, our efforts are aimed at replacing these substances before long
- In respect of new developments, we shall (*be able to*) do without these substances in the future (*specify date, if possible*).
- Unfortunately, no substitutes for these substances are presently available for technical reasons.

II. Inquiries which refer to the Dangerous Substances Ordinance.

Lead-in to the text blocks A.I.1 or A.I.2

In your inquiry of... you ask us about substances in our products which fall within the scope of the Dangerous Substances Ordinance. It is pointed out that the Dangerous Substances Ordinance regulates the production and use of dangerous substances but not the aspect of dangerous substances in a product, to which you refer. This specific aspect is covered by the german *Chemicals Prohibition Ordinance*.

Add either text block A.I.1 or text block A.I.2.

B. Ozone-damaging substances

I. General inquiries about ozone-damaging substances

1. CFCs are not contained in and did not come into contact with the product:

None of the products (*parts, equipment, installations...*) supplied to you contains fully or partly halogenated H-CFCs. Such substances are not used either as aids in the manufacture of our products. Hence, our products and production processes conform to the provisions of the german *Chemicals Prohibition Ordinance* as of 19 July 1996 and later and of the german *CFC Prohibition Ordinance* as of 6 May 1991 and later.

Where products, parts, equipment, installations... were purchased from third parties, especially from non-EU countries, the following sentence may be added:

The products (parts, equipment, installations)

.....

.....

are purchased parts about the preliminary treatment of which with ozone-damaging substances we can say nothing (at the moment).

or

are purchased parts which, according to our purchase terms, must not have come into contact with ozone-damaging substances.

2. CFCs came into contact with the product in the manufacturing process:

As manufacturing aids for the products (*parts, equipment, installations...*) supplied to you, the following substances are still in use:

Product (<i>part, equipment, installation</i>)	Substances
.....
.....

However, the use of these substances does not fall within the scope of the german *CFC Prohibition Ordinance* of 6 May 1991 and later. The mentioned products serve only production purposes and are not subsequently contained in the product (*part, equipment, installation...*).

Add text block A.I.3, if applicable.

3. CFCs are contained in the product:

Our products (*parts, equipment, installations...*) supplied to you still contain the following substances:

Product (<i>part, installation</i>)	Substances
.....
.....

However, the use of these substances does not fall within the scope of the german *CFC Prohibition Ordinance* of 6 May 1991 and later.

Add text block A.I.3, if applicable.

C. Fire event

I. General inquiries about decomposition products

1. General reply:

Unfortunately, no final statements can be made as to whether toxic substances may originate from our products (*parts, equipment, installations...*) in case of fire, what kind of substances these are and whether the quantities involved are of relevance. A fire is not a standard event whose course is predictable in all details. Too many influence variables like fire temperature, oxygen content during the fire, air humidity and many other factors have decisive effects on the kind and quantity of substances that may be generated.

The answer may have to be modified and supplemented appropriately when it is known what substances may occur in the event of a fire. For instance, when PVC is burnt, hydrogen chloride (hydrochloric acid) is set free. Such information, where available, should be passed on to the inquirer. On the other hand, if correct, it should also be mentioned that, to the replying person's knowledge, no substances with a toxic potential beyond trace concentrations are present in the product.

II. Inquiries about flame-retardant additives (dioxin formation)

1. The products (*parts, equipment, installations...*) contain non-halogenated flame-retardant additives:

Insert text block C.I.1. and continue:

Furthermore, our products (*parts, equipment, installations...*)
.....
.....
contain flame-retardant additives for reasons of operational safety. But these additives contain no halogens so that in case of fire the formation of dioxins or furans through these additives can be excluded.

2. The products (*parts, equipment, installations....*) contain brominated flame-retardant additives but no polybrominated biphenyls or diphenyl ether:

Insert text block C.I.1. and continue:

Furthermore, our products (*parts, equipment, installations...*)
.....
.....
contain flame-retardant additives with bromine for reasons of operational safety. In case of fire, therefore, the formation of polybrominated dibenzodioxins or dibenzofurans cannot be excluded. But this is generally the case when halogenated, organic materials are burnt. However, according to the current state of knowledge, the brominated flame-retardant additives used by us are unlikely to generate the particularly toxic chlorinated dioxins or furans.

Add text block A.I.3, if applicable.

3. The products (parts, equipment, installations) contain polybrominated biphenyls or diphenyl ether as flame retardants:

Insert text block C.I.1. and continue:.

Furthermore, our products (parts, equipment, installations...)

.....

.....

contain flame-retardant additives (kind of additive: polybrominated biphenyls or diphenyl ether) for reasons of operational safety. In case of fire, therefore, the formation of polybrominated dibenzodioxins or dibenzofurans cannot be excluded.

If applicable, reference should be made to synergists (e.g. antimony trioxide).

Add text block A.I.3, if applicable.

D. Occupational safety and health, environmental protection

In all replies, one's own commitment to occupational safety and health can be mentioned:

For us, it goes without saying that, where production is concerned, all statutory requirements for occupational safety and health and for environmental protection are complied with. Our products (*parts, equipment, installations...*) are so made that, according to the current state of knowledge, they cause no health risks to the user and no damage to the environment, if used in the intended manner.

E. Recycling/recovery and disposal

The information given above allows to assess to a wide extent the risk potentials for man and the environment, also at the end of a product's lifetime. Of course, the information will always have to be correlated with the relevant recycling/recovery or disposal process used, e.g. combustion.

F. Closing text

All information was given to the best of our knowledge and belief. It reflects the current state of the art. The information given implies no warranty within the meaning of the warranty law.

We hope to have answered your inquiry to your satisfaction. For any further questions you may have, we readily are at your disposal.

Extract from German and European Legal Provisions (updated 08/2002)

No.	Chemical compound	CAS-No.	Limit in %-Weight ^{1) 9)}	Application ⁹⁾	Exceptions ^{2) 9)}	Germany	EU and others
1	Acrylonitrile as residual monomer	107-13-1	> 0.000,002 (SML)	in polymer materials (ABS, SAN etc.) for requisites for food	no	BedarfsgegV ⁴⁾	EU: 90/128/EEC
2	Aliphatic chlorinated hydrocarbons Carbon tetrachloride 1,1,2,2-Tetrachloroethane 1,1,1,2-Tetrachloroethane Pentachloroethane Trichlormethane 1,1,2-Trichlorethane 1,1-Dichlorethylene 1,1,1-Trichlorethane	56-23-5 79-34-5 630-20-6 76-01-7 67-66-3 79-00-5 75-35-4 71-55-6	> 0.1 (collectively)	ban of application for private enduser	yes	ChemVerbotsV ⁵⁾	EU: 94/60/EEC
3	Aromatic amines ³⁾ 2-Naphtylamine & salts 4-Aminodiphenyl & salts Benzidine & salts 4-Nitrophenyl	91-59-8 92-67-1 92-87-5 92-93-3	> 0.1 (collectively)	general ban of application	no	ChemVerbotsV ⁵⁾	EU 89/677/EEC
4	Arsenic compounds	7440-38-2		in antifouling paints for wood preservation	yes yes	ChemVerbotsV ⁵⁾	EU 89/677/EEC
5	Asbestos Actinolite Amosite Anthophyllite Chrysotile Crocidolite Tremolite	77536-66-4 12172-73-5 77536-67-5 12001-29-5 12001-28-4 77536-68-6	> 0.1 (collectively)	general ban of application	yes	ChemVerbotsV ⁵⁾	EU 76/769/EEC EU 83/478/EEC EU 85/610/EEC EU 91/659/EEC
6	Azo dyes forming certain amines			in requisites in contact with skin	no	BedarfsgegV ⁴⁾	
7	Benzene ³⁾	71-43-2	> 0.1	general ban of application	yes	ChemVerbotsV ⁵⁾	EU 76/769/EEC EU 82/806/EEC
8	Butadiene	106-99-0	> 0.000,002 (SML)	in polymer materials (ABS, SAN etc.) for requisites for food	no	BedarfsgegV ⁴⁾	EU: 90/128/EEC

Annex 2: Extract from German legal provisions

No.	Chemical compound	CAS-No.	Limit in %-Weight ^{1) 9)}	Application ⁹⁾	Exceptions ^{2) 9)}	Germany	EU and others	
9	Lead and compounds of lead							
	Lead	7439-92-1		batteries in vehicles in electrical and electronic equipment	yes yes yes	BattV ⁷⁾ AltfahrzeugV ⁸⁾ -	EU 89/677/EEC EU 91/157, 93/86 & 98/101/EEC EU: 2000/53/EEC (ELV) EU: 2002/95/EEC (ROS)	
	Lead carbonate	598-63-0	> 0.40	in paints	no	ChemVerbotsV ⁵⁾		
	Lead hydroxycarbonate	1319-46-6	> 0.40	in paints	no	ChemVerbotsV ⁵⁾		
	Lead sulphate	7446-14-2 and 15739-80-7	> 0.40 > 0.40	in paints in paints	no no	ChemVerbotsV ⁵⁾ ChemVerbotsV ⁵⁾		
10	Cadmium and Compounds of Cadmium	7440-43-9	> 0.01 > 0.01 > 0.01 > 0.025	in dyes for plastics in paints and laquers as stabilisers for plastics as surface protection batteries in vehicles in electrical and electronic equipment	yes yes yes yes yes yes yes	ChemVerbotsV ⁵⁾ BattV ⁷⁾ AltfahrzeugV ⁸⁾ -	EU 91/338/EEC AU: BGBI.I 93/855, 97/53 CH: SR 814.013 S: KIFS 85:839, 95:1094, 98:944 EU 91/157, 93/86 & 98/101/EEC EU: 2000/53/EEC (ELV) EU: 2002/95/EEC (ROS)	
	11	Dioxins and Furans			general ban of application	yes	ChemVerbotsV ⁵⁾	
		01.) 2,3,7,8-Tetra-CDD	1746-01-6	No. 01: 1 µg/kg (=ppb)				
		02.) 1,2,3,7,8-Penta-CDD	40321-76-4	Σ No. 01 - 12: 5 µg/kg				
		03.) 2,3,7,8-Tetra-CDF	51207-31-9	Σ No. 01 - 17: 100 µg/kg				
04.) 2,3,4,7,8-Penta-CDF		57117-31-4	Σ No. 18 - 21: 1 µg/kg					
05.) 1,2,3,4,7,8-Hexa-CDD		39227-28-6	Σ No. 18 - 25: 5 µg/kg					
06.) 1,2,3,7,8,9-Hexa-CDD		19408-74-3						
07.) 1,2,3,6,7,8-Hexa-CDD		57653-85-7						
08.) 1,2,3,7,8-Penta-CDF		57117-41-6						
09.) 1,2,3,4,7,8-Hexa-CDF		70648-26-9						
10.) 1,2,3,7,8,9-Hexa-CDF		72918-21-9						
11.) 1,2,3,6,7,8-Hexa-CDF		57117-44-9						
12.) 2,3,4,6,7,8-Hexa-CDF		60851-34-5						
13.) 1,2,3,4,6,7,8-Hepta-CDD		35822-46-9						
14.) 1,2,3,4,6,7,8,9-Octa-CDD		3268-87-9						
15.) 1,2,3,4,6,7,8-Hepta-CDF		67562-39-4						
16.) 1,2,3,4,7,8,9-Hepta-CDF		55673-89-7						
17.) 1,2,3,4,6,7,8,9-Octa-CDF		39001-02-0						
18.) 2,3,7,8-Tetra-BDD		50585-81-6						
19.) 1,2,3,7,8-Penta-BDD		109333-34-8						
20.) 2,3,7,8-Tetra-BDF		67733-57-7						
21.) 2,3,4,7,8-Penta-BDF	131166-92-2							

Annex 2: Extract from German legal provisions

No.	Chemical compound	CAS-No.	Limit in %-Weight ^{1) 9)}	Application ⁹⁾	Exceptions ^{2) 9)}	Germany	EU and others
17	Creosotes	8001-58-9		in wood preservatives in wood or wooden materials	yes yes	ChemVerbotsV ⁵⁾	
18	Vinylchloride as residual monomer	75-01-4	> 0.000,001 (SML) > 0.000,1	PVC for requisites for food or body	no	BedarfsgegV ⁴⁾	EU 90/128/EEC
19	Organostannic compounds			as anti-fouling paints	yes	ChemVerbotsV ⁵⁾	EU 76/769/EEC, 89/677/EEC, 2002/62/EEC
20	Hexavalent Chromium (Chrom VI)			in vehicles in electrical and electronic equipment	yes yes	AltfahrzeugV ⁸⁾ -	EU: 2000/53/EEC (ELV) EU: 2002/95/EEC (ROS)
21	Polybrominated Biphenyls (PBB) Polybrominated Diphenylethers (PBDE)			in electrical and electronic equipment	yes	-	EU: 2002/95/EEC (ROS)

¹⁾ If there is no concentration mentioned it exists a ban regulation which is not quantified by legislature. If a concentration amount is not mentioned the legislature has decreed a regulation without mentioning a limit. Since technically a concentration "0" is not existent, a helping criterion could be a concentration that is not detectable using current technical standards. Declaration made is valid for the whole group of substances, if not indicated otherwise.

²⁾ The legislator has permitted exemptions from the ban for some compounds. For more details see the current legal regulations.

³⁾ These substances are usually not relevant for electrotechnical products

⁴⁾ BedarfsgegV = Act on food commodities = Bedarfsgegenstände-Verordnung

⁵⁾ ChemVerbotsV = Ordinance on banned chemicals = Chemikalien-Verbotsverordnung

⁶⁾ FCKW-Halon-VerbotsV = Ordinance on the ban of CFCs and Halons = FCKW-Halon-Verbotsverordnung

⁷⁾ BattV = Ordinance on take-back and disposal of batteries = Batterieverordnung

⁸⁾ AltfahrzeugV = Ordinance on take-back and disposal of vehicles = Altfahrzeugverordnung

⁹⁾ Data valid for the whole substance group if not otherwise indicated

SML Specific Migration Limit (Maximum permissible concentration of diffused substance in food product)

Legal basis:

- Chemicals prohibition ordinance (Chemikalien-Verbotsverordnung) dated July 19, 1996 (BGBl. I, S. 1151), last changed by ordinance August 15, 2002 (BGBl. I S. 3302)
- Commodity goods ordinance (Bedarfsgegenstände-Verordnung) dated December 23, 1997 (BGBl. I 1998, S. 5), last changed by ordinance June 20, 2002 (BGBl. I, S. 2076)
- CFC and halons prohibition ordinance (FCKW-Halon-Verbotsverordnung) dated May 6, 1991 (BGBl. I, S. 1090), changed Oct. 29, 2001 (BGBl. I, S. 2785, Art. 398)
- Battery take-back and disposal ordinance (Batterieverordnung) dated July 2, 2001 (BGBl. I, S. 2331)
- End of life vehicles ordinance (Altfahrzeugverordnung) dated June 21, 2002 (BGBl. I, S. 2215)

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