Sustainable Public Procurement-fiche: advanced

1) Subject matter

Mattresses produced with environmental friendly materials and processes.

"For <…..> (name of the public authority), the care for the environment and social aspects is important. It is stated in her <strategic policies>, <mission>, <vision>, <procurement policy>, …"

2) Exclusion criteria

Non compliance with environmental and social legislation, which has been the subject of a final judgment or a decision having equivalent effect, may be considered an offence concerning the professional conduct of the economic operator concerned or grave misconduct, permitting to exclude the party concerned from competing for the contract

Ref:
Art. 53 and 54 of Directive 2004/17/EC and Art. 45 of Directive 2004/18/EC

3) Technical capacity(not exclusive)

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4) Technical specifications

Wood

- Wood-based materials do not exceed in their raw state, i.e. prior to machining or coating, a formaldehyde steady state concentration of 0.1 ppm in the test chamber. This means that they have E1-emission class.

Textile

- The following azo dyes, which potentially cleave one of the aromatic amines listed below (according to Directive 2002/61/EC) are not used:
  - 4-aminobiphenyl (92-67-1),
  - benzidine (92-87-5),
  - 4-chloro-o-toluidine (95-69-2),
  - 2-naphthylamine (91-59-8),

- o-aminoazotoluene (97-56-3),
- 2-amino-4-nitrotoluene (99-55-8),
- p-chloroaniline (106-47-8),
- 2,4-diaminoanisole (615-05-4),
- 4,4'-diaminodiphenylmethane (101-77-9),
- 3,3'-dichlorobenzidine (91-94-1),
- 3,3'-dimethoxybenzidine (119-90-4),
- 3,3'-dimethylbenzidine (119-93-7),
- 3,3'-dimethyl-4,4'-diaminodiphenylmethane (838-88-0),
- p-cresidine (120-71-8),
- 4,4'-methylene-bis-(2-chloroaniline) (101-14-4),
- 4,4'-oxydianiline (101-80-4),
- 4,4'-thiodianiline (139-65-1),
- o-toluidine (95-53-4),
- 2,4-diaminotoluene (95-80-7),
- 2,4,5-trimethylaniline (137-17-7),
- 4-aminoazobenzene (60-09-3),
- o-anisidine (90-04-0).

- The following dyes that are carcinogenic, teratogenic or toxic to reproduction may not be used (see also annex):
  - C.I. Basic Red 9 C.I. 42 500,
  - C.I. Disperse Blue 1 C.I. 64 500,
  - C.I. Acid Red 26 C.I. 16 150,
  - C.I. Basic Violet 14 C.I. 42 510,
  - C.I. Disperse Orange 11 C.I. 60 700,
  - C.I. Direct Black 38 C.I. 30 235,
  - C.I. Direct Blue 6 C.I. 22 610,
  - C.I. Direct Red 28 C.I. 22 120,
  - C.I. Disperse Yellow 3 C.I. 11 855.

- The following potentially sensitizing dyes may not be used (see also annex):
  - C.I. Disperse Blue 3 C.I. 61 505,
  - C.I. Disperse Blue 7 C.I. 62 500,
  - C.I. Disperse Blue 26 C.I. 63 305,
  - C.I. Disperse Blue 35,
  - C.I. Disperse Blue 102,
  - C.I. Disperse Blue 106,
  - C.I. Disperse Blue 124,
  - C.I. Disperse Orange 1 C.I. 11 080,
  - C.I. Disperse Orange 3 C.I. 11 005,
  - C.I. Disperse Orange 37,
  - C.I. Disperse Orange 76 (previously designated Orange 37)
  - C.I. Disperse Red 1 C.I. 11 110,
  - C.I. Disperse Red 11 C.I. 62 015,

- C.I. Disperse Red 17 C.I. 11 210,
- C.I. Disperse Yellow 1 C.I. 10 345,
- C.I. Disperse Yellow 9 C.I. 10 375,
- C.I. Disperse Yellow 39,
- C.I. Disperse Yellow 49.

- For textile of natural fibers: the concentration of pentachlorophenol does not exceed 0,5ppm.

Latex foam *(and coconut fibers that are rubber-coated)*

- No chlorophenol (salts and esters) is present in concentrations exceeding 1mg/kg.
- The concentration of butadiene does not exceed 1 ppm.
- The concentration of N-nitrosamines does not exceed 0,001 mg/m³.

Polyurethane (PUR) foam

- Tin in organic form (tin bonded to a carbon atom) may not be used.
- CFCs, HCFCs, HFCs or methylene chloride are not to be used as blowing agents or as auxiliary blowing agents. The use of methylene chloride as an auxiliary blowing agent is nevertheless allowed in conjunction with the application of powdered flame retardants.

Glues and additives

- Any glue used is free of benzene and chlorobenzenes.

Wire and springs

- No electroplated coating is applied to the elastic springs.

Evidence:

The compliance with all the criteria mentioned above can be proved with one of the following labels:

Eu Ecolabel Blaue Engel

In case that the tendering company can present one of these labels, any further proof is not necessary. Any other suitable evidence from a recognized body can also be used.

5) Awarding the contract:

	Criterium	***Weight***
1	***Price*** *Calculation (e.g.):* Lowest offered price/ stated price x 0,70	e.g. 70%
2	***Environmental criteria*** (The public authority formulates the points it wants to assign to the below mentioned criteria) *Calculation (e.g.):* Total scored points / maximum number of points x 0,20	e.g. 20%
3	…	e.g. 5 %
4	…	e.g. ...

Environmental criteria

General substance requirement

- The materials used for the manufacture of a mattress (textiles, upholstery materials, adhesives) do not contain any substances or preparations (see annex):
    - which are listed in Annex I to Directive 67/548/EEC and show the following properties determined more specifically in Annex VI to Directive 67/548/EEC: very toxic (T+) and toxic (T);
    - which are listed in Annex I to Directive 67/548/EEC and show the following properties determined more specifically in Annex VI to

Directive 67/548/EEC: carcinogenic (Carc.Cat. 1, Carc.Cat. 2), mutagenic (Mut.Cat. 1, Mut.Cat. 2) or toxic to reproduction (Repr.Cat 1, Repr.Cat. 2).

- Material protection agents (fungicides, insecticides, flame-retardants) or halogenated organic compounds (e.g. chloroorganic carriers in textiles) are not added to mattresses, including the materials used for the manufacture (textiles, foams, wood-based materials, adhesives etc). Exempted are fungicides exclusively used for pot preservation of aqueous adhesives as well as adhesives based on aqueous dispersions.

Wood

- Solid wood, laminated wood, wood slats, veneer and the wood used for the production of plywood comes from sustainable forestry. When the wood is certified as FSC, PEFC or any other equivalent certification system, this will be accepted as proof of compliance.
- The formaldehyde measured in any particle board used does not exceed 0.05ppm (this is 50 % of the threshold value that would allow it to be classified as E1 emission class).
- The formaldehyde measured in any fibreboard used does not exceed 0.05ppm (this is 50 % of the threshold value that would allow it to be classified as E1 emission class).

Textile

Chemical requirements for all textile

- Biocidal or biostatic products are not applied to products so that they are active during the use phase.
- The content of polycyclic aromatic hydrocarbons (PAH) in the mineral oil proportion of auxiliaries and finishing agents for fibres and yarns is less than 1,0 % by weight.
- Alkylphenolethoxylates (APEOs), linear alkylbenzene sulfonates (LAS), bis(hydrogenated tallow alkyl) dimethyl ammonium chloride (DTDMAC), distearyl dimethyl ammonium chloride (DSDMAC), di(hardened tallow) dimethyl ammonium chloride (DHTDMAC), ethylene diamine tetra acetate (EDTA), and diethylene triamine penta acetate (DTPA) are not used and are no part of any preparations or formulations used.
- No use is allowed of flame retardant substances or of flame retardant preparations containing more than 0,1 % by weight of substances that are assigned or may be assigned at the time of application any of the following risk phrases (or combinations thereof):

- R40,R45, R46, R49, R50, R51, R52, R53, R60, R61, R62, R63, R68 (see annex)

as laid down in Directive 67/548/EEC and its subsequent amendments.

This requirement does not apply to flame retardants that on application change their chemical nature to no longer warrant classification under any of the R-phrases listed above, and where less than 0,1 % of the flame retardant on the treated yarn or fabric remains in the form as before application.

- The amount of Cadmium (Cd), Chromium (Cr), Nickel (Ni), Lead (Pb), Copper (Cu) in the product does not exceed:
  - Cadmium (Cd): 0.1 ppm
  - Chromium (Cr): 2.0 ppm
  - Nickel (Ni): 4.0 ppm
  - Lead (Pb): 1.0 ppm
  - Copper (Cu): 50.0 ppm.

Dyes and pigments

- The following potentially sensitizing dyes may not be used (see also annex):
  - C.I. Disperse Brown 1,
  - C.I. Disperse Yellow 3 C.I. 11 855.
- Dyes and pigments that contain cadmium, mercury, lead or nickel or not used.
- The levels of ionic impurities in the dyes used do not exceed the following:

  Ag 100 ppm; As 50 ppm; Ba 100 ppm; Cd 20 ppm; Co 500 ppm; Cr 100 ppm; Cu 250 ppm; Fe 2500 ppm; Hg 4 ppm; Mn 1000 ppm; Ni 200 ppm; Pb 100 ppm; Se 20 ppm; Sb 50 ppm; Sn 250 ppm; Zn 1500 ppm.
  Any metal that is included as an integral part of the dye molecule (e.g. metal complex dyes, certain reactive dyes, etc.) is not considered when assessing compliance with these values, which only relate to impurities. (Dyes are coloring agents that are soluble or not in water. Their affinity for the fibres leads to chemical bounding.)
- The levels of ionic impurities for pigments used do not exceed the following: As 50 ppm; Ba 100 ppm, Cd 50 ppm; Cr 100 ppm; Hg 25 ppm; Pb 100 ppm; Se 100 ppm; Sb 250 ppm; Zn 1000 ppm. (Pigments are inorganic or organic, chromatic or achromatic coloring agents that are practically insoluble in the application medium. They have no affinity for the fibres and need a specific binder)

- Chrome mordant dyeing is not allowed.
- No use is allowed of dye substances or of dye preparations containing more than 0,1 % by weight of substances that are assigned or may be assigned at the time of application any of the following risk phrases (or combinations thereof):
    - R40, R45, R46, R49, R60, R61, R62, R63, R68 (see annex),

    as laid down in Council Directive 67/548/EEC and its subsequent amendments.

For textile made of natural fibers

- The concentration of the sum of the following pesticides is less than 1,0 ppm: 2,4,5-T; 2,4-D; Azinophosmethyl; Azinophosethyl; Aldrine; Bromophos-ethyl; Captafol; Carbaryl; Chlordane; Chlordimeform; Chlorfenvinphos; Coumaphos; Cyfluthrin; Cyhalothrin; Cypermethrin; DEF; Deltamethrin; DDD; DDE; DDT; Diazinon; Dichlorprop; Dicrotophos; Dieldrine; Dimethoate; Dinoseb and salts; α-Endosulfan; β-Endosulfan; Endrine; Esfenvalerate; Fenvalerate; Heptachlor; Heptachloroepoxide; Hexachlorobenzene; α-Hexachlorcyclohexane; β-Hexachlorcyclohexane; δ-exachlorcyclohexane; Isodrine; Kelevane; Kepone; Lindane; Malathion; MCPA; MCPB; Mecoprop; Metamidophos; Methoxychlor; Mirex; Monocrotophos; Parathion; Parathion-methyl; Perthane; Phosdrin/Mevinphos; Propethamphos; Profenophos; Quinalphos; Strobane; Telodrine; Toxaphene; Trifluralin.
- No mothproofing agents are used for the protection of cover fabrics and the underlying upholstery.
- <u>For textile of cotton and other natural cellulosic seed fibres</u> do not contain more than 0,05 ppm (sensibility of the test method permitting) of each of the following substances: aldrin, captafol, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, hexachlorocyclohexane (total isomers), 2,4,5-T, chlordimeform, chlorobenzilate, dinoseb and its salts, monocrotophos, pentachlorophenol, toxaphene, methamidophos, methylparathion, parathion, phosphamidon.

  This requirement does not apply when more than 50 % of the cotton content is organically grown cotton or transitional cotton, that is to say certified by an independent organisation to have been produced in conformity with the production and inspection requirements laid down in Council Regulation (EEC) No 2092/91 of 24 June 1991 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs.
- <u>For textile made of greasy wool and other keratin fibres</u> (including wool from sheep, camel, alpaca, goat):
    - The total sum content of the following substances does not exceed 0,5 ppm: γ-hexachlorocyclohexane (lindane), α-hexachlorocyclohexane, β-

hexachlorocyclohexane, δ-hexachlorocyclohexane, aldrin, dieldrin, endrin, p,p'-DDT, p,p'-DDD.

- The total sum content of the following substances does not exceed 2 ppm: diazinon, propetamphos, chlorfenvinphos, dichlorfenthion, chlorpyriphos, fenchlorphos.
- The total sum content of the following substances does not exceed 0,5 ppm: cypermethrin, deltamethrin, fenvalerate, cyhalothrin, flumethrin.
- The total sum content of the following substances does not exceed 2 ppm: diflubenzuron, triflumuron.

For latex foam and polyurethane (PUR) foam *(and coconut fibers who are rubber-coated)*

- The concentrations of the following metals do not exceed the following values:
  - Antimony: 0,5 ppm
  - Arsenic: 0,5 ppm
  - Lead: 0,5 ppm
  - Cadmium: 0,1 ppm
  - Chromium (total): 1,0 ppm
  - Cobalt: 0,5 ppm
  - Copper: 2,0 ppm
  - Nickel: 1,0 ppm
  - Mercury: 0,02 ppm
- The levels of ionic impurities in the dyes used do not exceed the following: Ag 100 ppm; As 50 ppm; Ba 100 ppm; Cd 20 ppm; Co 500 ppm; Cr 100 ppm; Cu 250 ppm; Fe 2 500 ppm; Hg 4 ppm; Mn 1 000 ppm; Ni 200 ppm; Pb 100 ppm; Se 20 ppm; Sb 50 ppm; Sn 250 ppm; Zn 1 500 ppm.

  Any metal that is included as an integral part of the dye molecule (e.g. metal complex dyes, certain reactive dyes, etc.) is not considered when assessing compliance with these values, which only relate to impurities.
- The levels of ionic impurities for pigments used do not exceed the following: As 50 ppm; Ba 100 ppm, Cd 50 ppm; Cr 100 ppm; Hg 25 ppm; Pb 100 ppm; Se 100 ppm Sb 250 ppm; Zn 1 000 ppm.
- Chrome mordant dyeing is not allowed.
- Azo dyes that may cleave to any one of the following aromatic amines are not used:
  - 4-aminodiphenyl (92-67-1)
  - Benzidine (92-87-5)
  - 4-chloro-o-toluidine (95-69-2)
  - 2-naphthylamine (91-59-8)
  - o-amino-azotoluene (97-56-3)
  - 2-amino-4-nitrotoluene (99-55-8)

- p-chloroaniline (106-47-8)
- 2,4-diaminoanisol (615-05-4)
- 4,4'-diaminodiphenylmethane (101-77-9)
- 3,3'-dichlorobenzidine (91-94-1)
- 3,3'-dimethoxybenzidine (119-90-4)
- 3,3'-dimethylbenzidine (119-93-7)
- 3,3'-dimethyl-4,4'-diaminodiphenylmethane (838-88-0)
- p-cresidine (120-71-8)
- 4,4'-methylene-bis-(2-chloraniline) (101-14-4)
- 4,4'-oxydianiline (101-80-4)
- 4,4'-thiodianiline (139-65-1)
- o-toluidine (95-53-4)
- 2,4-diaminotoluene (95-80-7)
- 2,4,5-trimethylaniline (137-17-7)
- 4-aminoazobenzene (60-09-3)
- o-anisidine (90-04-0)

- The following dyes (that are carcinogenic, mutagenic or toxic to reproduction) are not used:
  - C.I. Basic Red 9
  - C.I. Disperse Blue 1
  - C.I. Acid Red 26
  - C.I. Basic Violet 14
  - C.I. Disperse Orange 11
  - C. I. Direct Black 38
  - C. I. Direct Blue 6
  - C. I. Direct Red 28
  - C. I. Disperse Yellow 3
- Dye substances or of dye preparations containing more than 0,1 % by weight of substances that are assigned or may be assigned at the time of application any of the following risk phrases (or combinations thereof) are not used:
  - R40, R45, R46, R49, R60, R61, R62, R63, R68 (see annex)

  as laid down in Council Directive 67/548/EEC and its subsequent amendments.
- The following dyes are only used if the fastness to perspiration (acid and alkaline) of the dyed fibres, yarn or fabric is at least 4:
  - C.I. Disperse Blue 3 C.I. 61 505
  - C.I. Disperse Blue 7 C.I. 62 500
  - C.I. Disperse Blue 26 C.I. 63 305
  - C.I. Disperse Blue 35
  - C.I. Disperse Blue 102
  - C.I. Disperse Blue 106
  - C.I. Disperse Blue 124

- C.I. Disperse Orange 1 C.I. 11 080
- C.I. Disperse Orange 3 C.I. 11 005
- C.I. Disperse Orange 37
- C.I. Disperse Orange 76 (previously designated Orange 37)
- C.I. Disperse Red 1 C.I. 11 110
- C.I. Disperse Red 11 C.I. 62 015
- C.I. Disperse Red 17 C.I. 11 210
- C.I. Disperse Yellow 1 C.I. 10 345
- C.I. Disperse Yellow 9 C.I. 10 375
- C.I. Disperse Yellow 39
- C.I. Disperse Yellow 49

- Flame retardant substances or of flame retardant preparations containing more than 0,1 % by weight of substances that are assigned or may be assigned at the time of application any of the following risk phrases (or combinations thereof) are not used:

  - R40, R45, R46, R49, R50, R51, R52, R53, R60, R61, R62, R63, R68 (see annex),

  as laid down in Directive 67/548/EEC and its subsequent amendments.

  This requirement does not apply to flame retardants that on application change their chemical nature to no longer warrant classification under any of the R-phrases listed above, and where less than 0,1 % of the flame retardant on the treated yarn or fabric remains in the form as before application.
- Metal complex dyes based on copper, lead, chromium or nickel are not used.
- The concentration of formaldehyde does not exceed 30 ppm.
- The concentration of VOC's does not exceed 0,5 mg/m³.

Latex foam *(and coconut fibers who are rubber-coated)*

- No chlorophenol (salts and esters) are present in concentrations exceeding 0,1ppm, except mono- and di-chlorinated phenols (salts and esters) which do not exceed 1ppm.
- The concentration of carbon disulphide does not exceed 0,020 mg/m³ as measured with the chamber test.

Polyurethane (PUR) foam

- Perfluorinated hydrocarbons (PFCs) or methylene chloride are not used as physical blowing agent or auxiliary blowing agent.

Glues and additives

- Any glues or additives used contain less than 10 % by weight of volatile organic compounds (VOC's).

6) Performance clauses:

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References

[Information of the public authority that used these clauses in a procurement case]

Annex R-PHRASES:

(R-phrases are mentioned on product labels and in product safety datasheets. It can be a useful tool for verification-procedures.)

R1:	Explosive when dry.
R2:	Risk of explosion by shock, friction, fire or other sources of ignition.
R3:	Extreme risk of explosion by shock, friction, fire or other sources of ignition.
R4:	Forms very sensitive explosive metallic compounds.
R5:	Heating may cause an explosion.
R6:	Explosive with or without contact with air.
R7:	May cause fire.
R8:	Contact with combustible material may cause fire.
R9:	Explosive when mixed with combustible material.
R10:	Flammable
R11:	Highly flammable
R12:	Extremely flammable
R13 (obsolet):	*Extremely flammable liquid gas* *(This R-phrase is no longer designated by the version of the GefStoffV published on 26.10.93.)*
R14:	Reacts violently with water.
R15:	Contact with water liberates extremely flammable gases.
Merck R15.1	*Contact with acid liberates extremely flammable gases.*
R16:	Explosive when mixed with oxidizing substances.
R17:	Spontaneously flammable in air.
R18:	In use, may form flammable/explosive vapour-air mixture.
R19:	May form explosive peroxides.
R20:	Harmful by inhalation.
R21:	Harmful in contact with skin.
R22:	Harmful if swallowed.
R23:	Toxic by inhalation.
Riedel-de Haen R23K:	*Also toxic by inhalation.*
R24:	Toxic in contact with skin.
Riedel-de Haen R24K:	*Also toxic in contact with skin.*
R25:	Toxic if swallowed.
Riedel-de Haen R25K:	*Also toxic if swallowed.*
R26:	Very toxic by inhalation.
Riedel-de Haen R26K:	*Also very toxic by inhalation.*
R27:	Very toxic in contact with skin
Riedel-de Haen R27A:	*Very toxic in contact with eyes.*
Riedel-de Haen R27K:	*Also very toxic in contact with skin.*
Riedel-de Haen R27AK:	*Also very toxic in contact with eyes.*

R28:	Very toxic if swallowed.
Riedel-de Haen R28K:	*Also very toxic if swallowed.*
R29:	Contact with water liberates toxic gas.
R30:	Can become highly flammable in use.
R31:	Contact with acids liberates toxic gas.
Merck R31.1	*Contact with alkalies liberates toxic gas.*
R32:	Contact with acids liberates very toxic gas.
R33:	Danger of cumulative effects.
R34:	Causes burns.
R35:	Causes severe burns.
R36:	Irritating to eyes.
Riedel-de Haen R36A:	*Lacrimating*
R37:	Irritating to respiratory system.
R38:	Irritating to skin.
R39:	Danger of very serious irreversible effects.
R40:	Possible risk of cancer. *CAUTION: Until 2001 this R-phrase was used for possible mutagenic or teratogenic risks as well. These risks are now labelled with R68!*
R41:	Risk of serious damage to eyes.
R42:	May cause sensitization by inhalation.
R43:	May cause sensitization by skin contact.
R44:	Risk of explosion if heated under confinement.
R45:	May cause cancer.
R46:	May cause heritable genetic damage.
R47(obsolet):	*May cause deformities.* *(This R-phrase is no longer designated by the version of the GefStoffV published on 26.10.93.)*
R48:	Danger of serious damage to health by prolonged exposure.
R49:	May cause cancer by inhalation.
R50:	Very toxic to aquatic organisms.
R51:	Toxic to aquatic organisms.
R52:	Harmful to aquatic organisms.
R53:	May cause long-term adverse effects in the aquatic environment.
R54:	Toxic to flora.
R55:	Toxic to fauna.
R56:	Toxic to soil organisms.
R57:	Toxic to bees.
R58:	May cause long-term adverse effects in the environment.
R59:	Dangerous for the ozone layer.
R60:	May impair fertility.
R61:	May cause harm to the unborn child.
R62:	Possible risk of impaired fertility.
R63:	Possible risk of harm to the unborn child.
R64:	May cause harm to breastfed babies.
R65:	Harmful: may cause lung damage if swallowed.
R66:	Repeated exposure may cause skin dryness or cracking.
R67:	Vapours may cause drowsiness and dizziness.
R68:	Possible risks of irreversible effects.

COMBINATIONS OF R-PHRASES:

R14/15:	Reacts violently with water, liberating extremely flammable gases.
R15/29:	Contact with water liberates toxic, extremely flammable gas.

R20/21:	Harmful by inhalation and in contact with skin.
R21/22:	Harmful in contact with skin and if swallowed.
R20/22:	Harmful by inhalation and if swallowed.
R20/21/22:	Harmful by inhalation, in contact with skin and if swallowed.
R21/22:	Harmful in contact with skin and if swallowed.
R23/24:	Toxic by inhalation and in contact with skin.
R24/25:	Toxic in contact with skin and if swallowed.
R23/25:	Toxic by inhalation and if swallowed.
R23/24/25:	Toxic by inhalation, in contact with skin and if swallowed.
R24/25:	Toxic in contact with skin and if swallowed.
R26/27:	Very toxic by inhalation and in contact with skin.
R27/28:	Very toxic in contact with skin and if swallowed.
R26/28:	Very toxic by inhalation and if swallowed.
R26/27/28:	Very toxic by inhalation, in contact with skin and if swallowed.
R36/37:	Irritating to eyes and respiratory system.
R37/38:	Irritating to respiratory system and skin.
R36/38:	Irritating to eyes and skin.
R36/37/38:	Irritating to eyes, respiratory system and skin.
R39/23:	Toxic: danger of very serious irreversible effects through inhalation.
R39/24:	Toxic: danger of very serious irreversible effects in contact with skin.
R39/25:	Toxic: danger of very serious irreversible effects if swallowed.
R39/23/24:	Toxic: danger of very serious irreversible effects through inhalation and in contact with skin.
R39/23/25:	Toxic: danger of very serious irreversible effects through inhalation and if swallowed.
R39/24/25:	Toxic: danger of very serious irreversible effects in contact with skin and if swallowed.
R39/23/24/25:	Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
R39/26:	Very toxic: danger of very serious irreversible effects through inhalation.
R39/27:	Very toxic: danger of very serious irreversible effects in contact with skin.
R39/28:	Very toxic: danger of very serious irreversible effects if swallowed.
R39/26/27:	Very toxic: danger of very serious irreversible effects through inhalation and in contact with skin.
R39/26/28:	Very toxic: danger of very serious irreversible effects through inhalation and if swallowed.
R39/27/28:	Very toxic: danger of very serious irreversible effects in contact with skin and if swallowed.
R39/26/27/28:	Very toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
R42/43:	May cause sensitization by inhalation and skin contact.
R48/20:	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R48/21:	Harmful: danger of serious damage to health by prolonged exposure in contact with skin.
R48/22:	Harmful: danger of serious damage to health by prolonged exposure if swallowed.
R48/20/21:	Harmful: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin.
R48/20/22:	Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R48/21/22:	Harmful: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed.
R48/20/21/22:	Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
R48/23:	Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R48/24:	Toxic: danger of serious damage to health by prolonged exposure in contact with skin.
R48/25:	Toxic: danger of serious damage to health by prolonged exposure if swallowed.
R48/23/24:	Toxic: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin.
R48/23/25:	Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R48/24/25:	Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed.
R48/23/24/25:	Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
R50/53:	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53:	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R52/53:	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R68/20: Harmful: possible risk of irreversible effects through inhalation.
R68/21: Harmful: possible risk of irreversible effects in contact with skin.
R68/22: Harmful: possible risk of irreversible effects if swallowed.
R68/20/21: Harmful: possible risk of irreversible effects through inhalation and in contact with skin.
R68/20/22: Harmful: possible risk of irreversible effects through inhalation and if swallowed.
R68/21/22: Harmful: possible risk of irreversible effects in contact with skin and if swallowed.
R68/20/21/22: Harmful: possible risk of irreversible effects through inhalation, in contact with skin and if swallowed.