

## Sustainable Public Procurement-fiche

Product / service	Version	Date
Car cleaning agents	Advanced	December 2010

### Scope

The scope of this technical card applies to the group car cleaning agents and care products (inside and outside) for individual household use and for professional use like in carwashes and automatic car wash installations (ACWI).

The main environmental problems associated with the use of those agents occur after use when the products are released into the sewage system, treatment plants and then into aquatic environments. Imposing requirements on the ingredients in the substances allows the impact on the environment to be reduced.

Typical examples are the following:

- General all cleaners
- Polishers products
- Polishing agents
- Drying agents
- Waxes
- Shampoos
- Shining agents
- Preservative products
- Anti-steam/-condensation product for the motor compartment
- Plastic/rubber cleaning products
- Degreasing agents
- Cleaning products for upholstery, housing and leather
- Insect removal cleaners
- Lacquer sealing agents
- Rim cleaners
- Window cleaning products (not to fill up the window cleaning tank)
- Windscreen washer fluids
- Run-off agents (ACWI)
- Rinsing agents (ACWI)
- (Combi-)Waxes (ACWI)

The following fall out of this scope:

- Cleaning or polishing products for other main purposes than car care.
- Agents for special use (anti-corrosion, antifouling paint, oils)
- Appliances for mechanical cleaning (washing sponges, brushes, clothes or equivalent)

## 1) Subject matter

Car cleaning agents produced with environmentally friendly materials and processes and produced in a socially responsible way.

### 1.1. The subject matter in the framework of the organizations policy.

“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>, ...”

### 1.2. “Reserved contracts”

*This category of contract is handled separately in Article 19 of Directive 2004/18/EC. This article permits the member states to “reserve” the right to participate in public contract award procedures. It includes contracts awarded to sheltered workshops or awarded in the context of sheltered employment programmes restricted to handicapped persons who cannot conduct professional activities under normal conditions. Paragraph 2 of Article 18a of the Law of 24 December 1993 has already taken a step in this direction by enabling, within the European thresholds, an identical strategy.*

## 2) Exclusion criteria

### 2.1. Social aspects:

Buyers can take account of social aspects in there procurement. For more information about the different possibilities see:

<http://www.gidsvoorduurzameaankopen.be/en/node/108>

## 3) Technical capacity

-

## 4) Market information

-

## 5) Technical specifications

### 5.1. Risk classification - Product-Environmental requirements (Milieukeur, Nordic)

- Following EC guideline 1999/45/EC<sup>(1)</sup>, product shall not be classified as dangerous to the environment (N) with R50, R50/53, R51/53, R52, R53 or R52/53 (Risks phrases in Annex 1 and 6)

Exceptions from requirements to classification are (Nordic):

Super-concentrates; because the pure product must only fulfill the classification requirements, here above stated, on the resulting “concentrated solution” provided by a first dilution step following producer instructions.

**Super-concentrated product –dilution-> Concentrated product –dilution-> Normal use product**

<sup>(1)</sup>1999/45/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labeling of dangerous preparations

### 5.2. Risk classification — Product -- Prohibited ingredients (Milieukeur, Nordic)

- Following Directive EEC/67/548<sup>(2)</sup> on dangerous substances or EEC/1999/45<sup>(1)</sup> on dangerous preparations, with adaptations and amendments:  
Products or ingredients must not be classified as T+, T, C, Xn, Xi, F+ or F; or fall under classification with respective R phases.  
Such compounds shall not be used.

Exception (milieukeur):

Except for labelling R10, Xi with R36/37/38 or combinations of these or Xn with R66.

Exceptions (Nordic):

- Windscreen washer fluid can be classified R11 .
- Products for professional use and in packages of 3 liters or more can be classified:  
R22  
R34  
R65
- Super-concentrates; because the pure product must only fulfill the classification requirements, here above stated, on the resulting “concentrated solution” provided by a first dilution step following producer instructions.

**Super-concentrated product –dilution-> Concentrated product –dilution-> Normal use product**

(Risks phrases in Annex 1 and 6)

<sup>(1)</sup>Dangerous preparation directive (1999/45/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labeling of dangerous preparations)

<sup>(2)</sup>Dangerous substances directive (Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances)

- The product must not contain substances classified as toxic for reproduction (Rep with R60, R61, R62 and/or R63).

Note Nordic: NTA (nitrilo-triacetate complexation agent) is expected to be classified as CMR (Carcinogenic-Mutagenic-Reprotoxic) in March 2008 and will be covered by this requirement.

(Risks phrases in Annex 1 and 6)

### **5.3. Risk classification- Product-Environmental Hazard** (Milieukeur, Nordic)

- The applicant shall have the supplier documents in which is approved that the quantity of substances classified as dangerous for the environment must not exceed in the final product expressed as weight/weight:  
0.1% of R50/53  
0.2% of R51/53 + R52/53 (based on 0.1% of R51/53 and 0.1% of R52/53)

(Risks phrases in Annex 1 and 6)

### **5.4. Product-Prohibited ingredients-Musks** (Milieukeur, Nordic)

- The applicant shall have the supplier documents in which are approved that product does not contain any of the following compounds (with CAS no.):
  - musk xylene (CAS 81-15-2)
  - musk ambrette (CAS 83-66-9)
  - moskene (CAS 166-66-5)
  - musk tibetene (CAS 145-39-1)
  - musk ketone (CAS 81-14-1)
  - musk tetralin AHTN (CAS 1506-02-1; 21145-77-7)
  - HHCb (CAS 1222-05-5 and CAS 114109-62-5; 114109-63-6, CAS 78448-48-3, CAS 78448-49-4)

### **5.5. Product-Prohibited ingredients- Complexion agents** (Nordic, Milieukeur)

- Car care products may contain phosphate in a content not exceeding 2.5 g/l (≈ 0,25%) of final solution (calculated as P).  
The limit applies to the highest recommended concentration at which the product may be used.

Note: Beware that some products are super concentrated to make concentrated solution themselves diluted to get the normal use solution and so concentration in original product might be higher than 2.5g/L!

**5.6. Product-Prohibited ingredients-Volatile Organic Compounds (VOCs)** (Milieukeur, Nordic)

- The quantity of halogenated and volatile aromatic hydrocarbon shall not exceed 0.5% per product (w/w) (thus 5 g/kg).

**5.7. Colorants-dyes** (Milieukeur, Nordic)

- Only colorants allowed in foods and aliments (guideline 94/36/EC) and cosmetics (guideline 76/768/EEC) are authorized.  
They must be heavy metals free (Pb, Cd, Hg, Cr(VI), Al, Cu...)

**5.8. Risk classification- Product-Environmental Hazard** (Milieukeur, Nordic)

- The total content of environmental harmful substances classified as R50, according to EUs Dangerous Substances Directives (Directive EEC/67/548 on dangerous substances and/or EEC/1999/45 on dangerous preparations, with adaptations and amendments), must not be present in the product in quantities exceeding 5 % in weight.  
(Risks phrases in Annex 1 and 6)

Note (Nordic):

For super-concentrates, the maximum permitted quantity is calculated on basis of the super-concentrates diluted to concentrate.

**Super-concentrated product –dilution-> Concentrated product –dilution-> Normal use product**

**Evidence:**

The compliance with all the criteria mentioned above can be proved with the following label:



Milieukeur



Nordic Ecolable

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

**6) Awarding the contract:**

	<b>Criteria --- For example ---</b>	<b>Weight</b>
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1	<b>Price</b>  <i>Calculation (e.g.):</i> Lowest offered price/ stated price x 0,60	e.g. 60%
2	<b>Environmental criteria</b> (The public authority formulates the points it wants to assign to the below mentioned criteria )  <i>Calculation (e.g.):</i> Total scored points / maximum number of points x 0,35	e.g. 35%
3	...	e.g. 5 %
4	...	e.g. ....

***In above mentioned table, the weight of the environmental criteria shall be stated by the buyer in function of its particular procurement. Representatives of several sectors federations mention often to not underestimate this weight to give sustainability in the awarding phase a chance at all.***

***The environmental criteria in the above mentioned table concern the following issues:***

**6.1. Risk classification- Product - Environmental requirements** (Milieukeur)

- Following EU-guideline 1999/45/EC <sup>(1)</sup> product shall not be classified as dangerous to the environment (N) with R59.  
The applicant shall have the supplier documents in which is approved that the quantity of substances classified as dangerous for the environment with R59 does not exceed 0.1% each separate (weight/weight) and 1% all together
- The applicant shall have the supplier documents in which is approved that substances known to be linked with risk phrases R48/23/24/25 or R39/23/24/25 (following Directive 67/598/EEC)<sup>(2)</sup> are not used in the composition of the final product in concentrations higher than the limit for declaration of these preparations (overview via MSDS (Material Safety Data Sheet) and PSDS (Product Safety Data Sheet) according to 88/379/EC and revision thereof in guideline 1999/45/EC.

(Risks phrases in Annex 1 and 6)

<sup>(1)</sup>Dangerous Preparations Directive (1999/45/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labeling of dangerous preparations)

<sup>(2)</sup>Dangerous Substances Directive (Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances)

## **6.2. Risk classification -- Product-- Prohibited ingredients** (Nordic)

-Following Directive EEC/67/548 <sup>(2)</sup> on dangerous substances or EEC/1999/45 <sup>(1)</sup> on dangerous preparations, with adaptations and amendments, product must not be classified as:

Explosive (E): with R2 and R3 (Risks phrases in Annex 1 and 6)

Exceptions from requirements to classification are:

Super-concentrates; because the pure product must only fulfill the classification requirements, here above stated, on the resulting “concentrated solution” provided by a first dilution step following producer instructions.

**Super-concentrated product –dilution-> Concentrated product –dilution-> Normal use product**

<sup>(1)</sup>Dangerous Preparations Directive (1999/45/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labeling of dangerous preparations)

<sup>(2)</sup>Dangerous Substances Directive (Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances)

-The product must not contain substances classified as: (Nordic)

- carcinogenic (Carc with R40, R45 and/or R49)
- mutagenic (Mut with R46 and/or R68)

Note: NTA (nitrilo-triacetate complexion agent) is expected to be classified as CMR in March 2008 and will be covered by this requirement.

(Risks phrases in Annex 1 and 6)

-The applicant shall have the supplier documents in which is approved that substances classified as reproduction toxic R64 are not used in the composition of the final product in concentrations higher than the limit for declaration of these preparations (overview via MSDS and PSDS) according to 88/379/EC and revision thereof in guideline 1999/45/EC<sup>(1)</sup>. (Milieukeur)

<sup>(1)</sup>Dangerous Preparations Directive (1999/45/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labeling of dangerous preparations)

(Risks phrases in Annex 1 and 6)

## **6.3. Risk classification- Product-Environmental Hazard**

- The applicant shall have the supplier documents in which is approved that the quantity of substances classified as dangerous for the environment must not exceed in the final product expressed as weight/weight: (Milieukeur)

0.1% of R51/53

0.1% of R52/53

0.1% of R53



And  
1% of R50/53 + R51/53 + R52/53 + R53  
5% of R52

(Risks phrases in Annex 1 and 6)

- The total content of substances that fulfill the requirements as to environmental harmfulness according to EU Dangerous Substances Directives (Directive EEC/67/548 on dangerous substances and/or EEC/1999/45 on dangerous preparations, with adaptations and amendments), with relation to hereunder displayed risk phrases, must not be present in the product in quantities in excess of the following: (Nordic)

Classification of the substance	Maximum permitted quantity (weight percentage in the concentrated product)
R50/53	0.04%
R51/53 + R52/53	0.04%

(Risks phrases in Annex 1 and 6)

**Note:** For super-concentrates the maximum permitted quantity is calculated on basis of the super-concentrates diluted to concentrates.

**Super-concentrated product –dilution-> Concentrated product –dilution-> Normal use product**

#### 6.4. Product-Prohibited ingredients-Musks (Milieukeur)

- The applicant shall have the supplier documents in which is approved that no synthetic nitro- or polycyclic musk is used in the product.
  - cashmeran (CAS 33704-61-9)
  - celestolide (CAS 13171-00-1)

#### 6.5. Product-Prohibited ingredients-Volatile Organic Compounds (VOCs)

- VOCs-content shall not exceed 5% per product (weight /weight) (thus 50g/kg) (Milieukeur)

**Note:**

VOCs are Volatile Organic Compounds and mix thereof with a vapor pressure of at least 0,01 kPa at 293,15 K or a comparable volatility in the specific use conditions.

This includes Volatile Organo Halogenated Compounds (VOXs), Volatile hydrocarbons (aromatic and alkanic) and other volatile organic compounds!

- The product may contain a limited quantity only of volatile organic compounds (VOCs <sup>(1)</sup>) that may contribute to the formation of photochemical smog, measured as POCP (Photochemical Ozone Creation Potential). (Nordic)  
Products with a VOCs content of < 1.2% <sup>(3)</sup> do not need to undergo POCP calculations since the requirement will be fulfilled even in a worst case scenario.



The maximum permissible content of VOCs in the product is 12 g ethylene equivalents/kilo of product.

$$\sum_i (m_i \cdot \text{POCP}_i) / (m_{\text{product}}) = (\sum m_1 \cdot \text{POCP}_1 + m_2 \cdot \text{POCP}_2 + \dots) / (m_{\text{product}}) \leq 12 \text{ g C}_2\text{H}_2 \text{ equivalents/kg}$$

where

$m_i$  = mass in grams of  $\text{VOC}_i$  (substance i) in the product

$\text{POCP}_i$  =  $\text{VOC}_i$  substance's factor (see in annex 2)<sup>(2)</sup>

$m_{\text{product}}$  = product mass in kg

<sup>(1)</sup>VOC: organic substance with a vapour pressure >0.010 kPa at 20°C or boiling point <250°C at 101,3 kPa (1 atm).

<sup>(2)</sup>In the case of solvents not included on the list in annex 2, POCP values from experiments/ tests may provide the basis for calculating the permitted VOC content alternatively the worst case for the VOC group may be used.

<sup>(3)</sup>1,2% weight/weight = 1,2% w/w = 12 g/1000g = 12 g/kg

#### **6.6. Product-Prohibited ingredients- Complexion agents** (Milieukeur)

- No phosphates allowed

#### **6.7. Product-Prohibited ingredients-Volatile Organic Compounds (VOCs)** (Nordic)

- Halogenated and/or aromatic organic solvents must not be present in the product

#### **6.8. Product-Prohibited ingredients- Complexion agents** (Milieukeur)

- NTA (nitrilo-triacetate) maximum 4% (weight/weight) (thus 40 g/kg)
- No EDTA (ethylene diamine tetraacetate) allowed.

#### **6.9. General requirements** (Nordic)

- The complete formulation for the product shall be submitted. The formulation shall include the trade name, chemical name, function, ingoing quantity, CAS register number and DID (Detergent Ingredient Database) number of each ingredient. The water content of the ingredients shall be stated.

#### **6.10. Product-Prohibited ingredients** (Nordic)

- The substances listed below must not be present in the product:
  - dyes in non-professional products (Except for windscreen washer fluids!)
  - linear alkylbenzene sulphonates (LAS)
  - alkyl phenol ethoxylates (APEO) and alkylphenol derivates (APD)
  - perfluorinated and polyfluorinated compounds (PFAS)
  - chloro-organic compounds or reactive chlorine compounds capable of forming chloro-organic metabolites.

**6.11. Fragrance -Allergenic substances** (Nordic)

- Allergenic fragrance substances specified in annex 3 may not be present in the car care product.

**6.12. Windscreen washer fluids** (Nordic)

- At least 80% by volume of the product must be based on vegetable raw materials.  
The product may contain a maximum of 10% by volume of water.

**6.13. Risk classification--Product-Prohibited ingredients-Sensitizing substances**

(Nordic)

- Products that contain at least one substance classified as sensitizing with R42 and/or R43 in a concentration of  $\geq 0,1\%$ , or any lower limit given in the list of dangerous substances, will not be allowed.  
Professional products for use in automatic wash installations are exempted, provided that the packaging is designed in such a way that there is no risk that the user will come into contact with the product.

(Risks phrases in Annex 1 and 6)

**6.14. Substances: preservatives** (Nordic)

- Preservatives must not be potentially bioaccumulative according to OECD<sup>(1)</sup> Guidelines 107, 117 or 305.

Verification is made on basis of the results from tests for the BCF or  $\log P_{ow}$ .

(For details see Annex 5)

<sup>(1)</sup> Organization for Economic Cooperation and Development

**6.15. Organic substances: degradability** (Nordic)

- All organic substances and their degradation products shall be readily aerobically degradable in accordance with OECD<sup>(1)</sup> Guidelines No. 301 A – F or other equivalent methods and anaerobically degradable in accordance with ISO 11734 or other equivalent method. (For details see Annex 4)

The following compounds are exempted from the degradability requirement:

- non-chlorinated polymers
- non-chlorinated natural and synthetic waxes
- preservatives
- iminodisuccinate
- fragrance
- dyes in windscreen washer fluids
- dyes in products for professional use
- denaturing agents in ethanol

<sup>(1)</sup> Organization for Economic Cooperation and Development

#### **6.16. Fragrance –IFRA** (Nordic)

- Fragrances used must comply with IFRA's <sup>(1)</sup> recommendations

<sup>(1)</sup> IFRA: international fragrance association

#### **6.17. Product: Critical Dilution Volume** (Nordic)

- The critical dilution volume ( $CDV_{(acute)}$ ) of the product must not exceed 1.000.000.  $CDV_{(acute)}$  is calculated using the formula below and must be calculated for all substances in the product.

$$CDV_{(acute)} = \sum_i (\text{dose}_i \times DF_i \times 1000 / TF_{(acute)i})$$

where :

$\text{dose}_i$  = the ingoing quantity of substance i

$DF_i$  =degradation factor of substance i as stated in the DID (Detergent Ingredient Database) list

$TF_{(acute)i}$  = the toxicity factor of the substance i as stated in the DID list

**CDV** must be calculated using the highest recommended concentration at which the product may be used and is expressed as **gram/liter use concentration**.

#### **6.18. Performance requirements Efficiency** (Nordic)

- The product must be at least equally as effective as other equivalent products on the market.  
In the case of consumer products, this is to be proved through efficiency tests.  
In the case of products for professional applications through efficiency tests or field tests.  
For products intended for both consumer and professional use, the effectiveness may be substantiated by results from efficiency tests or field tests.

During field tests for products intended for professional use, at least five professional companies must have tested the product on at least 10 wash occasions under relevant conditions.

This means for example that dirt, the wash object, water temperature, the quantity of product used, effective time, mechanical treatment, etc., must correspond to the conditions under which the product is intended to be used.

### **7) Performance clauses:**

#### **7.1. Environmental aspects:**

**a) Product requirements for carwash installations maximum content** (Milieukeur)

- In user manual and on the product must be explained that:
  - For car shampoos as prewashing product maximum 25 ml per treatment is allowed.
  - For general, cleaning, drying or conserving products, maximum 40 ml per treatment is allowed.

**b) General requirements for professional: Super-concentrates** (Nordic)

- Only for Professional (Carwashes)!
  - The packaging of super-concentrates for professional users must be designed in such a way that there is no risk that the user will come into contact with the product.
  - For super-concentrates a technical instruction and user manual must be available describing how to avoid contact with the product.
  - Super-concentrates, only after a first dilution step following producer instructions to “concentrated solution”, must fulfill the classification requirements under “General requirements: product classification”.

**Super-concentrated product –dilution-> Concentrated product –dilution-> Normal use product**

**c) Product requirements for individuals maximum content** (Milieukeur)

- Recommendation only for Individual use:  
For car shampoos as prewashing product, the maximum quantity of product must be of 25 ml per treatment. This must be stated in the user manual!

**d) Product Dosage for individuals**

- To avoid overdosing of concentrated products that requires dilution, prior to use; the packaging must be designed so that correct dosage is facilitated. (Milieukeur, Nordic)
- Dosage facilitator must always be sub-part of the packaging (e.g. tube hood, dosing cap) and this even for product that require no dilution for use.  
Invitation to use the dosage facilitator must be written into the user manual. (Milieukeur)

**e) Packaging**

- PVDC (polyvinylidene dichloride) is not allowed as part of packaging. (Milieukeur)
- Aerosol packaging (i.e. packaging using a propellant gas) may not be used. (Nordic)
- Plastic packaging must be marked with the polymer type and corresponding symbol according to DIN 6120, section 2 (e.g. here under), or equivalent. (Nordic)



- PVC (polyvinyl chloride) is not allowed as part of packaging. (Milieukeur, Nordic)

**f) Product- User info**

- The applicant must provide detailed information on the products for which the label is sought, including the following: (Nordic)
  - Name and address of the manufacturer
  - Annual turnover of the products
  - Size of the package
- The product must display the following or equivalent text:
  - information on the choice of a suitable site for washing (consumer products only)

Proposal for wording: “To protect the environment, please choose a washing location where the water drains off into a sewage system connected to a public treatment facility.” (Nordic)
- The product must display the following or equivalent text:

“Freezing point for windscreen washer fluids at recommended doses”. (Nordic)
- Information on the product must clearly disclose: (Milieukeur, Nordic)
  - What type of product it is.
  - What it is used for.
  - Clear instructions for dosing (in g (or ml)/L) must be displayed for product that must be diluted prior to use.

**g) Windscreen washer fluids** (Nordic)

- The windscreen washer fluid packaging may not weigh more than 45 g per liter of concentrated product.

**h) Performance requirements Freeze protection of windscreen washer fluids** (Nordic)

- The recommended doses on the windscreen washer fluid packaging need to fulfill the promised level of freeze protection.

Results of the freezing-point test conducted in accordance with ASTM <sup>(1)</sup> accordance with ASTM D1177, ASTM D2386 or equivalent method.

<sup>(1)</sup>ASTM International, formerly known as the American Society for Testing and Material

**7.2. Social aspects:**

Buyers can take account of social aspects in there procurement. For more information about the different possibilities see:

<http://www.gidsvoorduurzameaankopen.be/en/node/108>

### **7.3. Ethical aspects:**

“The tenderer undertakes, until the contract has been executed in full, to respect the 8 Basic Conventions of the ILO

By signing his tender, the tenderer undertakes to respect the standards defined in the Basic Conventions of the International Labour Organisation (ILO) and, in particular:

1. The prohibition of forced labour (C29 Forced Labour Convention, 1930, and C105 Abolition of Forced Labour Convention, 1957);
2. The right to freedom of association (C87 Freedom of Association and Protection of the Right to Organise, 1948);
3. The right to organise and collective bargaining (C98 Right to Organise and Collective bargaining, 1949);
4. The prohibition of any discrimination in terms of labour and remuneration (C100 Equal Remuneration, 1951 and C111 Discrimination (Employment and Occupation), 1958);

The minimum age for child labour (C138 Minimum Age Convention, 1973), together with the prohibition of the worst forms of child labour (C182 Worst Forms of Child Labour Convention, 1999).

The non-respect of this undertaking may, by virtue of Article 20, §1, 4° of the general specifications annexed to the Royal Decree of 26 September 1996, give rise to the application of the official measures described in § 6 of the same article, including unilateral termination of the contract.”

## References

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

## Annex 1: R-PHRASES:

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

<u>R1:</u>	Explosive when dry.
<u>R2:</u>	Risk of explosion by shock, friction, fire or other sources of ignition.
<u>R3:</u>	Extreme risk of explosion by shock, friction, fire or other sources of ignition.
<u>R4:</u>	Forms very sensitive explosive metallic compounds.
<u>R5:</u>	Heating may cause an explosion.
<u>R6:</u>	Explosive with or without contact with air.
<u>R7:</u>	May cause fire.
<u>R8:</u>	Contact with combustible material may cause fire.
<u>R9:</u>	Explosive when mixed with combustible material.
<u>R10:</u>	Flammable
<u>R11:</u>	Highly flammable
<u>R12:</u>	Extremely flammable
<u>R13 (obsolete):</u>	<i>Extremely flammable liquid gas (This R-phrase is no longer designated by the version of the GefStoffV published on 26.10.93.)</i>
<u>R14:</u>	Reacts violently with water.
<u>R15:</u>	Contact with water liberates extremely flammable gases.
<i>Merck R15.1</i>	<i>Contact with acid liberates extremely flammable gases.</i>
<u>R16:</u>	Explosive when mixed with oxidizing substances.
<u>R17:</u>	Spontaneously flammable in air.
<u>R18:</u>	In use, may form flammable/explosive vapour-air mixture.
<u>R19:</u>	May form explosive peroxides.
<u>R20:</u>	Harmful by inhalation.
<u>R21:</u>	Harmful in contact with skin.
<u>R22:</u>	Harmful if swallowed.
<u>R23:</u>	Toxic by inhalation.
<i>Riedel-de Haen R23K:</i>	<i>Also toxic by inhalation.</i>
<u>R24:</u>	Toxic in contact with skin.
<i>Riedel-de Haen R24K:</i>	<i>Also toxic in contact with skin.</i>
<u>R25:</u>	Toxic if swallowed.
<i>Riedel-de Haen R25K:</i>	<i>Also toxic if swallowed.</i>
<u>R26:</u>	Very toxic by inhalation.
<i>Riedel-de Haen R26K:</i>	<i>Also very toxic by inhalation.</i>
<u>R27:</u>	Very toxic in contact with skin
<i>Riedel-de Haen R27A:</i>	<i>Very toxic in contact with eyes.</i>
<i>Riedel-de Haen R27K:</i>	<i>Also very toxic in contact with skin.</i>
<i>Riedel-de Haen R27AK:</i>	<i>Also very toxic in contact with eyes.</i>
<u>R28:</u>	Very toxic if swallowed.
<i>Riedel-de Haen R28K:</i>	<i>Also very toxic if swallowed.</i>
<u>R29:</u>	Contact with water liberates toxic gas.
<u>R30:</u>	Can become highly flammable in use.
<u>R31:</u>	Contact with acids liberates toxic gas.
<i>Merck R31.1</i>	<i>Contact with alkalis liberates toxic gas.</i>
<u>R32:</u>	Contact with acids liberates very toxic gas.
<u>R33:</u>	Danger of cumulative effects.

\* Finance Tower, 8<sup>th</sup> floor · Kruidtuinlaan 50 / 8 · 1000 Brussels - T + 32 2 524 88 54 · F + 32 2 524 88 70  
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<u>R34:</u>	Causes burns.
<u>R35:</u>	Causes severe burns.
<u>R36:</u>	Irritating to eyes.
<i>Riedel-de Haen R36A: Lacrimating</i>	
<u>R37:</u>	Irritating to respiratory system.
<u>R38:</u>	Irritating to skin.
<u>R39:</u>	Danger of very serious irreversible effects.
<u>R40:</u>	Possible risk of cancer. <i>CAUTION: Until 2001 this R-phrase was used for possible mutagenic or teratogenic risks as well. These risks are now labelled with R68!</i>
<u>R41:</u>	Risk of serious damage to eyes.
<u>R42:</u>	May cause sensitization by inhalation.
<u>R43:</u>	May cause sensitization by skin contact.
<u>R44:</u>	Risk of explosion if heated under confinement.
<u>R45:</u>	May cause cancer.
<u>R46:</u>	May cause heritable genetic damage.
<u>R47(obsolete):</u>	<i>May cause deformities. (This R-phrase is no longer designated by the version of the GefStoffV published on 26.10.93.)</i>
<u>R48:</u>	Danger of serious damage to health by prolonged exposure.
<u>R49:</u>	May cause cancer by inhalation.
<u>R50:</u>	Very toxic to aquatic organisms.
<u>R51:</u>	Toxic to aquatic organisms.
<u>R52:</u>	Harmful to aquatic organisms.
<u>R53:</u>	May cause long-term adverse effects in the aquatic environment.
<u>R54:</u>	Toxic to flora.
<u>R55:</u>	Toxic to fauna.
<u>R56:</u>	Toxic to soil organisms.
<u>R57:</u>	Toxic to bees.
<u>R58:</u>	May cause long-term adverse effects in the environment.
<u>R59:</u>	Dangerous for the ozone layer.
<u>R60:</u>	May impair fertility.
<u>R61:</u>	May cause harm to the unborn child.
<u>R62:</u>	Possible risk of impaired fertility.
<u>R63:</u>	Possible risk of harm to the unborn child.
<u>R64:</u>	May cause harm to breastfed babies.
<u>R65:</u>	Harmful: may cause lung damage if swallowed.
<u>R66:</u>	Repeated exposure may cause skin dryness or cracking.
<u>R67:</u>	Vapours may cause drowsiness and dizziness.
<u>R68:</u>	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.

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- 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.

## Annex 2: Calculation of the VOCs contribution to POCP (photochemical smog formation – Photochemical Ozone Creation Potential)

The product may contain only a limited quantity of volatile organic compounds (VOC) that contribute to the formation of photochemical smog (POCP).

In the case of solvents not included in the list, POCP values from experiments/tests may be used for the purpose of calculating the permitted content of VOC; or alternatively the "worst case" for the VOC group may be used. The list below is not synonymous with substances that are approved for use in labeled products.

<b>Alkanes</b>	0,4 +/-0,1 (worst case = 0,5)	<b>Alkenes</b>	0,5 +/- 0,2
Metane	0,007 <sup>1</sup>	Ethylene	1,0
Ethane	0,1	Propylene	0,6
Propane	0,5	1-butene	0,5
n-butane	0,5	2-butene (trans)	0,4
i-butane	0,4	2-pentene (trans)	0,4
n-pentane	0,3	2-methylbut-1-ene	0,2
i-pentane	0,3	2-methylbut-2-ene	0,5
n-hexane	0,5	3-methylbut-1-ene	0,5
2-methylpentane	0,5	Isobutene	0,6
3-methylpentane	0,4	Isoprene	0,6
2,2-dimethyl-butane	0,3 <sup>1</sup>		
2,3-dimethyl-butane	0,4 <sup>1</sup>	<b>Alkynes</b>	0,4
n-heptane	0,5	Acetylene	0,4
2-methylhexane	0,5 <sup>1</sup>		
3-methylhexane	0,5 <sup>1</sup>	<b>Aromatics</b>	
n-octane	0,5	benzene	0,4
2-methylheptane	0,5	toluene	0,5
n-nonane	0,4	o-xylene	0,2
2-methyloktane	0,5	m-xylene	0,5
n-dekane	0,4	p-xylene	0,5
2-methylnonane	0,4	ethylbenzene	0,5
n-undekane	0,4	1,2,3-	0,3

		trimethylbenzene	
n-dodekane	0,3	1,2,4-trimethylbenzene	0,3
methylcyclo-hexane	0,5	1,3,5-trimethylbenzene	0,3
		o-ethyltoluene	0,4
		m-ethyltoluene	0,4
		p-ethyltoluene	0,4
<b>Aldehydes</b>	0,3 +/- 0,2	n-propylbenzene	0,5
formaldehyde	0,3	isopropylbenzene	0,5
acetaldehyde	0,2		
propionaldehyde	0,2		
butyraldehyde	0,2	<b>Alcohols</b>	0,2 +/- 0,02
isobutyraldehyde	0,3	methanol	0,2
valeraldehyde	0,3	ethanol	0,2
acrolein	0,8	isopropanol	0,2
benzaldehyde	-	butanol	0,2
		isobutanol	0,3
<b>Ketones</b>	0,2 +/- 0,1	butan-2-diol	0,3
acetone	0,1		
methyl ethyl ketone	0,2	<b>Chloroalkanes</b>	0,01 +/- 0,01
methyl i-butyl ketone	0,3	Methylene chloride	0,02
		chloroform	0,004
<b>Ethers</b>	0,4 +/- 0,1	methyl chloroform	0,002
dimethyl ether	0,3		
propylene glycol methyl ether	0,5	<b>Chloroalkenes</b>	0,2 +/- 0,3
		trichloroethylene	0,1
<b>Esters</b>	0,2 +/- 0,1	tetrachloroethylene	0,01
methyl acetate	0,1	allyl chloride	0,5
ethyl acetate	0,3		
Isopropylacetate	0,2 <sup>1</sup>		
n-butyl acetate	0,3		
isobutyl acetate	0,4		
propylene glycol methylether acetate	0,2		

Source: ICA Center Denmark (2007): EDIP characterisation factors for photochemical ozone formation (High NOx).

## Annex 3: Fragrance substances

The following fragrance substances may not be present in car or boat care products:

Navn	Cas-nr
Amyl cinnamal	122-40-7
Benzyl alcohol	100-51-6
Cinnamyl alcohol	104-54-1
Citral	5392-40-5
Eugenol	97-53-0
Hydroxy-citronellal	107-75-5
Isoeugenol	97-54-1
Amylcinnamyl alcohol	101-85-9
Benzyl salicylat	118-58-1
Cinnamal	104-55-2
Coumarin	91-64-5
Geraniol	106-24-1
Hydroxyisoheptyl 3-cyclohexene carboxaldehyd	31906-04-4
Anisyl alcohol	105-13-5
Benzyl cinnamat	103-41-3
Farnesol	4602-84-0
Butylphenyl methylpropional	80-54-6
Linalool	78-70-6
Benzyl benzoate	120-51-4
Citronellol	106-22-9
Hexyl cinnamaldehyd	101-86-0
d-Limonene	5989-27-5
alpha isomethyl ionone	127-51-5
methyl 2-octynoat	111-12-6
Oak moss extract	90028-68-5
Tree moss extract	90028-67-4

## Annex 4: Analyses and control

Sample taking must be conducted in such a way to ensure the samples are representative. The analysis laboratory and/or testing institution must be impartial and competent. Raw data must be available for inspection by the ecolabelling organisation.

The analysis laboratory must fulfill the general requirements stipulated in EN 45001 or have official GLP approval (applies only to laboratories for chemical analysis).

The applicant bears the costs of documentation and analysis.

The manufacturer's laboratory may be approved to carry out analyses and testing if the analyses and testing are covered by the ISO 9001 or ISO 9002 quality system.

### 1 Ecotoxicological test methods

International test methods (OECD Guidelines for Testing of Chemicals, ISBN 92-64-1222144) or equivalent test methods must be used for documentation. If equivalent test methods are used, these must be evaluated by an external body in order to ensure that the results also are equivalent. The relevant test methods to be used are given below.

### 2 Aquatic acute toxicity

Test methods 201 - 203 in the OECD Guidelines for testing of chemicals (ISBN 92-64-1222144) or other equivalent methods shall be used for determining aquatic acute toxicity.

### 3 Potensial for bioaccumulation

The bioconcentration factor (BCF) for fish or the octanol/water distribution factor ( $P_{ow}$  or  $K_{ow}$ ) can be determined in order to obtain an assessment of the ability of a substance to become accumulated in organisms.

The assessment shall be made on the basis of one of the methods OECD 107, 117 or 305, and classification shall take place in accordance with the following:

Classification	OECD 107 or 117	OECD 305
Not liable to bioaccumulation	$\log K_{ow} < 3,0$	$BCF < 100$
Liable to bioaccumulation	$\log K_{ow} \geq 3,0$	$BCF \geq 100$

A component is viewed as having potential for bioaccumulation if the analysis in the two-phase system n-octanol and water show a solubility in the organic phase that is at least 1000 times greater than in the water phase at chemical equilibrium ( $\log Pow > 3$ ), if not other results are shown (OECD test method 107 or 117). The bioaccumulation of such a component can be tested on fish according to test method 305 A-E. If the biological concentration factor (BCF) of the component is 100 or more, the component is regarded as bioaccumulating.

OECD test method 107 is not applicable to surface active components capable to dissolve in both fat and water. For such components, evidence must be presented that demonstrates to a high degree of certainty based on current knowledge that the components or their degradation products do not represent a long-term or delayed hazard to the organisms in the aquatic environment.



#### 4 Aerobic degradability

Test methods 301 A - F in the OECD Guidelines or other scientifically acceptable methods are used for determining whether an organic substance is readily aerobically biodegradable. If mechanisms other than biodegradation occur, such data may be reported.

Test methods 301 A - F for determining ready biodegradability are standardised tests with limited opportunities for biodegradability and limited test duration (28 days). Chemical substances that are found by these tests to be readily degradable are also assumed to degrade quickly in nature.

The limit values for whether or not a substance is to be classified as readily biodegradable (aerobically) are given in the table below.

Classification	Test methods	BOD or CO <sub>2</sub>	DOC
Readily biodegradable	301 A-F	≥ 60%	≥ 70%

#### 5 Anaerobic degradability

Anaerobic degradability can be tested in accordance with ISO 11734, ECETOC No. 28 (June 1988) or other scientifically acceptable methods. For a substance to be regarded as anaerobically degradable in the ISO test, >60% mineralization is required.

Substances that are not surfactants and not available on the DID-list are exempted from the analysis requirements with regard to anaerobic degradability if they are:

- Readily aerobically degradable and have low adsorption ( $A < 25\%$ ) or
- Readily aerobically degradable and have high desorption ( $D > 25\%$ ) or
- Readily aerobically degradable and have not potential for bioaccumulation.

Method 106 in the OECD Guidelines or ISO CD 18749 "Water quality – Adsorption of substances on activated sludge" is used for determining the adsorption/desorption.

#### 6 The DID-list

The DID is a joint list for the EU ecolabelling scheme and Nordic Ecolabelling. The list was developed in co-operation with interested parties both from consumer and environmental organisations and the industry, and contains information on the toxicity and degradability of a number of substances that could be used in chemical products. The substances contained in the DID list do not express the substances found in ecolabelled products.

The DID list cannot be used for documenting the toxicity of individual substances for the purposes of the classification regulations. Information regarding classification must be taken from product safety data sheets, from the literature or obtained from raw material manufacturers.

The DID list is available from the ecolabelling organisation or via the websites, see page two.

For these criteria the DID list adopted in January 2007 or later versions will apply.

## 7 Exceptions from the analysis requirements

The following substances are exempted from the analysis requirements with regard to aquatic toxicity, biodegradability and bioaccumulativity.

- Substances with a short life span (< 1 hour for the analysis of potential for bioaccumulation and < 24 hour for other tests). Degradation products are analysed as required.
- Substances known to be dangerous to the environment and listed by the public authorities.
- Substances for which through scientific references and reasoning, conclusions may be drawn that are analogous to tested substances.
- High-molecular substances (molecular weight > 700 minimum calculated diameter > 9.5 Å or length > 5.5 nm) are exempt from the bioaccumulation test requirement.



## Annex 5:

The terms “bioconcentration” and “bioaccumulation” are both used in assessment of the hazard and risk of chemical contamination in the environment, according to various regulatory criteria [European Commission 2003; U.S. Environmental Protection Agency (EPA) 2000; Persistence and Bioaccumulation Regulations 2000].

**Bioconcentration:** is the process by which a chemical is retained in an aquatic organism following its absorption through respiratory and dermal surfaces from the surrounding water (does not include dietary exposure). Bio-concentration is measured under controlled laboratory conditions (OECD 1996). The potential for a chemical to bio-concentrate is expressed by its BCF, which may be calculated in two ways:

- a) using the ratio of the chemical concentration in the organism  $C_B$  and the concentration in the water ( $C_W$ ) at steady state, so

$$BCF_{\text{SteadyState}} = C_B / C_W$$

- b) using the ratio of the rate of chemical uptake ( $k_1$ ) and the total rate of chemical elimination or depuration ( $k_2$ ) in the organism, so

$$BCF_{\text{Kinetic}} = k_1 / k_2 \text{ (Barron 1990; Mackay and Fraser 2000).}$$

**Bioaccumulation:** is net uptake and retention of a chemical in an organism from all routes of exposure (diet, dermal, respiratory) and any source (water, sediment, food) as typically occurs in the natural environment (Spacie et al. 1995). Bioaccumulation by invertebrates can be measured in the laboratory (ASTM 2000) or in the field. For vertebrates, bioaccumulation is measured in the field and expressed using either:

- a) BAF, the bioaccumulation factor: ratio of chemical concentration in the organism to the chemical’s concentration in water
- b) BSAF, the biota–sediment accumulation factor: ratio of lipid-normalized chemical concentration in the organism to that in the sediment on an organic carbon basis (Spacie et al. 1995).

Relation between Log  $K_{ow}$  (or Log P) and BCF is listed in link hereafter:

[http://www.icca-chem.org/ICCADocs/NO\\_DATE\\_Log\\_Kow\\_criteria\\_of\\_5\\_is\\_equivalent\\_to\\_BCF\\_criteria\\_of\\_5000.doc](http://www.icca-chem.org/ICCADocs/NO_DATE_Log_Kow_criteria_of_5_is_equivalent_to_BCF_criteria_of_5000.doc)

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## Annex 6: Translation between classification in accordance with Directive 67/548/EEC and Directive 1272/2008/EEC.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:353:0001:1355:EN:PDF>

Classification under Directive 67/ 548/EEC	Physical state of the substance when rele-vant	Classification under 1272/2008/EEC		Note
		Hazard Class-and-Category	Hazard statement	
E; R2		No direct translation possible.		
E; R3		No direct translation possible.		
O; R7		Org. Perox. CD	H242	
		Org. Perox. EF	H242	
O; R8	gas	Ox. Gas 1	H270	
O; R8	liquid, solid	No direct translation possible.		
O; R9	liquid	Ox. Liq. 1	H271	
O; R9	solid	Ox. Sol. 1	H271	
R10	liquid	No direct translation possible.		
		Correct translation of R10, liquid is:		
		<ul style="list-style-type: none"> <li>Flam. Liq. 1, H224 if flashpoint &lt; 23 °C and initial boiling point ≤ 35 °C</li> <li>Flam. Liq. 2, H225 if flashpoint &lt; 23 °C and initial boiling point &gt; 35 °C</li> <li>Flam. Liq. 3, H226 if flashpoint ≥ 23 °C</li> </ul>		
F; R11	liquid	No direct translation possible.		
		Correct translation of F; R11, liquid is:		
		<ul style="list-style-type: none"> <li>Flam. Liq. 1, H224 if initial boiling point ≤ 35 °C</li> <li>Flam. Liq. 2, H225 if initial boiling point &gt; 35 °C</li> </ul>		
F; R11	solid	No direct translation possible.		
F+; R12	gas	No direct translation possible.		
		Correct translation of F+; R12, gaseous results either in Flam. Gas 1, H220 or Flam. Gas 2, H221.		
F+; R12	liquid	Flam. Liq. 1	H224	
F+; R12	liquid	Self-react. CD	H242	
		Self-react. EF	H242	
		Self-react. G	none	
F; R15		No translation possible.		
F; R17	liquid	Pyr. Liq. 1	H250	
F; R17	solid	Pyr. Sol. 1	H250	
Xn; R20	gas	Acute Tox. 4	H332	(1)
Xn; R20	vapours	Acute Tox. 4	H332	(1)
Xn; R20	dust/mist	Acute Tox. 4	H332	
Xn; R21		Acute Tox. 4	H312	(1)
Xn; R22		Acute Tox. 4	H302	(1)

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T;R23	gas	Acute Tox. 3	H331	(1)
T;R23	vapour	Acute Tox. 2	H330	
T;R23	dust/mist	Acute Tox. 3	H331	(1)
T;R24		Acute Tox. 3	H311	(1)
T;R25		Acute Tox. 3	H301	(1)
T+; R26	gas	Acute Tox. 2	H330	(1)
T+; R26	vapour	Acute Tox. 1	H330	
T+; R26	dust/mist	Acute Tox. 2	H330	(1)
T+; R27		Acute Tox. 1	H310	
T+; R28		Acute Tox. 2	H300	(1)
R33		STOT RE 2	H373	(3)
C; R34		Skin Corr. 1B	H314	(2)
C; R35		Skin Corr. 1A	H314	
Xi; R36		Eye Irrit. 2	H319	
Xi; R37		STOT SE 3	H335	
Xi; R38		Skin Irrit. 2	H315	
T;R39/23		STOT SE 1	H370	(3)
T;R39/24		STOT SE 1	H370	(3)
T;R39/25		STOT SE 1	H370	(3)
T+; R39/26		STOT SE 1	H370	(3)
T+; R39/27		STOT SE 1	H370	(3)
T+; R39/28		STOT SE 1	H370	(3)
Xi; R41		Eye Dam. 1	H318	
R42		Resp. Sens. 1	H334	
R43		Skin Sens. 1	H317	
Xn; R48/20		STOT RE 2	H373	(3)
Xn; R48/21		STOT RE 2	H373	(3)
Xn; R48/22		STOT RE 2	H373	(3)
T;R48/23		STOT RE 1	H372	(3)
T;R48/24		STOT RE 1	H372	(3)
T;R48/25		STOT RE 1	H372	(3)
R64		Lact.	H362	
Xn; R65		Asp. Tox. 1	H304	
R67		STOT SE 3	H336	
Xn; R68/20		STOT SE 2	H371	(3)
Xn; R68/21		STOT SE 2	H371	(3)
Xn; R68/22		STOT SE 2	H371	(3)
Carc. Cat. 1; R45		Carc. 1A	H350	

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Carc. Cat. 2; R45		Carc. 1B	H350	
Carc. Cat. 1; R49		Carc. 1A	H350i	
Carc. Cat. 2; R49		Carc. 1B	H350i	
Carc. Cat. 3; R40		Carc. 2	H351	
Muta. Cat. 2; R46		Muta. 1B	H340	
Muta. Cat. 3; R68		Muta. 2	H341	
Repr. Cat. 1; R60		Repr. 1A	H360F	(4)
Repr. Cat. 2; R60		Repr. 1B	H360F	(4)
Repr. Cat. 1; R61		Repr. 1A	H360D	(4)
Repr. Cat. 2; R61		Repr. 1B	H360D	(4)
Repr. Cat. 3; R62		Repr. 2	H361f	(4)
Repr. Cat. 3; R63		Repr. 2	H361d	(4)
Repr. Cat. 1; R60-61		Repr. 1A	H360FD	
Repr. Cat. 1; R60 Repr. Cat. 2; R61		Repr. 1A	H360FD	
Repr. Cat. 2; R60 Repr. Cat. 1; R61		Repr. 1A	H360FD	
Repr. Cat. 2; R60-61		Repr. 1B	H360FD	
Repr. Cat. 3; R62-63		Repr. 2	H361fd	
Repr. Cat. 1; R60 Repr. Cat. 3; R63		Repr. 1A	H360Fd	
Repr. Cat. 2; R60 Repr. Cat. 3; R63		Repr. 1B	H360Fd	
Repr. Cat. 1; R61 Repr. Cat. 3; R62		Repr. 1A	H360Df	
Repr. Cat. 2; R61 Repr. Cat. 3; R62		Repr. 1B	H360Df	
N; R50		Aquatic. Acute 1	H400	
N; R50-53		Aquatic Acute 1 Aquatic Chronic 1	H400 H410	
N; R51-53		Aquatic Chronic 2	H411	
R52-53		Aquatic Chronic 3	H412	
R53		Aquatic Chronic 4	H413	
N; R59		Ozone	EUH059	