CHEMICAL PRODUCTS

Basic Guide on Labelling and Safety Data Sheets

Dirección General de Salud Pública y Participación
Salud Ambiental
CHEMICAL PRODUCTS
Basic Guide on Labelling and Safety Data Sheets

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Hazardous chemical products have to comply with, amongst others, the provisions of a correct classification of danger, labelling and compilation of the Safety Data Sheets.

The aim is to protect people’s health and the environment from exposure to hazardous chemicals - especially the health and safety of direct users, professionals or not, and the general public, via environmental exposure.

This publication is intended to contribute to the knowledge of the objectives and basic aspects of these legal provisions, and thereby increase their degree of compliance in Andalusia and other European regions.

This Guide is directed toward those people who in the development of their professional activities, are in one way or another in contact with dangerous chemical products.
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I. INTRODUCTION

The large-scale marketing of chemical products on a worldwide level is significantly improving the life conditions of populations. But at the same time, the hazard of many of these products implies a potential risk for peoples’ health, whether they be workers, consumers or the general public, in a direct way or through the pollution of the environment.

Knowledge of chemical products dangerous properties and the negative effects that they can produce, plus the possible measures to adopt, is essential to minimize the risks, in occupational exposure, consumer exposure or indirect exposure via the environment.

To ensure this knowledge, it is necessary to have information available.

The basic objective of the European policies and legislation on chemical products is to achieve that extensive, reliable information about dangerous chemical products that are placed on the market is passed on from manufacturers or importers of raw materials to formulators, and from them to the packagers, wholesalers, distributors and in general, to professional users from all types of companies/undertaking.

It is also necessary that correct and simplified information reaches consumers.

The information system on the properties, potential risks and safety measures of chemical products is based on two basic tools: the Label and the Safety Data Sheet (SDS).

It is the duty of companies/undertaking to ensure that the necessary information is gathered, verified, shared and used by all those who are or could be in contact with dangerous chemical products.

This work carried out will achieve a significant decrease in the risk of exposure of consumers and professional users, because it will allow the selection of chemical products that are increasingly safer and the adoption of the necessary measures to prevent their negative effects on health and the environment.
II. CHEMICAL PRODUCTS: SOME DEFINITIONS

CHEMICAL PRODUCTS can be SUBSTANCES or PREPARATIONS.

### SUBSTANCES

Chemical elements and their compounds, in their natural state or obtained by any production process. They can be individual chemicals or mixtures.

A substance that is an individual chemical must contain at least 80% of the chemical. Impurities are included only from the manufacturing process.

A substance that is a mixture: reaction products not being separated into individual components and placed on the market as such. Ex: isomers, C8-20 alcohols, a petroleum distillation fraction.

Additives are included, if they are necessary to preserve the stability of the product.

### PREPARATIONS

Intentional mixtures (formulations) or solutions composed of two or more substances.

DANGER / Dangerous.

Is the potential of a chemical product for causing harm. It is a qualitative concept. It is a function of the specific nature of the product, that is to say, of its physico-chemical, toxicological or/and ecotoxicological properties.

A DANGEROUS SUBSTANCE is one which can be classified in one or several categories of danger, based on the Dangerous Substances Directive. (DSD).

A DANGEROUS PREPARATION is that mixture or solution that contains at least one dangerous substance and that is classified as dangerous based on the criteria established in the Dangerous Preparations Directive. (DPD).
III. Categories of danger

To establish, by means of the same procedure, the nature and degree of the hazards presented by the chemical products commercialized in the European Member States, 15 categories of danger have been defined. These are listed below together with their abbreviations:

### Categories based on their physico-chemical properties:

<table>
<thead>
<tr>
<th>Number</th>
<th>Property</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Explosive</td>
<td>E</td>
</tr>
<tr>
<td>2</td>
<td>Oxidising</td>
<td>O</td>
</tr>
<tr>
<td>3</td>
<td>Extremely flammable</td>
<td>F+</td>
</tr>
<tr>
<td>4</td>
<td>Highly flammable</td>
<td>F</td>
</tr>
<tr>
<td>5</td>
<td>Flammable</td>
<td>R10</td>
</tr>
</tbody>
</table>

### Categories based on their effects on human health:

<table>
<thead>
<tr>
<th>Number</th>
<th>Property</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Very Toxic</td>
<td>T+</td>
</tr>
<tr>
<td>7</td>
<td>Toxic</td>
<td>T</td>
</tr>
<tr>
<td>8</td>
<td>Harmful</td>
<td>Xn</td>
</tr>
<tr>
<td>9</td>
<td>Corrosive</td>
<td>C</td>
</tr>
<tr>
<td>10</td>
<td>Irritant</td>
<td>Xi</td>
</tr>
<tr>
<td>11</td>
<td>Sensitising</td>
<td>R42 y/o R43</td>
</tr>
<tr>
<td>12</td>
<td>Carcinogenic</td>
<td>Carc. Cat 1,2 o 3</td>
</tr>
<tr>
<td>13</td>
<td>Toxic for reproduction</td>
<td>Repr. Cat 1,2 o 3</td>
</tr>
<tr>
<td>14</td>
<td>Mutagenic</td>
<td>Muta. Cat. 1,2 o 3</td>
</tr>
</tbody>
</table>

### Categories based on their environmental effects:

<table>
<thead>
<tr>
<th>Number</th>
<th>Property</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Dangerous for the Environment</td>
<td>N y/o R52, R53, R59</td>
</tr>
</tbody>
</table>

Note: For the Carcinogenic, Mutagenic and/or Toxic for Reproduction categories, (CMR Categories) the subcategories of danger 1, 2 or 3 should be indicated.

These 15 categories of danger are those considered in the commercial chemical products legislation. They do not necessarily have to coincide exactly with the classification of danger that exists in the International Transport of Dangerous Goods rules or other types of specific legislation.
IV. Classification

The CLASSIFICATION of a chemical product is the procedure by which the corresponding categories of danger are assigned.

When is a substance or a preparation dangerous?

When it can be assigned one or several categories of danger.

How is the classification of danger of a substance or preparation carried out?

1. By identifying the physico-chemical properties, properties affecting health (toxicological and CMR) and environmental properties of substances or preparations.

2. Once the said properties are known and based on the data obtained, either through tests carried out or by validated reports/publications or, in the case of preparations, by a conventional calculation method, the product is assigned the corresponding categories of danger, with the obligatory risk phrases associated to each category and, in the appropriate cases, other additional risk phrases.

Who classifies the substances or preparations?

The manufacturer or the person responsible for placing them on the Community market.

In the case of substances included in Annex I of the Dangerous Substances Directive, this process is done by the European administration.

Annex I is a list of dangerous substances that are officially classified and labelled. This Annex I is continuously updated, adding new substances or revising the classification of those already included.
In general and in relation to classification, associated to the categories or subcategories of danger, are the following:

- **A SYMBOL**
  - Ex: [Image]

- **INDICATION OF DANGER**
  - Ex: **Toxic**

- **R - PHRASES**
  - Ex: R23: Toxic by inhalation

**THE S- PHRASES DO NOT FORM PART OF THE CLASSIFICATION PROCESS**

**NOT ALL CATEGORIES OF DANGER HAVE A SYMBOL AND INDICATION OF DANGER.**

Ex: “Flammable” Category: Does not carry a symbol or indication of danger, but does carry an R- phrase for its identification: R10.

**DIFFERENT CATEGORIES OF DANGER CAN BE REPRESENTED BY THE SAME SYMBOL AND INDICATION OF DANGER.**

Ex: "Harmful" Category and "Sensitisation" Cat. with R42 are both represented by the Xn symbol and the indication of danger "Harmful".

**TO FULLY UNDERSTAND THE HAZARD OF A CHEMICAL PRODUCT, INDICATED ON THE LABEL, THE R- PHRASES THAT INDICATE THE RISKS SHOULD BE CAREFULLY READ.**
### Classification on the Basis of Physico-Chemical Properties

<table>
<thead>
<tr>
<th>General Definition</th>
<th>Symbol</th>
<th>Indication of Danger</th>
<th>R-Phrases</th>
<th>Categories of Danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosive: solid, liquid, or gelatinous substances which may react exothermically with or without atmospheric oxygen, thereby releasing gases, energy, heat, and which, under defined test conditions, detonate, explode or spew off rapidly.</td>
<td>![Explosive Symbol]</td>
<td>Explosive</td>
<td>R2, R3</td>
<td>Explosive</td>
</tr>
<tr>
<td>Oxidising: substances and preparations which give rise to a highly exothermic reaction in contact with other substances, particularly flammable substances.</td>
<td>![Oxidising Symbol]</td>
<td>Oxidising</td>
<td>R7, R8, R9</td>
<td>Oxidising</td>
</tr>
<tr>
<td>Highly Flammable: Liquid substances and preparations which may become hot and flammable in contact with air at ambient temperature and pressure.</td>
<td>![Highly Flammable Symbol]</td>
<td>Highly Flammable</td>
<td>R12</td>
<td>Highly Flammable</td>
</tr>
<tr>
<td>Extremly Flammable: Substances and preparations which may become hot and flammable in contact with air at a lower temperature than normal ambient temperature and pressure.</td>
<td>![Extremly Flammable Symbol]</td>
<td>Extremely Flammable</td>
<td>R11, R15, R17</td>
<td>Extremely Flammable</td>
</tr>
<tr>
<td>Flammable: liquid substances and preparations having a low flash-point.</td>
<td>![Flammable Symbol]</td>
<td>Flammable</td>
<td>R10</td>
<td>Flammable</td>
</tr>
</tbody>
</table>

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**Chemical Products Basic Guide on Labelling and Safety Data Sheets**

Consejería de Salud de Andalucía/Regional Ministry of Health
### Classification on the Basis of Toxicological Properties

<table>
<thead>
<tr>
<th>Categories of Danger</th>
<th>R-Frases</th>
<th>Indication of Danger</th>
<th>General Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very Toxic</strong></td>
<td>R26, R27, R28 &amp; combinations, R39 &amp; combinations with the farmer.</td>
<td>Very Toxic</td>
<td>Very Toxic: substances and preparations, which in very low quantities cause death or acute or chronic damage to health when inhaled, swallowed or absorbed via the skin.</td>
</tr>
<tr>
<td><strong>Toxic</strong></td>
<td>R23, R24, R25 &amp; combinations, R39 &amp; combinations with the farmer, R4B &amp; combinations with the farmer.</td>
<td>Toxic</td>
<td>Toxic: substances and preparations, which in low quantities cause death or acute or chronic damage to health when inhaled, swallowed or absorbed via the skin.</td>
</tr>
<tr>
<td><strong>Harmful</strong></td>
<td>R20, R21, R22 &amp; combinations, R4B &amp; combinations with the farmer, R6B &amp; combinations with the farmer, R65</td>
<td>Harmful</td>
<td>Harmful: substances and preparations, which may cause death or acute or chronic damage to health when inhaled, swallowed or absorbed via the skin.</td>
</tr>
<tr>
<td><strong>Corrosive</strong></td>
<td>R34, R35</td>
<td>Corrosive</td>
<td>Corrosive: substances and preparations, which may, on contact with living tissues, destroy them.</td>
</tr>
<tr>
<td><strong>Irritant</strong></td>
<td>R36, R37, R38 &amp; combinations, R41</td>
<td>Irritant</td>
<td>Irritant: non-corrosive substances and preparations, which, through immediate, prolonged or repeated contact with the skin or mucous membrane, may cause inflammation.</td>
</tr>
<tr>
<td><strong>Sensitising</strong></td>
<td>R42, R42/43, R43</td>
<td>Harmful, Irritant</td>
<td>Sensitising: substances and preparations which, if they are inhaled or if they penetrate the skin, are capable of eliciting a reaction of hypersensitisation such that on further exposure to the substance or preparation, characteristic adverse effects are produced.</td>
</tr>
</tbody>
</table>
### Classification on the Basis of Specific Effects on Human Health

<table>
<thead>
<tr>
<th>Categories of Danger</th>
<th>R - Frases</th>
<th>Indication of Danger</th>
<th>Symbol</th>
<th>General Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcinogenic</td>
<td>R45, R49</td>
<td>Toxic</td>
<td></td>
<td>Carcinogenic: substances or preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce cancer or increase its incidence.</td>
</tr>
<tr>
<td>Category 3</td>
<td>R40</td>
<td>Harmful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mutagenic</td>
<td>R46</td>
<td>Toxic</td>
<td></td>
<td>Mutagenic: substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce heritable genetic defects or increase their incidence.</td>
</tr>
<tr>
<td>Category 3</td>
<td>R68</td>
<td>Harmful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toxic for Reproduction</td>
<td>R60, R61</td>
<td>Toxic</td>
<td></td>
<td>Toxic for Reproduction: substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may produce, or increase the incidence of, non-heritable adverse effects in the progeny and/or an impairment of male or female reproductive functions or capacity.</td>
</tr>
<tr>
<td>Category 3</td>
<td>R62, R63</td>
<td>Harmful</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Classification on the Basis of Environmental Effects

- **Dangerous for the Environment**
  - Aquatic environment: R50, R50/53, R51/53
  - Non-aqueous environment: R54, R55, R56, R57, R58
  - Ozone layer: R59
- Dangerous for the Environment: substances and preparations which, were they to enter the environment, would or could present an immediate or delayed danger for one or more components of the environment.
CLASSIFICATION OF PREPARATIONS

The assessment of the hazards of a preparation deriving from its properties shall be determined by means of one or more of the following procedures:

- **Test Method**: Experimental determination of a property of the preparation, as described in the tests of Annex V of the Dangerous Substances Directive, that can lead to the assignment of a category of danger.

- **Conventional Method**: It consists in the classification following a method of calculation, based on the classification and concentration of the substances present in the preparation.

  This methodology is included in Part A of Annex II and Part A of Annex III of the Dangerous Preparations Directive. (*

  The contribution of each dangerous substance to the danger of the preparation, if it is not specified in Annex I of the DSD, shall be determined using the concentration limits fixed in Tables I to VI of Part B of Annex II and Part B of Annex III in the Dangerous Preparations Directive. (‡)

**TO CLASSIFY A PREPARATION, THE FOLLOWING SHALL BE TAKEN INTO ACCOUNT:**

1. **Evaluation of the hazards deriving from physico-chemical properties**: Explosive, Oxidising, (Extremely, Highly) Flammable, must always be determined by means of the Test Method. Except: When no component has such properties and it is unlikely, based on the information available, that the preparation has them. Also aerosols that satisfy the provisions of D 75/324/EEC.

2. **Evaluation of the hazards deriving from toxicological properties**: Very Toxic, Toxic, Harmful, Corrosive, Irritant and Sensitising, can be determined by the Test Method or by the Conventional Method.

   In the case of Corrosives, the criteria of extreme pH can also be applied: those preparations with $\text{pH} \leq 2$ or $\text{pH} \geq 11.5$ should be considered as Corrosive.

3. **Evaluation of the hazards deriving from CMR properties**: Carcinogenic, Mutagenic and Toxic for reproduction must be determined only by the Conventional Method, when the preparation contains at least one substance classified as CMR.

4. **Evaluation of Environmental Hazards (‡)**: Normally the classification is made by the Conventional Method, except in the case of acute aquatic toxicity that the Test Method can also be used. (see Part C of Annex III of the DPD).

(‡) *New indications of Directive 1999/45/CE.*
V. THE LABELLING OF CHEMICAL PRODUCTS

5.1 WHAT IS A LABEL FOR?

The label on a chemical product is an information system that must clarify in a concise way the potential risks the product has and the basic safety measures that should be taken in order to avoid them.

The content of the label warns of the hazards that the handling and normal use of the dangerous substances and preparations can cause in the conditions in which they are marketed, but not necessarily in the way that they are applied: for example, dilutions.

Often, it is the only information that persons who come into contact with dangerous chemical products have at their disposal immediately, at the precise moment that they are using them.

On the label, the classification of danger of the chemical product is shown shown by means of danger symbols and risk phrases, and the recommended safety measures, by means of safety advice phrases.

It is very important that all the labelling conditions are respected such as the dimensions of the label, the size and colour of the symbols and the complete data that must appear on the label.
THE SYSTEM OF ASSIGNING SYMBOLS IN A LABEL:

When more than one symbol is assigned not all the symbols and indications of danger associated with the classification of a chemical product have to appear on the label, except when Annex I of the Dangerous Substances Directive indicates so.

- When symbol ☢️ is obligatory, it will not be obligatory that symbols ⚠️ and 🔥 appear.

- When symbol ☠️ is obligatory, it will not be obligatory that symbols ⚠️ and ⚠️ appear.

- When symbol ⚠️ is obligatory, it will not be obligatory that symbol ☢️ appears.

- When the symbol ⚠️ and the indication of danger "Harmful" are obligatory, it will not be obligatory that symbol ☢️ and the indication of danger "Irritant" appear.
5.2 REQUIREMENTS THAT THE LABEL OF A CHEMICAL PRODUCT MUST COMPLY WITH

Dangerous chemical products can only be placed in the market, that is to say, manufacturers, formulators, importers, wholesalers, packagers and distributors can only make them available to third parties in the Community market, if:

- The label correctly shows all the data required for dangerous substances and preparations.
- The label (or if the case arises, the package itself) contains all the necessary information, in a legible and indelible way, in the country official language/s.
- This information stands out clearly from the background and shall be of such size and spacing as to be easily read horizontally, when the package is set down normally.
- The label shall be firmly affixed to one or more surfaces of the packaging.
- The dimensions of the label shall be as follows:

<table>
<thead>
<tr>
<th>Capacity of the package (in litres)</th>
<th>Dimensions (in millimetres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not exceeding 3</td>
<td>if possible (*) , at least 52 x 74</td>
</tr>
<tr>
<td>Greater than 3 but not exceeding 50</td>
<td>at least 74 x 105</td>
</tr>
<tr>
<td>Greater than 50 but not exceeding 500</td>
<td>at least 105 x 148</td>
</tr>
<tr>
<td>Greater than 500</td>
<td>at least 148 x 210</td>
</tr>
</tbody>
</table>

(*) For preparations.

- The labels are intended solely for provision of the information required by the Directives on Dangerous Substances and Preparations and if necessary of any supplementary information on health and safety.
The symbols:

- The design of the danger symbols and the wording of the indications of danger shall comply with those laid down in Annex II of the DSD.

- Shall be printed in black on an orange-yellow background.

- Each symbol shall cover at least one-tenth of the surface area of the label. But shall never be less than 1 cm².

- The presentation and colour of the label or the package shall be such that the danger symbol clearly stands out.

The label shall not bear indications such as "non-toxic", "non-harmful", "non-polluting", "ecological" or any other statements that are likely to lead to the impression that the product is not dangerous or to underestimation of the dangers.

THERE ARE SPECIAL LABELLING REQUIREMENTS FOR:

**Dangerous Substances:** Containers of less than 125 ml, mobile gas cylinders, LPG gas containers, metals in massive form, substances classified as Harmful R65 (Annex VI of the Dangerous Substances Directive) and aerosols.

**Preparations:** Gaseous preparations, gas containers for preparations with stenched propane, butane or LPG, preparations containing polymers or elastomers, alloys, preparations classified with R65, special provisions concerning the labelling of certain dangerous and non-dangerous preparations. (See Chapter 5.7)
5.3 DATA THAT MUST APPEAR ON THE LABEL OF DANGEROUS SUBSTANCES

1. The name of the substance.
   The chemical name used in an internationally recognised nomenclature (Ex: IUPAC), preferably the name assigned in the EINECS or ELINCS Catalogue. (If the substance is in Annex I, it will be indicated as it appears in Annex I).

2. Data of the person responsible for placing the substance on the market: Name, full address, and telephone number.
   The person responsible can be the manufacturer, distributor or importer and they become responsible for the product supplied, the contents of the label and/or the container in which the product is marketed.
3. **Symbols.**
   The pictograms are indicated in Annex II of the Dangerous Substances Directive (DSD).
   The system of assignement of symbols can be taken into account.

4. **Indications of danger.**
   Words that describe a type of danger associated with the symbol and which accompany the pictogram, on the lower part.
   They are indicated in Annex II of the DSD.

5. **R- phrases of specific risks.**
   The criteria of assignation of the R phrases, for those substances that are not in Annex I of the Dangerous Substances Directive, are indicated in Annex VI of the DSD.

6. **S- phrases of safety advices.**
   The criteria of assignation of S phrases, for those substances that are not in Annex I of the Dangerous Substances Directive, are indicated in Annex VI of the DSD.

7. **EC number: "XXX – XXX – X"**
   The EC number indicates that the dangerous substance belongs to the European Inventory of Existing Commercial Chemical Substances (EINECS) or the European List of Notified Chemical Substances (Elnics).

8. **"EC Label"**
   Its an indication that should always appear when the dangerous substance is in Annex I of the Dangerous Substances Directive.

9. **Other indications on health and safety.**
   They can be necessary if the dangerous substance is also affected by other specific regulations on chemical products. (Ex: Restrictions on Marketing and Use legislation, Plant Protection products, Detergents and Cleaning Agents or Biocides legislation).
5.4 DATA THAT MUST APPEAR ON THE LABEL OF DANGEROUS PREPARATIONS

They cannot be placed on the market unless the labelling on their packaging shows the following information in a legible and indelible way, at least in the official country language/s:

1. THE TRADE NAME OF THE PRODUCT

2. CHEMICAL NAME OF THE DANGEROUS SUBSTANCES THAT IT CONTAINS as follows:

   - For preparations classified as Very Toxic, Toxic or Harmful, the substances T+, T and Xn (acute lethal effects) present in concentrations equal to, or greater than, the lowest limit (limit Xn) taken into consideration in each case.

   - For preparations classified as Corrosive, the C substances present in concentrations equal to, or greater than, the lowest limit (limit Xi) taken into consideration in each case.

   - If the preparations are classified as:

     1. Sensitising (R42, R43).

     2. Very Toxic, Toxic or Harmful (Non-lethal irreversible effects after a single exposure: T+ R39/route of exposure, T R39/route exp., Xn R68/route exp)

     3. Toxic or Harmful (Severe effects after prolonged exposure: T R48/route exp, Xn R48/route exp)

     4. Carcinogenic, Cat 1,2 or 3. Mutagenic Cat 1,2 or 3. Toxic for Reproduction, Cat 1,2 or 3(*).

The names of the substances responsible for this classification shall be mentioned.

   - It will not be necessary to mention on the label the name of the substances that led to the classification of the preparation in the following categories: Explosive, Oxidising, Flammable, Irritant, Dangerous for the environment (*) unless the substance has to be mentioned for other reasons.
3. DATA OF THE PERSON RESPONSIBLE FOR PLACING THE SUBSTANCE ON
THE MARKET: NAME, FULL ADDRESS, AND TELEPHONE NUMBER.

4. SYMBOLS AND INDICATIONS OF DANGER, in accordance with Annex II, DSD.

5. R - PHRASES, in accordance with Annex III, DSD.

6. S - PHRASES, in accordance with Annex IV, DSD.

7. SPECIAL PROVISIONS FOR PREPARATIONS, IF NECESSARY, WHETHER THEY
ARE DANGEROUS OR NOT.

8. THE NOMINAL QUANTITY (NOMINAL MASS OR NOMINAL VOLUME) OF
THE CONTENTS IN THE CASE OF PREPARATIONS OFFERED OR SOLD TO THE
GENERAL PUBLIC.

9. OTHER INDICATIONS OF HEALTH AND SAFETY.
   These can be necessary if the preparation is also affected by other specific
   regulations on chemical products. (See labelling of substances)

(*) New indications in Directive 1999/45/CE.

SYMBOLS AND INDICATIONS OF DANGER
OF DANGEROUS SUBSTANCES AND PREPARATIONS
## 5.5 R - PHRASES OF SPECIFIC RISKS

They are standardized phrases that indicate the nature of the specific risks. The wording shall comply with that laid down in Annex III of the DSD.

| 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 mixture. |
| 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. |
| R14 | Reacts violently with water. |
| R15 | Contact with water liberates extremely flammable gases. |
| R16 | Explosive when mixed with oxidising 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. |
| R24 | Toxic in contact with skin. |
| R25 | Toxic if swallowed. |
| R26 | Very toxic by inhalation. |
| R27 | Very toxic in contact with skin. |
| R28 | 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. |
| R32 | Contact with acids liberates very toxic gas. |
| R33 | Danger of cumulative effects. |
| R34 | Causes burns. |
| R35 | Causes severe burns. |
| R36 | Irritating to eyes. |
| R37 | Irritating to respiratory system. |
| R38 | Irritating to skin. |
| R39 | Danger of very serious irreversible effects. |
The supplementary R phrases are not associated to the categories of danger. They describe the nature of other specific risks and are assigned in accordance with Annex VI of the Dangerous Substances Directive.

- Supplementary R Risk phrases, associated to other physico-chemical properties of chemical products.
- Supplementary R Risk phrases, associated to other toxicological properties of chemical products.

(*) Modifications introduced in the D 2001/59/CE of 6th August and in the D 2001/60/CE of 7th August.
COMBINATION OF R - PHRASES

Each one of these combinations is considered as one R - phrase only. They are combined using the separation "/" between them.

- **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.
- **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.
- **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.
- **R26/28** Very toxic by inhalation and if swallowed.
- **R26/27/28** Very toxic by inhalation, in contact with skin and if swallowed.
- **R27/28** Very toxic in contact with skin and if swallowed.
- **R36/37** Irritating to eyes and respiratory system.
- **R36/38** Irritating to eyes and skin.
- **R36/37/38** Irritating to eyes, respiratory system and skin.
- **R37/38** Irritating to 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 sensitisation 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.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R48/22</td>
<td>Harmful: danger of serious damage to health by prolonged exposure if swallowed.</td>
</tr>
<tr>
<td>R48/20/21</td>
<td>Harmful: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin.</td>
</tr>
<tr>
<td>R48/20/22</td>
<td>Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.</td>
</tr>
<tr>
<td>R48/21/22</td>
<td>Harmful: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed.</td>
</tr>
<tr>
<td>R48/20/21/22</td>
<td>Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.</td>
</tr>
<tr>
<td>R48/23</td>
<td>Toxic: danger of serious damage to health by prolonged exposure through inhalation.</td>
</tr>
<tr>
<td>R48/24</td>
<td>Toxic: danger of serious damage to health by prolonged exposure in contact with skin.</td>
</tr>
<tr>
<td>R48/25</td>
<td>Toxic: danger of serious damage to health by prolonged exposure if swallowed.</td>
</tr>
<tr>
<td>R48/23/24</td>
<td>Toxic: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin.</td>
</tr>
<tr>
<td>R48/23/25</td>
<td>Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.</td>
</tr>
<tr>
<td>R48/24/25</td>
<td>Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed.</td>
</tr>
<tr>
<td>R48/23/24/25</td>
<td>Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.</td>
</tr>
<tr>
<td>R50/53</td>
<td>Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</td>
</tr>
<tr>
<td>R51/53</td>
<td>Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</td>
</tr>
<tr>
<td>R52/53</td>
<td>Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</td>
</tr>
<tr>
<td>R68/20</td>
<td>Harmful: possible risk of irreversible effects through inhalation. (*)</td>
</tr>
<tr>
<td>R68/21</td>
<td>Harmful: possible risk of irreversible effects in contact with skin. (*)</td>
</tr>
<tr>
<td>R68/22</td>
<td>Harmful: possible risk of irreversible effects if swallowed. (*)</td>
</tr>
<tr>
<td>R68/20/21</td>
<td>Harmful: possible risk of irreversible effects through inhalation and in contact with skin. (*)</td>
</tr>
<tr>
<td>R68/20/22</td>
<td>Harmful: possible risk of irreversible effects through inhalation and if swallowed. (*)</td>
</tr>
<tr>
<td>R68/21/22</td>
<td>Harmful: possible risk of irreversible effects in contact with skin and if swallowed. (*)</td>
</tr>
<tr>
<td>R68/20/21/22</td>
<td>Harmful: possible risk of irreversible effects through inhalation, in contact with skin and if swallowed. (*)</td>
</tr>
</tbody>
</table>

(*) Modifications introduced in the D 2001/59/CE of 6th August and in the D 2001/60/CE of 7th August.
5.6 S - PHRASES OF SAFETY ADVICES

They are standardized phrases that indicate safety recommendations. The wording shall comply with that laid down in Annex IV of the DSD.

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>Keep locked up.</td>
</tr>
<tr>
<td>S2</td>
<td>Keep out of the reach of children.</td>
</tr>
<tr>
<td>S3</td>
<td>Keep in a cool place.</td>
</tr>
<tr>
<td>S4</td>
<td>Keep away from living quarters.</td>
</tr>
<tr>
<td>S5</td>
<td>Keep contents under ... (appropriate liquid to be specified by the manufacturer).</td>
</tr>
<tr>
<td>S6</td>
<td>Keep under ... (inert gas to be specified by the manufacturer).</td>
</tr>
<tr>
<td>S7</td>
<td>Keep container tightly closed.</td>
</tr>
<tr>
<td>S8</td>
<td>Keep container dry.</td>
</tr>
<tr>
<td>S9</td>
<td>Keep container in a well-ventilated place.</td>
</tr>
<tr>
<td>S12</td>
<td>Do not keep the container sealed.</td>
</tr>
<tr>
<td>S13</td>
<td>Keep away from food, drink and animal feedingstuffs.</td>
</tr>
<tr>
<td>S14</td>
<td>Keep away from ... (incompatible materials to be indicated by the manufacturer).</td>
</tr>
<tr>
<td>S15</td>
<td>Keep away from heat.</td>
</tr>
<tr>
<td>S16</td>
<td>Keep away from sources of ignition - No smoking.</td>
</tr>
<tr>
<td>S17</td>
<td>Keep away from combustible material.</td>
</tr>
<tr>
<td>S18</td>
<td>Handle and open container with care.</td>
</tr>
<tr>
<td>S20</td>
<td>When using do not eat or drink.</td>
</tr>
<tr>
<td>S21</td>
<td>When using do not smoke.</td>
</tr>
<tr>
<td>S22</td>
<td>Do not breathe dust.</td>
</tr>
<tr>
<td>S23</td>
<td>Do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer).</td>
</tr>
<tr>
<td>S24</td>
<td>Avoid contact with skin.</td>
</tr>
<tr>
<td>S25</td>
<td>Avoid contact with eyes.</td>
</tr>
<tr>
<td>S26</td>
<td>In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.</td>
</tr>
<tr>
<td>S27</td>
<td>Take off immediately all contaminated clothing.</td>
</tr>
<tr>
<td>S28</td>
<td>After contact with skin, wash immediately with plenty of ... (to be specified by the manufacturer).</td>
</tr>
<tr>
<td>S29</td>
<td>Do not empty into drains.</td>
</tr>
<tr>
<td>S30</td>
<td>Never add water to this product.</td>
</tr>
<tr>
<td>S33</td>
<td>Take precautionary measures against static discharges.</td>
</tr>
<tr>
<td></td>
<td>Instruction</td>
</tr>
<tr>
<td>----</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>S35</td>
<td>This material and its container must be disposed of in a safe way.</td>
</tr>
<tr>
<td>S36</td>
<td>Wear suitable protective clothing.</td>
</tr>
<tr>
<td>S37</td>
<td>Wear suitable gloves.</td>
</tr>
<tr>
<td>S38</td>
<td>In case of insufficient ventilation, wear suitable respiratory equipment.</td>
</tr>
<tr>
<td>S39</td>
<td>Wear eye/face protection.</td>
</tr>
<tr>
<td>S40</td>
<td>To clean the floor and all objects contaminated by this material, use ... (to be specified by the manufacturer).</td>
</tr>
<tr>
<td>S41</td>
<td>In case of fire and/or explosion do not breathe fumes.</td>
</tr>
<tr>
<td>S42</td>
<td>During fumigation/spraying wear suitable respiratory equipment (appropriate wording to be specified by the manufacturer).</td>
</tr>
<tr>
<td>S43</td>
<td>In case of fire, use ... (indicate in the space the precise type of fire-fighting equipment. If water increases risk, add “Never use water”).</td>
</tr>
<tr>
<td>S45</td>
<td>In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).</td>
</tr>
<tr>
<td>S46</td>
<td>If swallowed, seek medical advice immediately and show this container or label.</td>
</tr>
<tr>
<td>S47</td>
<td>Keep at temperature not exceeding ... °C (to be specified by the manufacturer).</td>
</tr>
<tr>
<td>S48</td>
<td>Keep wet with ... (appropriate material to be specified by the manufacturer).</td>
</tr>
<tr>
<td>S49</td>
<td>Keep only in the original container.</td>
</tr>
<tr>
<td>S50</td>
<td>Do not mix with ... (to be specified by the manufacturer).</td>
</tr>
<tr>
<td>S51</td>
<td>Use only in well-ventilated areas.</td>
</tr>
<tr>
<td>S52</td>
<td>Not recommended for interior use on large surface areas.</td>
</tr>
<tr>
<td>S53</td>
<td>Avoid exposure - obtain special instructions before use.</td>
</tr>
<tr>
<td>S54</td>
<td>Dispose of this material and its container to hazardous or special waste collection point.</td>
</tr>
<tr>
<td>S55</td>
<td>Use appropriate container to avoid environmental contamination.</td>
</tr>
<tr>
<td>S56</td>
<td>Refer to manufacturer/supplier for information on recovery/recycling.</td>
</tr>
<tr>
<td>S57</td>
<td>This material and its container must be disposed of as hazardous waste.</td>
</tr>
<tr>
<td>S58</td>
<td>Avoid release to the environment. Refer to special instructions/safety data sheets.</td>
</tr>
<tr>
<td>S59</td>
<td>If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.</td>
</tr>
<tr>
<td>S60</td>
<td>In case of accident by inhalation: remove casualty to fresh air and keep at rest.</td>
</tr>
<tr>
<td>S61</td>
<td>If swallowed, rinse mouth with water (only if the person is conscious).</td>
</tr>
</tbody>
</table>
### COMBINATION OF S - PHRASES

Each one of these combinations is considered as one S - phrase only. They are combined using the separation "/" between them.

<table>
<thead>
<tr>
<th>S1/2</th>
<th>Keep locked up and out of the reach of children.</th>
</tr>
</thead>
<tbody>
<tr>
<td>S3/7</td>
<td>Keep container tightly closed in a cool place.</td>
</tr>
<tr>
<td>S3/9/14</td>
<td>Keep in a cool, well-ventilated place away from ... (incompatible materials to be indicated by the manufacturer).</td>
</tr>
<tr>
<td>S3/9/14/49</td>
<td>Keep only in the original container in a cool, well-ventilated place away from ... (incompatible materials to be indicated by the manufacturer).</td>
</tr>
<tr>
<td>S3/9/49</td>
<td>Keep only in the original container in a cool, well-ventilated place.</td>
</tr>
<tr>
<td>S3/14</td>
<td>Keep in a cool place away from ... (incompatible materials to be indicated by the manufacturer).</td>
</tr>
<tr>
<td>S7/8</td>
<td>Keep container tightly closed and dry.</td>
</tr>
<tr>
<td>S7/9</td>
<td>Keep container tightly closed and in a well-ventilated place.</td>
</tr>
<tr>
<td>S7/47</td>
<td>Keep container tightly closed and at a temperature not exceeding ... °C (to be specified by the manufacturer).</td>
</tr>
<tr>
<td>S20/21</td>
<td>When using do not eat, drink or smoke.</td>
</tr>
<tr>
<td>S24/25</td>
<td>Avoid contact with skin and eyes.</td>
</tr>
<tr>
<td>S27/28</td>
<td>After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of ... (to be specified by the manufacturer).</td>
</tr>
<tr>
<td>S29/35</td>
<td>Do not empty into drains; dispose of this material and its container in a safe way.</td>
</tr>
<tr>
<td>S29/56</td>
<td>Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point.</td>
</tr>
<tr>
<td>S36/37</td>
<td>Wear suitable protective clothing and gloves.</td>
</tr>
<tr>
<td>S36/37/39</td>
<td>Wear suitable protective clothing, gloves and eye/face protection.</td>
</tr>
<tr>
<td>S36/39</td>
<td>Wear suitable protective clothing and eye/face protection.</td>
</tr>
<tr>
<td>S37/39</td>
<td>Wear suitable gloves and eye/face protection.</td>
</tr>
<tr>
<td>S47/49</td>
<td>Keep only in the original container at a temperature not exceeding ... °C (to be specified by the manufacturer).</td>
</tr>
</tbody>
</table>
5.7 SPECIAL PROVISIONS CONCERNING THE LABELLING OF CERTAIN PREPARATIONS

PREPARATIONS CLASSIFIED AS DANGEROUS

1. Preparations sold to the general public.
   - The labels must bear, in addition to the specific safety advices, the phrases S1, S2, S45 and S46 in accordance with Annex VI of the DSD:
     - For Very Toxic, Toxic and Corrosive preparations: S1, S2 and S45
     - For all the other preparations(\*): S2 and S46 (taking into account that preparations with R42 must bear phrase S45).
     (\*) Preparations only classified as Dangerous for the Environment are excluded.
   - For Very Toxic, Toxic or Corrosive preparations in very small packages, these shall be accompanied by very precise instructions including, where necessary, instructions for the destruction of the empty package.

2. Preparations intended for use by spraying.
   - Phrase S23 must compulsorily be included, accompanied by safety advice S38 or S51, in accordance with the criteria laid down in Annex VI of the Dangerous Substances Directive (DSD).

3. Preparations containing a substance assigned phrase R33: "Danger of cumulative effects"
   - When the preparation contains at least one of these substances in a concentration equal to or higher than 1%, unless different values are set in Annex I of the DSD, the label of the preparation must carry phrase R33.

4. Preparations containing a substance assigned phrase R64: "May cause harm to breastfed babies"
   - When the preparation contains at least one of these substances in a concentration equal to or higher than 1%, unless different values are set in Annex I of the DSD, the label of the preparation must carry phrase R64.

DANGEROUS AND NON-DANGEROUS PREPARATIONS

1. Paints and varnishes containing lead.
   - If the lead content in the preparation exceeds 0.15% (expressed as weight of the metal), the label must show the following particulars: "Contains lead. Should not be used on objects liable to be chewed or sucked by children".
   - In packages the contents of which are less than 125 ml, the particulars may be as follows: "Warning! Contains lead".
2. Adhesives containing cyanoacrylates.
   The immediate packaging must bear the following inscriptions:
   - "Cyanoacrylate
   - Danger
   - Bonds skin and eyes in seconds.
   - Keep out of the reach of children."

3. Preparations containing isocyanates (as monomers, oligomers, prepolymeres, etc or as mixtures).
   The package label must bear the following inscriptions:
   - "Contains isocyanates.
   - See information supplied by the manufacturer."

4. Preparations containing epoxy constituents with an average molecular weight of less than or equal to 700.
   The package label must bear the following inscriptions:
   - "Contains epoxy constituents.
   - See information supplied by the manufacturer."

5. Preparations sold to the general public which contain active chlorine.
   If the content of active chlorine is > 1%, the following inscription must appear on the packaging:
   - "Warning! Do not use together with other products. May release dangerous gases (chlorine)."

6. Preparations containing cadmium (alloys) and intended to be used for brazing or soldering.
   - The packaging must bear in clearly legible and indelible characters:
   - "Warning! Contains cadmium
   - Dangerous fumes are formed during use.
   - See information supplied by the manufacturer.
   - Comply with the safety instructions."

7. Preparations available as aerosols.
   Preparations available as aerosols are subject to the labelling provisions in accordance with points 2.2 and 2.3 of the Annex to Directive 75/324/EEC, as last amended by Directive 94/1/EC.

8. Preparations containing substances not yet tested completely
   When the preparation contains at least a substance that bears the inscription "Warning – substance not yet tested completely", and it is in a concentration equal to or higher than 1%, the label of the preparation must bear the inscription "Warning – this preparation contains a substance not yet tested completely."
**9. Preparations not classified as sensitising but containing at least one sensitising substance.**

When the preparation contains at least one of these substances in a concentration equal or greater than 0.1% in weight or that specified under a specific note in Annex I of the DSD, the packaging must bear the inscription:
- "Contains (name of sensitising substance). May produce an allergic reaction."

**10. Liquid preparations containing halogenated hydrocarbons (HH).**

For those preparations which show no flashpoint or with a flashpoint higher than 55ºC, and contain HH and more than 5% flammable or highly flammable substances, the packaging must bear the following inscription as appropriate:
- "Can become highly flammable in use" or "Can become flammable in use."

**11. Preparations containing a substance assigned phrase R67: vapours may cause drowsiness and dizziness.**

When the preparation contains at least one of these substances in a concentration equal to or higher than 15%, the label must carry the phrase R 67, unless:
- the preparation is already classified with phrases R20, R23, R26, R68/20, R39/23 or R39/26
- or the preparation is in a package not exceeding 125 ml.

**12. Cements and cement preparations.**

Cements and cement preparations containing more than 0,0002% soluble chromium (VI) of the total dry weight of the cement must bear the inscription:
- "Contains chromium (VI). May produce an allergic reaction".

unless the preparation is already classified and labelled as a sensitiser with R 43

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**NON-DANGEROUS PREPARATIONS**

**13. Non-dangerous preparations containing at least one dangerous substance, not intended for the general public.**

The label must bear the following inscription:
- "Safety data sheet available for professional user on request."

VI. SAFETY DATA SHEETS OF CHEMICAL PRODUCTS

6.1 WHAT IS A SAFETY DATA SHEET (SDS)?

It is an information system on chemical products, basically intended for professional users, that complements and enlarges the basic contents of the label, and should "travel" with the chemicals throughout their life cycle.

6.2 WHAT IS A SDS FOR?

- For the worker that is going to use it in his professional activity to have concrete and detailed information about the main aspects related to health and safety in the handling, storage or destruction of the chemical product, with the aim of protecting health, safety and the environment at the place of work.

- For the person responsible in the user company, to establish safe work procedures through the assessment, prevention, control and reduction of chemical risks.

- For the buyer of a chemical product, who must request the SDS from the supplier before the delivery of the product, to have extensive and detailed information of the nature and danger of the chemicals that he wishes to buy, so that he can choose, if possible, the least dangerous and safest product.

- For the manufacturer or formulator, who places chemical products made from other chemicals in the market, it also enables them to properly classify and label their own chemical products, as well as to prepare their own SDSs.

- For the supplier (importer or distributor) of chemical products, to know the hazards of the products, the conditions for their transportation, the limitations that, in the appropriate case, the products have for their marketing and use and to ensure an adequate and safe supply, with the corresponding SDS.
6.3 WHAT CHEMICAL PRODUCTS REQUIRE SDS?

a. Dangerous substances and preparations, as defined respectively in the Dangerous Substances and Dangerous Preparations Directives.

b. Preparations that are not classified as dangerous (*) but contain $\geq 1\%$ by weight, for non-gaseous preparations, and $\geq 0.2\%$ by volume for gaseous preparations, at least:
   - One dangerous substance.
   - One substance for which there are Community workplace exposure limits.

THE SAFETY DATA SHEET MUST BE COMPILED IN ALL THE PREVIOUS CASES AND MUST BE SUPPLIED TO COMPANIES/PROFESSIONALS USERS OF CHEMICAL PRODUCTS.

6.4 WHEN ARE SDS SUPPLIED?

a. Always, at the time of the first delivery or before.

b. On request of professional users, a SDS with proportionate information (*).


6.5 WHO PREPARES THE SDS?

It is the obligation of the first person responsible for placing a chemical product on the national/Community market, to supply the recipient with a SDS, properly elaborated.

The SDS should be prepared by a competent person, who shall take into account the specific needs, as far as its known, of the users for whom they are intended.
6.6 WHO MUST HAVE THE SDS OF CHEMICAL PRODUCTS?

The professional user, recipient of the dangerous substance or preparation. All the suppliers of the dangerous chemical products must also have them, in order to distribute the chemicals in the national/Community market.

6.7 HOW SHOULD THE SDS BE OBTAINED OR SUPPLIED?

COMPANIES/UNDERTAKING

The person responsible for placing a dangerous substance or preparation on the national/Community market, whether the importer, manufacturer or distributor, should provide the recipient with the SDS of the chemical product, on paper or electronically, at the latest when it is first supplied, free of charge.

Companies and users should request from their suppliers, if necessary, an up-to-date version of the SDS for those products that so require it.
The employer should have available the Safety Data Sheets and provide access to them, to the employees of the company.

These SDS should enable the employer of the user companies to determine whether any hazardous chemical agents are present in the workplace, and to assess any risk to the health and safety of the workers due to these chemicals (1).

THE SAFETY DATA SHEET

The information must be in the Member State official language/s and be drawn up in a clear and concise way.

The Safety Data Sheet must include the 16 mandatory headings, correctly compiled:

- For dangerous substances and preparations: In accordance with the "Guide to the compilation of Safety Data Sheets" included in the Annex of Directive 2001/58/EC.

The SDS must be dated.

When new information appears regarding safety or the protection of health or the environment, (Ex: the official classification of the substance or a component of the preparation has been revised), there shall be a new version of the SDS, identified as "Revision... (Date)", and it shall be distributed to all the clients of that product, within the former 12 months.

If the information on some properties is technically impossible to provide, the reasons must be clearly specified, under each inscription.

The cases where no information is available and the cases where tests have been carried out and negative results have been obtained must be clearly differentiated.

6.8 CONTENTS OF THE SAFETY DATA SHEET

The following is a description of the 16 mandatory headings in a SDS and the most significant aspects of the contents.

1. IDENTIFICATION OF THE SUBSTANCE (S) OR PREPARATION (P) AND OF THE COMPANY/UNDERTAKING

1.1 Identification of the chemical product, as provided on the label.
1.2 Use of the substance or preparation.
1.3 Identification of company/undertaking responsible for placing the S/P in the EU market and, if different, the company/undertaking responsible for placing the S/P in the national market, full address and telephone no.
1.4 Emergency telephone number of the company and/or relevant official advisory body.

2. COMPOSITION/INFORMATION ON INGREDIENTS.

The information given should enable the recipient to identify readily the hazards of the components of the preparation.

2.1 It is not necessary to give the full composition, although a general description of the components and their concentration can be helpful.

2.2 The composition of a dangerous preparation: The names and concentration or concentration range of substances dangerous to health or the environment that contribute to the classification of the preparation as dangerous and for those for which there are Community workplace exposure limits.

2.3 In the case of preparations not classified as dangerous: the names and concentration or concentration range of substances dangerous to health or the environment that are present in a concentration of >1% by weight (or > 0.2% by volume if the preparation is gaseous), as well as those for which there are Community workplace exposure limits.

2.4 The classification of danger of the above substances shall be given, including the symbols and R phrases. (don’t need to be fully written).

2.5 The name and EC number (Einecs or Elincs) of the above substances should be given. Also the CAS no. and the IUPAC name, if available, may be helpful.

The identity of some components can only be kept confidential in accordance to the provisions of article 15 of Directive 1999/45/EC.
3. HAZARDS IDENTIFICATION.

Give the classification of danger of the chemical product. Distinguish clearly between dangerous preparations and those that are not. Indicate clearly and briefly the hazards to man and the environment.

Describe the most important adverse physico-chemical, human health and environmental effects, as well as other hazards which do not result in classification, but which may contribute to the overall hazards of the product, such as freezing, dustiness, suffocation, etc.

Describe the symptoms relating to the uses and possible misuses of the chemical product, which can reasonably be foreseen.

4. FIRST AID MEASURES

Describe the first-aid measures, plus effects and symptoms, differentiating the different routes of exposure, and indicating if immediate medical attention is needed or whether a doctor must be consulted later. The information must be brief and easy to understand.

Indicate whether delayed effects can be expected after exposure and the necessity, for some chemical products, of special means to provide specific and immediate treatment at the workplace.

5. FIRE-FIGHTING MEASURES.

Refer to requirements for fighting a fire caused by a chemical product, or arising in its vicinity by indicating:

- Suitable extinguishing media.
- Extinguishing media which must not be used for safety reasons.
- Special exposure hazards arising from the substance or preparation itself, combustion products or the resulting gases.
- Special protective equipment for fire-fighters.
6. ACCIDENTAL RELEASE MEASURES.

Depending on the chemical product involved, information may be needed on:

- Personal precautions.
- Environmental precautions.
- Methods for cleaning up.
- Also consider the need for indications such as "never use, neutralise with...".

7. HANDLING AND STORAGE.

This information should assist the employer in devising suitable working procedures.

7.1 Handling: Specify precautions for safe handling.

7.2 Storage: Specify the conditions for safe storage that include, if relevant, any special requirements on quantity limits under storage conditions or the type of material used in the packaging/containers.

7.3 Specific uses: For end products, recommendations should refer to the intended uses and be detailed and operational.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION.

8.1 Exposure limit values.
   Specify currently applicable specific control parameters including occupational exposure limit values and/or biological limit values.
   Values should be given for the Member State where the chemical product is placed on the market.
   For preparations, provide values relating to the relevant components. (see heading 2)

8.2 Exposure Controls.
   Exposure control means the full range of specific protection and prevention measures, to be taken during use in order to minimise workers and environmental exposure.
**Occupational exposure controls.**
Suitable and adequate information mainly on the application of collective protection measures at source, and finally the use of individual protection measures, such as personal protection equipment. The type of equipment that will provide adequate protection must be specified in detail:

- Respiratory protection.
- Hand protection.
- Eyes protection.
- Skin protection.

**Environmental exposure controls.**
Specify the information required by the employer to fulfil his commitments under Community environmental protection legislation.

9. PHYSICAL AND CHEMICAL PROPERTIES.

General information relating to the physical state, colour and odour of the product. Specific data with regard to the following parameters: pH, boiling point/boiling range, flash point, flammability (solid, gas), explosive and oxidising properties, vapour pressure, relative density, solubility (water solubility, fat solubility specifying the solvent), partition coefficient: n-octanol/water, viscosity, vapour density and evaporation rate. Other important safety parameters may also be indicated.

These properties shall be determined in accordance with part A of Annex V of the Dangerous Substances Directive or by another equivalent method.

For preparations, information about the properties of individual components could be needed.

10. STABILITY AND REACTIVITY.

State the stability of the chemical product (indicate the need for and the presence of stabilisers) and the possibility of hazardous reactions occurring (possible exothermic reactions, significance of a change in physical appearance, hazardous decomposition products upon contact with water or degradation of unstable products), under certain conditions of use and if released into the environment.

These are expressly included:

10.1 Conditions to avoid. *Ex: temperature, pressure, light, shock, etc.*
10.2 Materials to avoid. *Ex: water, air, acids, bases, oxidising agents, etc.*
10.3 Hazardous decomposition products. *Ex: those produced in dangerous amounts upon decomposition.*
11. TOXICOLOGICAL INFORMATION.

Complete and comprehensible description of the various health effects which can arise if the user comes into contact with the chemical product.

Include the dangerous-to-health effects from exposure to the chemical product based on both experiences and conclusions from scientific experiments.

Include information on the different routes of exposure (inhalation, ingestion, skin and eye contact) and description of the symptoms. Include immediate, delayed and chronic effects, from short- and long-term exposure, for example: sensitisation, narcosis, and carcinogenic, mutagenic and reproductive toxicity.

- For preparations, the dangerous-to-health effects of one or more of the dangerous components may be indicated.

12. ECOLOGICAL INFORMATION.

Describe the possible effects, behaviour and environmental fate of the chemical product in air, water and/or soil, and for dangerous products arising from the degradation.

Where available, give relevant test data.

Describe the most important characteristics likely to have an effect on the environment, these may include: ecotoxicity, mobility, persistence and degradability, bioaccumulative potential and other adverse effects like ozone depletion potential, photochemical ozone creation potential or global warming potential.

13. DISPOSAL CONSIDERATIONS.

If the disposal of the product (surplus or waste resulting from the foreseeable use) presents a danger, a description of these residues and information on their safe handling shall be given, specifying the appropriate methods of disposal of both the product and packaging.

Refer to the Community/national legislation relating to dangerous waste and packaging and, if applicable, the regional or local provisions in force.
14. TRANSPORT INFORMATION.

Indicate any special precautions that a user needs to be aware of or needs to comply with in connection with transport either within or outside his premises.

Provide information on the transport classification for each of the modal regulations: IMDG (sea), ADR (road), RID (rail), ICAO/IATA (air). The said information may include the following data: UN number, class, proper shipping name, packing group, marine pollutant or others.

15. REGULATORY INFORMATION.

Give the health, safety and environmental information shown on the label, according to the DSD and the DPD.

Also, if the chemical product is the subject of specific provisions in relation to the protection of man or the environment at a Community level, for example: restrictions on the marketing and the use of dangerous substances and preparations (Directive 76/769/EEC), these provisions should be stated.

16. OTHER INFORMATION.

Indicate any other information that the supplier assesses as being of importance for the health and safety of the user and for the protection of the environment, for example:

- List of relevant R phrases, with the full text.
- Recommended restrictions on use (for example, non-statutory recommendations by supplier).
- Technical contact point.
- Sources of key data used to compile the safety data sheet.
- Training advice.
- For a revised SDS, indicate clearly the information which has been added, deleted or revised.

For detailed knowledge on these sections, the "Guide to the compilation of safety data sheets" can be consulted, regulated by the legislation in force.

CHEMICAL PRODUCTS

Basic Guide on Labelling and Safety Data Sheets

CONSEJERÍA DE SALUD