

Disclaimer: The English language text below is provided by the Translation and Terminology Centre for information only; it confers no rights and imposes no obligations separate from those conferred or imposed by the legislation formally adopted and published. Only the latter is authentic. The original Latvian text uses masculine pronouns in the singular. The Translation and Terminology Centre uses the principle of gender-neutral language in its English translations. In addition, gender-specific Latvian nouns have been translated as gender-neutral terms, e.g. chairperson.

Republic of Latvia

Cabinet  
Regulation No. 107  
12.03.2002

## **Procedures for Classification, Labelling and Packaging of Chemical Substances and Chemical Products**

Issued pursuant to Section 10, Paragraph three and Section 12, Paragraph three of the Chemical Substances and Chemical Products Law

### **I. General Provisions**

1. These Regulations prescribe procedures for the classification of chemical substances and chemical products depending on the dangerous properties thereof and the degree to which such properties are present in the substances and products referred to, as well as procedures for the labelling and packaging of chemical substances and chemical products.

### **II. Classification and Labelling of Chemical Substances and Chemical Products**

2. Manufacturers or importers of chemical substances or chemical products shall classify and label chemical substances and chemical products in accordance with these Regulations and the list of dangerous chemical substances approved by the Minister for Environmental Protection and Regional Development (hereinafter – the list of dangerous chemical substances).

3. In order to classify a chemical substance or a chemical product manufacturers or importers shall evaluate the danger thereof taking into account:

- 3.1. physical and chemical properties;
- 3.2. properties affecting human health; and
- 3.3. properties affecting the environment.

4. In determining the dangerous properties of a chemical product, the presence of all dangerous chemical substances both in constituents and impurities of the product shall be taken into account if the concentration of each dangerous chemical substance in the product exceeds the concentration limit specified in Annex 1 of these Regulations, except for the cases where the list of dangerous chemical substances or Annexes 5, 6, 7, 8, 9 or 10 of these Regulations prescribe a lower concentration limit.

5. A chemical product shall be classified repeatedly if, upon a change in the composition of a classified chemical product, changes in the concentration of one or several dangerous components contained by the chemical product, expressed in percentage by weight or volume, exceed the values set out in Annex 2 of these Regulations.

6. Explosive, extremely flammable, highly flammable and flammable chemical products shall be classified in accordance with Annex 4 of these Regulations, as well as on the basis of the physical and chemical property evaluation tests which have been carried out in accordance with laboratory methods approved by the Minister for Environmental Protection and Regional Development.

7. Properties of chemical products — explosively dangerous, oxidising, extremely flammable, highly flammable and flammable — shall not be determined in the following cases:

7.1. if the constituents of a chemical product do not possess the properties referred to and on the basis of the information provided by the manufacturer of the chemical product there are no grounds to believe that such properties are possessed by the relevant chemical product; and

7.2. if the composition of a classified chemical product is changed and it may be scientifically justified that the relevant changes shall not affect the classification of the chemical product.

8. In classifying chemical products dangerous for health (very toxic, toxic, harmful, corrosive, irritant, sensitising, carcinogenic, mutagenic and toxic for reproduction) and dangerous for the environment:

8.1. the calculation methods referred to in Annexes 5, 6, 7, 8 and 10 of these Regulations shall be used;

8.2. the properties required for classification shall be determined by means of tests carried out in accordance with laboratory methods approved by the Minister for Environmental Protection and Regional Development; and

8.3. the carcinogenic, mutagenic chemical substances and chemical substances toxic for reproduction shall be divided into categories 1, 2 or 3 in accordance with Annex 8 of these Regulations.

9. Characterisations and combined characterisations of the effects of chemical substances and chemical products are specified in Annex 3 of these Regulations. Selection criteria for characterisations of the effects are specified in Annexes 4, 5, 6, 7, 8, 9, 10 and 11 according to the dangerousness of the chemical substances and chemical products.

10. In utilising the evaluation method specified in Paragraphs 2, 3, 4, 5, 6 and 7 of Annex 10 of these Regulations the concentration limit of the relevant chemical substance specified in the list of dangerous chemical substances shall be used. If the concentration limit of the chemical substance is not referred to in the list, it shall be determined in accordance with Paragraphs 11 and 12 of Annex 10 of these Regulations.

11. The concentration limit shall be determined in accordance with Paragraph 11 and 12 of Annex 10 of these Regulations by using the evaluation method specified in Paragraphs 2, 3, 4, 5,

6 and 7 of Annex 10 of these Regulations if a chemical substance is not included in the list of dangerous chemical substances.

12. Designations of safety requirements and combined safety requirements are specified in Annex 12 of these Regulations.

13. Selection criteria for designations of safety requirements are specified in Annex 13 of these Regulations.

14. Upon request of the person who has purchased the relevant chemical substance or chemical product for further utilisation thereof in manufacturing of another product, the manufacturer, importer or supplier of chemical substances or chemical products shall without delay send to the relevant person all the necessary information regarding dangerous chemical substances contained by the chemical product to enable the classification and labelling of the new chemical product.

15. Each class of dangerousness of the chemical substances and chemical products shall have a labelling consisting of a symbol of dangerousness and an explanation of the danger (Annex 14).

16. Each class of dangerousness of the chemical substances and chemical products shall have a uniform representation on the labelling (Annex 15).

17. Each package of a chemical substance or a chemical product shall require a label with the following information in the official language:

17.1. the name of the chemical substance or chemical product according to Paragraphs 18 and 19 of these Regulations;

17.2. the names of the dangerous substances contained by the chemical product according to Paragraphs 18, 19 and 20 of these Regulations;

17.3. the name, address and telephone number of the manufacturer, importer or supplier registered in Latvia;

17.4. a characterisation of the effects of the chemical substance according to the criteria prescribed in Paragraphs 25 and 26 and Annexes 4, 5, 6, 7, 8, 9, 10 and 11 of these Regulations. The letter and number of the characterisation of the effects or combined characterisation of the effects of the chemical substance may not be a part of the labelling;

17.5. designations of safety requirements according to the criteria prescribed in Paragraphs 24, 25, 28, 29, 30 and 31 and Annex 13 of these Regulations. The letter and number of the designation of the safety requirements or the designation of combined safety requirements may not be a part of the labelling;

17.6. a symbol (symbols) of danger and the indication of danger according to the criteria prescribed in Paragraph 32 and Annexes 4, 5, 6, 7, 8, 9, 10 and 11 of these Regulations; and

17.7. the weight or volume per packaging unit of chemical substances and chemical products intended for retail trade.

18. If a chemical substance is classified as very toxic, toxic, harmful or corrosive the packaging shall carry the name of the chemical substance in the official language in accordance with the nomenclature of the International Union of Pure and Applied Chemistry (IUPAC). In other cases the trade name of the chemical substance or its chemical name in accordance with the

nomenclature of the International Union of Pure and Applied Chemistry (IUPAC) shall be indicated.

19. The packaging of chemical products shall contain the trade name of the chemical product in the official language.

20. Names of chemical substances contained by a chemical product shall be indicated on the label in the following cases:

20.1. if in accordance with Annex 5 of these Regulations a chemical product has been classified as very toxic, toxic or harmful, only the names of those very toxic, toxic and harmful chemical substances shall be indicated whose concentration in the chemical product is equal to the lowest concentration limit specified for each of them in the list of dangerous chemical substances (the concentration limit which corresponds to the classification of the chemical product in the class of dangerousness "harmful"), or is higher than the lowest concentration limit. If the chemical substance is not mentioned in the list of dangerous chemical substances or if it has no concentration limit indicated, the chemical substance shall be labelled in accordance with Annex 5 of these Regulations;

20.2. if in accordance with Annex 6 of these Regulations a chemical product has been classified as corrosive, only those names of the corrosive chemical substances shall be indicated whose concentration in the chemical product equals to the lowest concentration limit specified for each of them in the list of dangerous chemical substances (concentration limit which corresponds to the classification of the chemical product in the class of dangerousness "irritant"), or is higher than the lowest concentration limit. If the chemical substance is not mentioned in the list of dangerous chemical substances or if it has no concentration limit indicated, the chemical substance shall be labelled in accordance with Annex 6 of these Regulations;

20.3. if a chemical product contains chemical substances due to which it has been classified as:

20.3.1. a mutagen of category 1, 2 or 3;

20.3.2. a carcinogen of category 1, 2 or 3;

20.3.3. toxic for reproduction of category 1, 2 or 3;

20.3.4. very toxic, toxic or harmful due to non-lethal effects after a single exposure;

20.3.5. toxic or harmful due to severe effects after repeated or prolonged exposure; or

20.3.6. sensitising.

21. If a chemical product contains more than four dangerous chemical substances, the names of those four dangerous chemical substances that present the greatest danger of the chemical product to health and the environment shall be indicated.

22. If a chemical product is intended for the retail trade and has been classified as very toxic, toxic or corrosive but it is impossible to place the necessary information (labelling, characterisation of the effect of chemical substances and designation of safety requirements) on the packaging, the relevant information shall be appended to the packaging. When necessary, information regarding disposal of the used packaging shall be appended to the packaging.

23. If the manufacturer can prove that the information regarding any constituent of a chemical product or any chemical substance in accordance with the Freedom of Information Law is restricted access information or the relevant information is a commercial secret, the manufacturer has the right not to indicate the specific chemical substance but indicate the composition of its general functional groups (atoms or groups of atoms which determine the chemical properties of a compound) or the family of chemical substances in accordance with Annex 16 of these Regulations.

24. The characterisation of the effects of the chemical substances and the designation of safety requirements need not be indicated on the packaging of chemical substances in the following cases:

24.1. if the package volume of irritant, highly flammable or oxidising chemical substances does not exceed 125 ml; and

24.2. if the package volume of harmful chemical substances does not exceed 125 ml and they are not intended for the retail trade.

25. If the package of a chemical product does not exceed 125 ml, the following need not be indicated:

25.1. the characterisation of the effect of the substance and the designation of safety requirements if the chemical product has been classified as highly flammable, oxidising or irritant, with the exception of chemical products with the characterisation of the effects of the substance R41, as well as products dangerous for the environment with the symbol of danger N; and

25.2. the designation of safety requirements if the chemical product has been classified as flammable or dangerous for the environment and it does not have the symbol of danger N.

26. If the chemical product has been classified as harmful or irritant it shall be marked as harmful, but in the characterisation of the effect of the chemical substance both indications shall be mentioned.

27. In characterising the potential danger which a chemical substance or a chemical product may cause to humans and the environment at least one, but no more than six characterisations of the effects of the chemical substances shall be indicated (a combined characterisation of the effects of the chemical substances shall be regarded as one). In the characterisation of the effects of the chemical substances the property of the relevant chemical substance or chemical product having the most harmful effect shall be indicated.

28. In characterising the safety measures for use of chemical substances and chemical products at least one, but no more than six designations of safety requirements shall be indicated (a combined designation of safety requirements shall be regarded as one). If it is impossible to indicate the designations of safety requirements in the label, they shall be attached separately.

29. The designation of safety requirements shall be indicated for each chemical substance in accordance with the list of dangerous chemical substances. If a chemical substance is not mentioned in the list of dangerous chemical substances, the designation of safety requirements shall be indicated in accordance with Annex 13 of these Regulations.

30. The textual part of the designations of safety requirements S1, S2, S45 or S46 shall be indicated on the packaging of chemical products intended for the retail trade in accordance with Annex 13 of these Regulations.

31. If a chemical product has been intended for use by spraying, the package shall contain the textual part of the designations of safety requirements S23, S38 or S51 in accordance with Annex 13 of these Regulations.

32. If a chemical substance or a chemical product has more than one symbol of dangerousness, the following conditions shall be observed:

32.1. if a chemical substance or a chemical product is marked with symbol T, symbols C, Xi and Xn shall be optional unless the list of dangerous chemical substances specifies otherwise;

32.2. if a chemical substance or a chemical product is marked with symbol C, symbols Xi and Xn shall be optional;

32.3. if a chemical substance or a chemical product is marked with symbol E, symbols F and O shall be optional; and

32.4. if a chemical substance or a chemical product is marked with symbol Xn, symbol Xi shall be optional.

33. The information referred to in Paragraph 17 of these Regulations shall be placed on the packaging of chemical substances or chemical products horizontally on one or more surfaces of the package.

34. The information referred to in Paragraph 17 of these Regulations shall be separated from other information that may be indicated on the label of a dangerous chemical substance or a dangerous chemical product.

35. The size of the area for the placement of the information referred to in Paragraph 17 of these Regulations on the label of the package of the dangerous chemical substance or dangerous chemical product shall be determined taking into account the size of the package:

35.1. if the package volume is up to 3 litres, the minimum size of the area shall be 52 x 74 mm;

35.2. if the package volume is from 3 to 50 litres, the minimum size of the area shall be 74 x 105 mm;

35.3. if the package volume is from 51 to 500 litres, the minimum size of the area shall be 105 x 148 mm; and

35.4. if the package volume is more than 500 litres, the minimum size of the area shall be 148 x 210 mm.

36. Each symbol of dangerousness shall cover at least one-tenth of the surface that on the label is covered by the information prescribed by these Regulations, and at least 1 cm<sup>2</sup>. The label shall be glued to the package containing the chemical substance or the chemical product. The primary colour of the label shall be such that the information prescribed by these Regulations stands out.

37. If the packaging of a chemical substance or a chemical product consists of secondary packaging, which contains several items of primary packaging, the secondary packaging shall be labelled in accordance with the regulatory enactments regulating the transport of dangerous goods. The primary packaging shall be labelled in accordance with these Regulations.

38. Labels of chemical substances or chemical products shall not contain indications that the relevant chemical substance or chemical product does not pose any threat to humans or the environment (for example, "nav bīstams" [non-dangerous], "nav kaitīgs" [non-harmful], "marķējums nav nepieciešams" [labelling unnecessary], "pārbaudīts" [tested], "apstiprināts" [approved]).

39. Advertising of dangerous chemical substances and chemical products shall contain indications to their classification.

### **III. Specific Criteria for Labelling of Chemical Products**

40. If the content of lead in paints or varnishes exceeds 0.15% of the total weight, the package requires an indication "Satur svinu. Nelietot uz virsmām, kuras var sūkāt vai košļāt bērni" [Contains lead. Should not be used on surfaces liable to be sucked or chewed by children]. If the package volume is less than 125 ml, an indication "Uzmanību! Satur svinu" [Warning! Contains lead] shall be required.

41. If a chemical substance or a chemical product contains cyanoacrylates the packaging shall bear an inscription "Cianoakrilāts Bīstams!" Iedarbojas uz ādas un acu audiem dažu sekunžu laikā. Sargāt no bērniem!" [Cyanoacrylate! Danger! Bonds skin and eyes in seconds. Keep out of the reach of children!].

42. If a chemical substance or a chemical product contains isocyanates the packaging shall bear an inscription "Satur izocianātus! Skatīt ražotāja informāciju" [Contains isocyanates! See information supplied by the manufacturer].

43. If a chemical substance or a chemical product contains epoxy constituents with an average molecular weight  $\leq 700$  the packaging shall bear an inscription "Satur epoksīdus! Skatīt ražotāja informāciju" [Contains epoxy constituents! See information supplied by the manufacturer].

44. If a chemical substance or a chemical product intended for retail trade contains more than 1% of active chlorine the packaging shall bear an inscription "Uzmanību! Var izdalīties bīstama gāze (hlors)!" [Warning! Do not use together with other products! May release dangerous gases (chlorine)!].

45. If a chemical product contains cadmium (alloys) and it is intended to be used for brazing and soldering the packaging shall bear an inscription "Uzmanību! Satur kadmiju! Lietojot var veidoties bīstami tvaiki! Lietot saskaņā ar instrukciju" [Warning! Contains cadmium! Dangerous fumes are formed during use! See information supplied by the manufacturer. Use in accordance with instructions].

46. If a chemical product contains at least one substance which is not yet tested completely and the concentration of the relevant substance in the product is > 1%, the packaging shall bear an inscription "Uzmanību! Šis produkts satur vielu, kura vēl nav pilnīgi pārbaudīta"[Warning! This product contains a substance not yet tested completely].

47. A packaging of a new chemical substance shall bear an inscription "Uzmanību! Šī viela vēl nav pilnīgi pārbaudīta".[Warning! This substance is not yet tested completely].

48. If a chemical product contains asbestos the labelling on the packaging shall be at least 5 cm high and 2.5 cm wide. It shall consist of two parts — the top part shall include the letter "a" in white on a black background, the bottom part shall include the inscription "Satur azbestu" [Contains asbestos] in white or black on a red background. If the product contains crocidolite, the bottom part of the labelling shall include the inscription "Satur krokidolītu (zilo azbestu)" [Contains crocidolite (blue asbestos)]. The safety instructions shall correspond to the relevant product. The label shall be firmly attached to the packaging.

49. If there are test results or other evidence that an aerosol which contains extremely flammable, highly flammable or flammable substances may not catch fire under normal conditions of use, the symbols of danger, the indication of danger and the characterisation of the effect of the relevant chemical substance need not be indicated in the labelling. If an aerosol has been classified only as extremely flammable or highly flammable chemical product, the tactile symbols of warning for blind consumers referred to in Paragraphs 61 and 62 need not be indicated.

50. If a chemical product which is not classified as sensitising contains at least one chemical substance which has been classified as sensitising and the concentration thereof in the product is 0.1% and greater or equal to or greater than that specified in the list of dangerous chemical substances, the packaging shall bear an inscription "Satur sensibilizējošās vielas! Var izraisīt alerģisku reakciju cilvēkiem, kuriem ir paaugstināts jutīgums" [Contains sensitising substances! May produce an allergic reaction to people with increased sensitivity]. After the words "sensibilizējošās vielas" [sensitising substances] their name shall be indicated.

51. If a chemical product contains at least one chemical substance with the characterisation of the effect R33 (danger of cumulative effects), the concentration thereof in the product is 1% or higher and no other concentration has been specified in the list of dangerous chemical substances, the labelling of the chemical product shall contain the characterisation of the effect of the relevant substance.

52. If a chemical product contains at least one chemical substance with the characterisation of the effect R64 (may cause harm to breastfed babies), the concentration thereof in the product is 1% or higher and no other concentration has been specified in the list of dangerous chemical substances, the labelling of the chemical product shall contain the characterisation of the effect of the relevant substance.

53. If a liquid chemical product with no flashpoint indicated or the flashpoint is higher than 55 °C contains halogenated hydrocarbons and more than 5% flammable substances or highly



flammable substances, the packaging shall bear an inscription "Lietojot var viegli uzliesmot" [Can become highly flammable in use] or "Lietojot var uzliesmot" [Can become flammable in use].

54. Specific instructions regarding labelling of gas cylinders shall be prescribed in accordance with the standards determined in Latvia.

55. Chemical substances and chemical products which have been classified as harmful and may present an aspiration risk for humans need not be labelled as harmful substances with the characterisation of the effect R65 if they are placed on the market in the form of aerosol containers or in tightly sealed containers.

56. If a chemical product contains one or more chemical substances with the characterisation of the effect of the substance R67 whose total concentration in the product is 15% or higher, the labelling of the chemical product shall include this characterisation of the effect of the substance, except for the products with the characterisation of the effect of the substance R20, R23, R26, R68/20, R39/23 or R39/26 and products whose package volume does not exceed 125 ml.

57. If a chemical product is not intended for retail trade and has not been classified as dangerous but contains at least one chemical substance which has been classified as dangerous and the concentration thereof in the relevant product is higher than 1% (for gaseous products – 0.2%) the packaging shall bear an inscription "Pēc profesionālu lietotāju pieprasījuma var saņemt drošības datu lapu" [Safety data sheet may be received on request of professional users].

58. If cement or chemical products containing cement have more than 0.0002% chromium (VI) of the total weight of dry cement, the packaging shall bear an inscription "Satur hromu (VI). Var izraisīt alerģiju" [Contains chromium (VI). May produce an allergic reaction]. A sensitising product with the characterisation of the effect of the substance R43 shall not require such inscription.

#### **IV. Packaging of Chemical Substances and Chemical Products**

59. The packaging of chemical substances and chemical products shall meet the following criteria:

- 59.1. durable under conditions of use and storage foreseen by the manufacturer;
- 59.2. packaging material does not form chemical compounds with the packaged chemical substance or chemical product or is not susceptible to their impact;
- 59.3. packaging construction and material do not allow for loss of the content during storage; and
- 59.4. packaging which is intended to be opened and closed repeatedly does not lose the content after repeated closing.

60. Packaging which is intended to be opened and closed repeatedly shall be such that children cannot open it if the package contains:

60.1. liquid chemical substances or chemical products kinematic viscosity of which is less than  $7 \times 10^{-6} \text{ m}^2/\text{s}$  at the temperature of  $40 \text{ }^\circ\text{C}$  and which contain 10% and more aliphatic and aromatic hydrocarbons;

60.2. chemical products containing 3% and more methanol; or

60.3. dichloromethane or chemical products containing 1% and more dichloromethane.

61. If chemical substances or chemical products which have been classified as very toxic, toxic or corrosive are intended for retail trade, the packaging thereof (irrespective of the volume) shall be such that it cannot be opened by children and it shall carry a tactile warning symbol of danger for blind consumers.

62. If chemical substances or chemical products which have been classified as harmful, extremely flammable or highly flammable are intended for retail trade, the packaging thereof (irrespective of the volume) shall carry a tactile warning symbol of danger intended for blind consumers.

63. The tactile warning symbol of danger referred to in Paragraphs 61 and 62 of these Regulations shall be a relief equilateral triangle with side length of 9 mm. If there is no space on the package for the symbol referred to, the side length may be 3 mm but if even that is impossible a three-dot symbol shall be used.

64. The tactile warning symbol of danger shall be placed straight on the package of the chemical substance or chemical product so that it can be felt by touch at the moment of opening of the package and during the whole time of use.

65. On packages of aerosols, hermetically sealed cylinders and tubes a tactile warning symbol of danger shall be placed as follows:

65.1. on aerosols the symbol shall be placed on the spray head that cannot be removed during the use;

65.2. on hermetically sealed cylinders the symbol shall be placed on the opening part as close as possible to the opening; and

65.3. on tubes the symbol shall be placed on the cap of the tube.

66. Chemical substances and chemical products shall be kept in a packaging, which bears a label with the symbol of danger, the characterisation of the effect of the chemical substance and the designation of safety requirements.

67. In packaging and storing chemical substances and chemical products in a warehouse the following principles of chemical compatibility shall be observed:

67.1. strong oxidisers and chemical products, which contain strong oxidisers, shall be placed separately from chemical products containing highly flammable substances;

67.2. acids and basis shall be placed separately;

67.3. chemical substances whose cross reactions may form toxic compounds shall not be kept together; and

67.4. other principles of compatibility.

68. It is prohibited to keep packaged chemical substances and chemical products together with food products or animal feed. According to the package size the packaged chemical substances and chemical products shall be placed on pallets or shelves. Between the pallets and rows of shelves there shall be at least one metre wide passageways (in retail trade chemical substances and chemical products in packaging shall be kept at the height of at least 1.5 m, except for the packaging which cannot be opened by children).

69. The place where the packaged dangerous chemical substances and chemical products are kept (except for cisterns, containers, tanks and reservoirs) shall have exhaust ventilation, water main output and a hand washing facility. Very toxic and toxic packaged chemical substances shall be kept in separate cupboards or premises where appropriate warning signs shall be placed.

70. Packages of chemical substances and chemical products shall not attract the attention of children or mislead consumers.

71. Packages used for packaging of food products, animal feed or medicinal or cosmetic products shall not be used for packaging of chemical substances and chemical products.

## V. Closing Provisions

72. Sub-paragraph 7.2 of Annex 4 to these Regulations shall come into force on 30 July 2003.

73. Requirements of the Regulations regarding biocides containing dangerous chemical substances and dangerous chemical products shall come into force on 30 July 2004.

74. Cabinet Regulation No. 228 of 29 June 1999, Procedures for Classification, Labelling and Packaging of Chemical Substances and Chemical Products (*Latvijas Vēstnesis*, 1999, 217/219) is repealed.

75. These Regulations come into force on 30 July 2002.

Prime Minister

A. Bērziņš

Minister for Environmental Protection  
and Regional Development

V. Makarovs

### Concentration Limits of Dangerous Chemical Substances to be Observed in Classification of Chemical Products

No.	Category of danger of the chemical substance	Concentration limit	
		in gaseous chemical products (percentage by volume)	in other chemical products (percentage by weight)
1.	Very toxic chemical substances	≥ 0.02	≥ 0.1
2.	Toxic chemical substances	≥ 0.02	≥ 0.1
3.	Carcinogenic chemical substances of category 1 and 2	≥ 0.02	≥ 0.1
4.	Mutagenic chemical substances of category 1 and 2	≥ 0.02	≥ 0.1
5.	Chemical substances toxic for reproduction of category 1 and 2	≥ 0.02	≥ 0.1
6.	Harmful chemical substances	≥ 0.2	≥ 1
7.	Corrosive chemical substances	≥ 0.02	≥ 1
8.	Irritant chemical substances	≥ 0.2	≥ 1
9.	Sensitising chemical substances	≥ 0.2	≥ 1
10.	Carcinogenic chemical substances of category 3	≥ 0.2	≥ 1
11.	Mutagenic chemical substances of category 3	≥ 0.2	≥ 1
12.	Chemical substances toxic for reproduction of category 3	≥ 0.2	≥ 1
13.	Chemical substances dangerous for the environment (symbol of danger N)		≥ 0.1
14.	Chemical substances dangerous for the ozone layer	≥ 0.1	≥ 0.1
15.	Chemical substances dangerous for the environment (without the symbol of danger)		≥ 1

Minister for Environmental Protection and Regional Development

V. Makarovs

**Permissible Changes in Concentration of Dangerous Chemical Substances in  
a Chemical Product**

No.	Initial concentration of the dangerous substance (in percentage by weight or volume)	Permitted changes in the concentration of the dangerous substance (in percentage of the initial concentration)
1.	$\leq 2.5\%$	$\pm 30\%$
2.	$> 2.5\% \leq 10\%$	$\pm 20\%$
3.	$> 10\% \leq 25\%$	$\pm 10\%$
4.	$> 25\% \leq 100\%$	$\pm 5\%$

Minister for Environmental Protection and Regional Development

V. Makarovs

## **Characterisations and Combined Characterisations of the Effect of Chemical Substances**

1. Characterisations of the effect of chemical substances
  - 1.1. R1 Explosive when dry
  - 1.2. R2 Risk of explosion by shock, friction, flame or other sources of ignition
  - 1.3. R3 Extreme risk of explosion by shock, friction, flame or other sources of ignition
  - 1.4. R4 Forms very sensitive explosive metallic compounds
  - 1.5. R5 Heating may cause an explosion
  - 1.6. R6 Explosive with or without contact with air
  - 1.7. R7 May cause fire
  - 1.8. R8 Contact with combustible material may cause fire
  - 1.9. R9 Explosive when mixed with combustible material
  - 1.10. R10 Flammable
  - 1.11. R11 Highly flammable
  - 1.12. R12 Extremely flammable
  - 1.13. R14 Reacts violently with water
  - 1.14. R15 Contact with water liberates extremely flammable gases
  - 1.15. R16 Explosive when mixed with oxidising substances
  - 1.16. R17 Spontaneously flammable in air
  - 1.17. R18 In use, may form flammable or explosive vapour-air mixture
  - 1.18. R19 May form explosive peroxides
  - 1.19. R20 Harmful by inhalation
  - 1.20. R21 Harmful in contact with skin
  - 1.21. R22 Harmful if swallowed
  - 1.22. R23 Toxic by inhalation
  - 1.23. R24 Toxic in contact with skin
  - 1.24. R25 Toxic if swallowed
  - 1.25. R26 Very toxic by inhalation
  - 1.26. R27 Very toxic in contact with skin
  - 1.27. R28 Very toxic if swallowed
  - 1.28. R29 Contact with water liberates toxic gas
  - 1.29. R30 Can become highly flammable in use
  - 1.30. R31 Contact with acids liberates toxic gas
  - 1.31. R32 Contact with acids liberates very toxic gas
  - 1.32. R33 Danger of cumulative effects
  - 1.33. R34 Causes burns
  - 1.34. R35 Causes severe burns
  - 1.35. R36 Irritating to eyes
  - 1.36. R37 Irritating to respiratory system
  - 1.37. R38 Irritating to skin
  - 1.38. R39 Danger of very serious irreversible effects

- 1.39. R40 Limited evidence of a carcinogenic effect
  - 1.40. R41 Risk of serious damage to eyes
  - 1.41. R42 May cause sensitisation by inhalation
  - 1.42. R43 May cause sensitisation by skin contact
  - 1.43. R44 Risk of explosion if heated under confinement
  - 1.44. R45 May cause cancer
  - 1.45. R46 May cause heritable genetic damage
  - 1.46. R 47 Toxic for reproduction
  - 1.47. R48 Danger of serious damage to health by prolonged exposure
  - 1.48. R49 May cause cancer by inhalation
  - 1.49. R50 Very toxic to aquatic organisms
  - 1.50. R51 Toxic to aquatic organisms
  - 1.51. R52 Harmful to aquatic organisms
  - 1.52. R53 May cause long-term adverse effects in the aquatic environment
  - 1.53. R54 Toxic to flora
  - 1.54. R55 Toxic to fauna
  - 1.55. R56 Toxic to soil organisms
  - 1.56. R57 Toxic to bees
  - 1.57. R58 May cause long-term adverse effects in the environment
  - 1.58. R59 Dangerous for the ozone layer
  - 1.59. R60 May impair fertility
  - 1.60. R61 May cause harm to the unborn child
  - 1.61. R62 Possible risk of impaired fertility
  - 1.62. R63 Possible risk of harm to the unborn child
  - 1.63. R64 May cause harm to breastfed babies
  - 1.64. R65 Harmful: may cause lung damage if swallowed
  - 1.65. R66 Repeated exposure may cause skin dryness or cracking
  - 1.66. R67 Vapours may cause drowsiness and dizziness
  - 1.67. R 68 Possible risk of irreversible effects
2. Combined characterisations of the effect of chemical substances
- 2.1. R14/15 Reacts violently with water liberating extremely flammable gases
  - 2.2. R15/29 Contact with water liberates toxic, extremely flammable gas
  - 2.3. R20/21 Harmful by inhalation and in contact with skin
  - 2.4. R20/22 Harmful by inhalation and if swallowed
  - 2.5. R20/21/22 Harmful by inhalation, in contact with skin and if swallowed
  - 2.6. R21/22 Harmful in contact with skin and if swallowed
  - 2.7. R23/24 Toxic by inhalation and in contact with skin
  - 2.8. R23/25 Toxic by inhalation and if swallowed
  - 2.9. R23/24/25 Toxic by inhalation, in contact with skin and if swallowed
  - 2.10. R24/25 Toxic in contact with skin and if swallowed
  - 2.11. R26/27 Very toxic by inhalation and in contact with skin
  - 2.12. R26/28 Very toxic by inhalation and if swallowed
  - 2.13. R26/27/28 Very toxic by inhalation, in contact with skin and if swallowed
  - 2.14. R27/28 Very toxic in contact with skin and if swallowed
  - 2.15. R36/37 Irritating to eyes and respiratory system

- 2.16. R36/38 Irritating to eyes and skin
- 2.17. R36/37/38 Irritating to eyes, respiratory system and skin
- 2.18. R37/38 Irritating to respiratory system and skin
- 2.19. R39/23 Toxic: danger of very serious irreversible effects through inhalation
- 2.20. R39/24 Toxic: danger of very serious irreversible effects in contact with skin
- 2.21. R39/25 Toxic: danger of very serious irreversible effects if swallowed
- 2.22. R39/23/24 Toxic: danger of very serious irreversible effects through inhalation and in contact with skin
- 2.23. R39/23/25 Toxic: danger of very serious irreversible effects through inhalation and if swallowed
- 2.24. R39/24/25 Toxic: danger of very serious irreversible effects in contact with skin and if swallowed
- 2.25. R39/23/24/25 Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed
- 2.26. R39/26 Very toxic: danger of very serious irreversible effects through inhalation
- 2.27. R39/27 Very toxic: danger of very serious irreversible effects in contact with skin
- 2.28. R39/28 Very toxic: danger of very serious irreversible effects if swallowed
- 2.29. R39/26/27 Very toxic: danger of very serious irreversible effects through inhalation and in contact with skin
- 2.30. R39/26/28 Very toxic: danger of very serious irreversible effects through inhalation and if swallowed
- 2.31. R39/27/28 Very toxic: danger of very serious irreversible effects in contact with skin and if swallowed
- 2.32. R39/26/27/28 Very toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed
- 2.33. R42/43 May cause sensitisation by inhalation and skin contact
- 2.34. R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation
- 2.35. R48/21 Harmful: danger of serious damage to health by prolonged exposure in contact with skin
- 2.36. R48/22 Harmful: danger of serious damage to health by prolonged exposure if swallowed
- 2.37. R48/20/21 Harmful: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin
- 2.38. R48/20/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed
- 2.39. R48/21/22 Harmful: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed
- 2.40. R48/20/21/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation, if swallowed and in contact with skin
- 2.41. R48/23 Toxic: danger of serious damage to health by prolonged exposure through inhalation
- 2.42. R48/24 Toxic: danger of serious damage to health by prolonged exposure in contact with skin
- 2.43. R48/25 Toxic: danger of serious damage to health by prolonged exposure if swallowed



- 2.44. R48/23/24 Toxic: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin
- 2.45. R48/23/25 Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed
- 2.46. R48/24/25 Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed
- 2.47. R48/23/24/25 Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed
- 2.48. R50/53 Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment
- 2.49. R51/53 Toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment
- 2.50. R52/53 Harmful to aquatic organisms may cause long-term adverse effects in the aquatic environment
- 2.51. R68/20 Harmful: possible risk of irreversible effects through inhalation
- 2.52. R68/20 Harmful: possible risk of irreversible effects in contact with skin
- 2.53. R68/22 Harmful: possible risk of irreversible effects if swallowed
- 2.54. R68/20/21 Harmful: possible risk of irreversible effects through inhalation and in contact with skin
- 2.55. R68/20/22 Harmful: possible risk of irreversible effects through inhalation and if swallowed
- 2.56. R68/21/22 Harmful: possible risk of irreversible effects in contact with skin and if swallowed
- 2.57. R68/20/21/22 Harmful: possible risk of irreversible effects through inhalation, in contact with skin and if swallowed

Minister for Environmental Protection and Regional Development

V. Makarovs

## **Criteria for Classification and Labelling of Explosive, Extremely Flammable, Highly Flammable and Flammable Chemical Substances and Chemical Products, as well as Chemical Substances and Chemical Products – Strong Oxidisers**

1. Chemical substances and chemical products shall be classified as explosive, labelled with the symbol of danger (E) and the indication of danger "sprādzienbīstams" [explosive], as well as have at least one of the following characterisations of the effect of the chemical substance indicated:

1.1. **risk of explosion by shock, friction, flame or other sources of ignition (R2)**. Shall be indicated for explosive chemical substances and chemical products for which it is not required to indicate the characterisation of the effect of the chemical substance R3; or

1.2. **extreme risk of explosion by shock, friction, flame or other sources of ignition (R3)**. Shall be indicated for extremely explosive chemical substances and chemical products (for example, picric acid salts or dibenzoyl peroxides).

2. Chemical substances and chemical products shall be classified as oxidising, labelled with the symbol of danger (O) and the indication of danger "spēcīgs oksidētājs" [oxidising], as well as have at least one of the following characterisations of the effect of the chemical substance indicated:

2.1. **may cause fire (R7)**. Shall be indicated for organic peroxides that may catch fire by themselves even if not in contact with combustible materials;

2.2. **contact with combustible material may cause fire (R8)**. Shall be indicated for other chemical substances and chemical products – oxidisers (including inorganic peroxides) which may catch fire or increase the flammability risk of other substances or products in contact with combustible materials; or

2.3. **explosive when mixed with combustible material (R9)**. Shall be indicated for chemical substances and chemical products (including inorganic peroxides, for example, chlorates) which become explosive when mixed with combustible materials.

Notes.

1. Chemical substances – organic peroxides – shall be classified as strong oxidising on the basis of their structure (for example, R-O-O-H, R<sub>1</sub>-O-O-R<sub>2</sub>).

2. Chemical products that contain organic peroxides shall be classified as oxidising on the basis of the calculation which determines the content of active oxygen:

$$16 \times (n_i \times c_i / M_i), \text{ where}$$

$n_i$  – number of peroxygen groups per molecule of organic peroxide  $i$ ;

Translation © 2002 Tulkošanas un terminoloģijas centrs (Translation and Terminology Centre)

$c_i$  – concentration of organic peroxide  $i$  in the product (in percentage by weight);  
 $M_i$  – molar mass of organic peroxide  $i$ .

3. Chemical products that contain organic peroxides shall be classified as oxidising:  
3.1. if they contain more than 5% of organic peroxides;  
3.2. if 0,5% of their oxygen content are in the form of peroxide group (-O-O-) and no more than 5% — in the form of hydrogen peroxide.

3. Chemical substances and chemical products shall be classified as extremely flammable, labelled with the symbol of danger (F+) and the indication of danger "īpaši viegli uzliesmojošs" [extremely flammable], as well as have the characterisation of the effect of the chemical substance "īpaši viegli uzliesmojošs" [extremely flammable] (R12) indicated (need not be marked repeatedly):

3.1. for liquid chemical substances and chemical products which have a flash point lower than 0 °C and a boiling point (if the substance is characterised by a boiling range – the temperature at which boiling starts) is 35 °C or lower; and

3.2. for gaseous chemical substances and chemical products which are flammable in contact with air at normal temperature and pressure.

4. Chemical substances and chemical products shall be classified as highly flammable, labelled with the symbol of danger (F) and the indication of danger "viegli uzliesmojošs" [highly flammable], as well as have at least one of the following characterisations of the effect of the chemical substance indicated:

4.1. **highly flammable** (R11) (need not be marked repeatedly). Shall be indicated:

4.1.1. for solid chemical substances and chemical products which may catch fire after brief contact with a source of ignition and continue to burn after removal thereof; and

4.1.2. liquid chemical substances and chemical products whose flash point is lower than 21 °C but which are not classified as extremely flammable;

4.2. **contact with water liberates extremely flammable gases** (R15). Shall be indicated for chemical substances and chemical products which from a kilogram of the substance in contact with water or water vapour evolve more than a litre of extremely flammable gas per hour; or

4.3. **spontaneously flammable in air** (R17). Shall be indicated for chemical substances and chemical products that in contact with air at normal temperature become hot and catch fire without any input of energy.

5. Chemical substances and chemical products classified as flammable shall have the characterisation of the effect of the chemical substance "uzliesmojošs" [flammable] (R10) indicated if the flash point of a liquid chemical substance or chemical product is 21-55 °C. The said chemical products need not be classified as flammable if the chemical product does not support combustion and there is no reason for concern that the person handling such chemical product or other persons may be endangered.

6. Chemical substances and chemical products classified in accordance with Paragraphs 1, 2, 3, 4, 5 or 7 of this Annex and Annexes 5, 6, 7, 8, 9 or 10 of these Regulations shall have the following additional characterisations of the effect of the chemical substance indicated:

6.1. **explosive when dry** (R1). Shall be indicated for chemical substances and chemical products that are explosive when dry and which are placed on the market in a liquid or wetted form (for example, nitrocellulose with more than 12,6% nitrogen);

6.2. **forms very sensitive explosive metallic compounds** (R4). Shall be indicated for chemical substances and chemical products that may form sensitive explosive metallic compounds (for example, picric acid);

6.3. **heating may cause an explosion** (R5). Shall be indicated for thermally unstable chemical substances and chemical products which are not classified as explosive (for example, perchloric acid (> 50%));

6.4. **explosive with or without contact with air** (R6). Shall be indicated for chemical substances and chemical products that are unstable at normal temperature (for example, acetylene);

6.5. **may cause fire** (R7). Shall be indicated for chemical substances and chemical products which are reactive (for example, fluorine, sodium hydrogensulphite);

6.6. **reacts violently with water** (R14). Shall be indicated for chemical substances and chemical products that react violently with water (for example, acetyl chloride, alkali metals, titanium tetrachloride);

6.7. **explosive when mixed with oxidising substances** (R16). Shall be indicated for chemical substances and chemical products which in contact with an oxidiser may explode (for example, red phosphorus);

6.8. **in use, may form inflammable/explosive vapour-air mixture** (R18). Shall be indicated for chemical substances and chemical products which are not in themselves classified as flammable but contain volatile components which are flammable when mixed with air;

6.9. **may form explosive peroxides** (R19). Shall be indicated for chemical substances and chemical products that may form explosive peroxides during storage (for example, diethyl ether, 1,4-dioxane);

6.10. **can become highly flammable in use** (R30). Shall be indicated for chemical substances and chemical products which are not in themselves classified as flammable but may become flammable if lose a volatile non-flammable component;

6.11. **risk of explosion if heated under confinement** (R44). Shall be indicated for chemical substances and chemical products which are not classified as explosive in accordance with Paragraph 1 of this Annex but may explode if they are thermally processed under confinement; or

6.12. chemical substances and chemical products may have additional characterisations of the effect of the chemical substance indicated in accordance with the criteria prescribed in Annex 11 of these Regulations.

7. Gaseous products (gas mixtures) shall be classified in accordance with Paragraphs 1, 2, 3, 4, 5 and 6 of this Annex:

7.1. if gaseous products are produced to order in small amounts the flammability of the gas mixture shall be evaluated using a formula where the composition of the gas mixture:

$$A_i F_i + \dots + A_i F_i + \dots A_n F_n + B_1 I_1 + \dots + B_i I_i + \dots B_p I_p, \text{ where}$$

$A_i$  un  $B_i$  – gas molar fractions;  
 $F_i$  – flammable gas;  
 $I_i$  – inert gas;  
 $n$  – number of flammable gases;  
 $p$  – number of inert gases;

7.1.1. the total content of flammable gases shall be determined by using the following formula:

$$A'_i = A_i \times (100 / (A_i + K_i B_i)), \text{ where}$$

$A'_i$  – the total content of the relevant flammable gases;  
 $K_i$  – coefficient of nitrogen equivalency for inert gases;

7.1.2. maximum values of the content of flammable gas which in a mixture with nitrogen form a composition that is not flammable in air ( $T_{ci}$ ) may be expressed as follows:

$$\sum_i A'_i / T_{ci} \leq 1$$

7.1.3. the gas mixture is flammable if the value, which has been calculated according to the formula specified in Sub-paragraph 7.1.2 of this Annex, is greater than one. The chemical product shall be classified as extremely flammable and have the characterisation of the effect of the substance R 12 indicated;

7.1.4. the values of the coefficient of nitrogen equivalency ( $K_i$ ) and the maximum amount of flammable gas which in a mixture with nitrogen is not flammable in air ( $T_{ci}$ ) shall be determined in accordance with tables provided in Paragraphs 9 and 10 of this Annex;

7.1.5. when  $T_{ci}$  value is not indicated the lower explosivity limit shall be used. If it is not determined, the  $T_{ci}$  value shall be one percent by volume;

7.2. a gas mixture shall be classified as oxidising with the characterisation of the effect of the substance R8 if any of the gases is as strong an oxidiser as air or stronger, which shall be determined by using the following formula:

$$\sum_i x_i C_i \geq 21, \text{ where}$$

$x_i$  – the concentration of gas in percentage by volume;  
 $C_i$  – oxygen equivalent of the relevant gas;

7.2.1. the  $C_i$  value shall be determined in accordance with Sub-paragraph 5.2 of the LVS ISO 10156 Standard:

7.2.1.1. for oxygen ( $O_2$ )  $C_i = 1$ ;

7.2.1.2. for nitrogen oxide ( $N_2O$ )  $C_i = 0,6$ ;

7.2.2. if a  $C_i$  value of the relevant gas is not indicated, it shall be assumed to be 40.

8. If none of the chemical substances contained by the chemical product is classified according to the criteria prescribed by this Annex and from the information at the disposal of the manufacturer or importer of the chemical product it does not follow that the chemical product

poses threats referred to in this Annex, it shall not be necessary to perform studies in order to determine whether the chemical product is to be classified in accordance with the criteria prescribed by this Annex.

9.  $K_i$  coefficient of equivalency between inert gases and nitrogen

Gas	$K_i$
N <sub>2</sub>	1
CO <sub>2</sub>	1,5
He	0,5
Ar	0,5
Ne	0,5
Kr	0,5
Xe	0,5
SO <sub>2</sub>	1,5
SF <sub>6</sub>	1,5
CF <sub>4</sub>	1,5
C <sub>3</sub> F <sub>8</sub>	1,5

10. The determined or expected maximum amount of flammable gas which in a mixture with nitrogen is not flammable in air ( $T_{ci}$ )

Gas	$T_{ci}$ %
Hydrogen	5,7
Carbon monoxide	20
Methane	14,3
Ethane	7,6
Ethylene	6
Butane	5,7
Propane	6
Propenes	6,5
Butenes	5,5
Isobutane	6
Butadiene	4,5
Acetylene	4
2,2-dimethylpropane (neopentane, tetramethylmethane)	4
n-pentane and isopentane	4
n-hexane	3,5
n-heptane	2
n-octane	1,8
Isooctane (2,2,4-trimethylpentane)	1,8

n-nonane	1,5
n-decane	1,1
n-dodecane	1
Cyclopropane	6,8
Cyclohexane	2,5
Benzole	4,2
Toluene	2,1
Methanol	11
Ethanol	5,8
Acetone	4,5
Diethyl ether	3,4
Dimethyl ether	3,7
2,2-dimethylbutane	2,4
Methylamine	6,8
Methyl formate	7
Methyl acetate	4,3
Ethyl formate	3,9
Ethyl acetate	4,3
Methylehtylketone	2
Hydrogen sulphide	5,2
Carbon disulphide	1,5
Fluormethane	3,7
1,1-difluorethylene (R1132a)	6,8
Vinylbromide	6,8
1-clor-1,1-difluorethane (R142b)	5,5
Vinylfluoride	3,2
R143a	5,6
1,1-difluorethane	4,6
R152a	1
Chloroethane	4,3
Propadiene	2,1
Vinylmethylether	2,7
Cyclobutane	2
1-methylbut-3-ene	1,8
Fluorethane	4,3
Vinylchloride	4,5
Cyanogen	7
Arsine	5,6
Diborane	1
Hydrogen cyanide	6,7

Translation © 2002 Tulkošanas un terminoloģijas centrs (Translation and Terminology Centre)

Carbonyl sulphide	14
Nickel carbonyl	1,1
Phosphine	1,2
Monoethylamine	4,8
Dimethylamine	3,5
Trimethylamine	2,5
Methylene chloride	10
Methyl mercaptan	4,7
R1113	10
Tetrafluorethylene	13,7
Bromomethane	16
Ethylmethylether	2,5
Tetraethyllead	2,2
Trifluorethylene	13,1
Hydrogen selenide	1
Methylsilane	1,4
Silane	1
Monochlorosilane	1
Dichlorosilane	4,5
Germanium	1
Ethylene oxide	3,1
Propylene oxide	2,0
Ethylacetylene	1,8
Methylacetylene	1,4

Minister for Environmental Protection and Regional Development

V. Makarovs



## **Criteria for Classification and Labelling of Very Toxic, Toxic and Harmful Chemical Substances and Chemical Products**

1. Chemical substances and chemical products shall be classified as very toxic, labelled with the symbol of danger (T+) and the indication of danger "ļoti toksisks" [very toxic], as well as have at least one of the following characterisations of the effect of the chemical substance indicated:

1.1. **very toxic if swallowed** (R28). Shall be indicated for chemical substances and chemical products whose acute toxicity is:

1.1.1.  $LD_{50} \leq 25$  mg/kg (for rats, by oral ingestion);

1.1.2. less than 100% of survived experimental animals at 5mg/kg dose ingested in accordance with the fixed dose procedure (for rats, by oral ingestion); or

1.1.3. high mortality after ingestion of  $\leq 25$  mg/kg dose (for rats, by oral ingestion);

1.2. **very toxic in contact with skin** (R27). Shall be indicated for chemical substances and chemical products whose acute toxicity is  $LD_{50} \leq 50$  mg/kg (for rats or rabbits, by dermal exposure);

1.3. **very toxic by inhalation** (R26). Shall be indicated for chemical substances and chemical products whose acute toxicity is: 1.3.1.  $LC_{50} \leq 0,5$  mg/l within four hours (for rats, by inhalation of gas or vapours); or

1.3.2.  $LC_{50} \leq 0,25$  mg/l within four hours (for rats, by inhalation of aerosol or particulates);

1.4. **danger of very serious irreversible effects** (R39). Shall be indicated for chemical substances and chemical products if there is strong evidence that irreversible damage which differs from the effects referred to in Annex 8 of these Regulations is caused by a single exposure by an appropriate route, generally in the dose range referred to in Sub-paragraphs 1.1, 1.2 and 1.3 of this Annex. In order to indicate the possible route of exposure one of the following combined characterisations of the effect of the chemical substance shall be used: R39/26, R39/27, R39/28, R39/26/27, R39/26/28, R39/27/28 or R39/26/27/28.

2. Chemical substances and chemical products shall be classified as toxic, labelled with the symbol of danger (T) and the indication of danger "toksisks" [toxic], as well as have at least one of the following characterisations of the effect of the chemical substance indicated:

2.1. **toxic if swallowed** (R25). Shall be indicated for chemical substances and chemical products whose acute toxicity is:

2.1.1.  $25$  mg/kg  $< LD_{50} \leq 200$  mg/kg (for rats, by oral ingestion);

2.1.2. 100% survived experimental animals with evident signs of toxicosis after ingestion of 5 mg/kg of discriminating dose (for rats, by oral ingestion); or

2.1.3. high mortality after ingestion of the dose  $25$  mg/kg  $< LD_{50} \leq 200$  mg/kg (for rats, by oral ingestion);

2.2. **toxic in contact with skin** (R24). Shall be indicated for chemical substances and chemical products whose acute toxicity is  $50$  mg/kg  $< LD_{50} \leq 400$  mg/kg (for rats or rabbits, by dermal exposure);

2.3. **toxic by inhalation** (R23). Shall be indicated for chemical substances and chemical products whose acute toxicity is:

2.3.1.  $0,25 \text{ mg/l} < \text{LC}_{50} \leq 1 \text{ mg/l}$  within four hours (for rats by inhalation of aerosol or particulates); or

2.3.2.  $0,5 \text{ mg/l} < \text{LC}_{50} \leq 2 \text{ mg/l}$  within four hours (for rats by inhalation of gas or vapours);

2.4. **danger of very serious irreversible effects** (R39). Shall be indicated for chemical substances and chemical products if there is strong evidence that irreversible damage which differs from the effects referred to in Annex 8 of these Regulations is caused by a single exposure by an appropriate route, generally in the dose range referred to in Sub-paragraphs 2.1, 2.2 and 2.3 of this Annex. In order to indicate the possible route of exposure, one of the following combined characterisations of the effect of the chemical substance shall be used: R39/23, R39/24, R39/25, R39/23/24, R39/23/25, R39/24/25 or R39/23/24/25;

2.5. **danger of serious damage to health by prolonged exposure** (R48). Shall be indicated for chemical substances and chemical products which may cause serious damage (clear functional disturbance or morphological change that are of toxicological origin) by repeated or prolonged exposure by an appropriate route. A chemical substance or a chemical product shall be classified as toxic if the harmful effect is observed at levels which are one order of magnitude (i.e. ten times) lower than those set out in Paragraph 3 of this Annex for the use of the characterisation of the effect of the substance R48. In order to indicate the possible route of exposure, one of the following combined characterisations of the effect of the chemical substance shall be used: R48/23, R48/24, R48/25, R48/23/24, R48/23/25, R48/24/25 or R48/23/24/25.

3. Chemical substances and chemical products shall be classified as harmful, labelled with the symbol of danger (Xn) and the indication of danger "kaitīgs" [harmful], as well as have at least one of the following characterisations of the effect of the chemical substance indicated:

3.1. **harmful if swallowed** (R22). Shall be indicated for chemical substances and chemical products whose acute toxicity:

3.1.1. is  $200 \text{ mg/kg} < \text{LD}_{50} \leq 2000 \text{ mg/kg}$  (for rats, by oral ingestion);

3.1.2. there are 100% of survived experimental animals with evident signs of toxicosis after ingestion of 50 mg/kg of discriminating dose (for rats, by oral ingestion);

3.1.3. less than 100% of survived experimental animals after 500 mg/kg dose which has been ingested in accordance with the fixed dose procedure (for rats, by oral ingestion); or

3.1.4. high mortality after ingestion of a dose  $200 \text{ mg/kg} \leq 2000 \text{ mg/kg}$  (for rats, by oral ingestion);

3.2. **harmful in contact with skin** (R21). Shall be indicated for chemical substances and chemical products whose acute toxicity is  $400 \text{ mg/kg} < \text{LD}_{50} \leq 2000 \text{ mg/kg}$  (for rats or rabbits, by dermal exposure);

3.3. **harmful by inhalation** (R20). Shall be indicated for chemical substances and chemical products whose acute toxicity is:

3.3.1.  $1 \text{ mg/l} < \text{LC}_{50} \leq 5 \text{ mg/l}$  within four hours (for rats by inhalation of aerosol or particulates); or

3.3.2.  $2 \text{ mg/l} < \text{LC}_{50} \leq 20 \text{ mg/l}$  within four hours (for rats by inhalation of gas or vapours);

3.4. **harmful – may cause lung damage if swallowed** (R65). Shall be indicated for the following liquid chemical substances and chemical products which because of their low viscosity may present an aspiration risk in humans:

3.4.1. for chemical substances and chemical products containing aliphatic, alicyclic and aromatic hydrocarbons whose total concentration is 10 % or greater which are characterised by one of the following criteria:

3.4.1.1. fluidity is less than 30 seconds in a 3-mm ISO cup;

3.4.1.2. kinematic viscosity which has been determined by a calibrated glass capillary viscometer is less than  $7 \times 10^{-6} \text{ m}^2/\text{s}$  at 40 °C temperature; or

3.4.1.3. kinematic viscosity, which has been determined by the rotational viscometry method, is less than  $7 \times 10^{-6} \text{ m}^2/\text{s}$  at 40 °C temperature;

3.4.2. chemical substances and chemical products which meet the criteria referred to in Sub-paragraphs 3.4.1.1, 3.4.1.2 and 3.4.1.3 need not be classified if they have a surface tension greater than 33 mN/m at 25 °C temperature;

3.5. **possible risk of irreversible effects** (R68). Shall be indicated for chemical substances and chemical products if there is strong evidence that irreversible damage which differs from the effects referred to in Annex 8 of these Regulations is caused by a single exposure by an appropriate route, generally in the dose range referred to in Sub-paragraphs 3.1, 3.2, 3.3 and 3.4 of this Annex. In order to indicate the possible route of exposure, one of the following combined characterisations of the effect of the chemical substance shall be used: R68/20, R68/21, R68/22, R68/20/21, R68/21/22 or R68/20/21/22;

3.6. **danger of serious damage to health by prolonged exposure** (R48). Shall be indicated for chemical substances and chemical products that may cause serious damage (clear functional disturbance or morphological change of toxicological origin) by repeated or prolonged exposure by an appropriate route. Chemical substances and chemical products shall be classified as harmful if the harmful effect is observed:

3.6.1. with rats, by oral ingestion,  $\leq 50 \text{ mg}$  per bodyweight kilogram per day;

3.6.2. with rats or rabbits by dermal exposure,  $\leq 100 \text{ mg}$  per bodyweight kilogram per day;

3.6.3. with rats by inhalation,  $\leq 0,25 \text{ mg/l}$  six hours per day;

3.6.4. the values specified in Sub-paragraphs 3.6.1, 3.6.2, 3.6.3 of this Annex shall be applied directly if severe harmful effects have been observed in a subchronic 90 days toxicity test. When interpreting the results of a subacute 28 days toxicity test these figures shall be increased three times. If the results of a chronic two years toxicity test are available they shall be evaluated separately in each case. If results of studies of differing duration are available, then the results of the study of the longest duration shall be used for classification. In order to indicate the possible route of exposure, one of the following combined characterisations of the effect of the chemical substance shall be used: R48/20, R48/21, R48/22, R48/20/21, R48/20/22, R48/21/22 or R48/20/21/22.

4. Acute toxic chemical products shall be classified:

4.1. in accordance with the correspondence of their constituents with the classification of very toxic, toxic or harmful chemical substances as specified in this Annex; or

4.2. in accordance with Table 1 of this Annex – if a chemical product contains at least one very toxic, toxic or harmful substance. The concentration limit set in the Table shall be used if the list of dangerous chemical substances does not specify another concentration limit;

Table 1

Classification of the chemical substance	Classification of the chemical product		
	T+	T	Xn
T+ with R26, R27, R28	$c \geq 7\%$	$1\% \leq c < 7\%$	$0,1\% \leq c < 1\%$
T with R23, R24, R25		$c \geq 25\%$	$3 \leq c < 25\%$
Xn with R20, R21, R22			$c \geq 25\%$

4.3. individual concentration limits of very toxic, toxic or harmful gaseous chemical substances for classification of chemical products have been prescribed in Table 2;

Table 2

Classification of the chemical substance (gas)	Classification of the chemical product		
	T+	T	Xn
T+ with R26, R27, R28	$c \geq 1\%$	$0,2 \leq c < 1\%$	$0,02 \leq c < 0,2\%$
T with R23, R24, R25		$c \geq 5\%$	$0,5 \leq c < 5\%$
Xn with R20, R21, R22			$c \geq 5\%$

4.4. if a chemical product contains more than one chemical substance that is classified in accordance with Paragraphs 1, 2 and 3 of this Annex, the chemical product shall be classified according to the following criteria:

4.4.1. very toxic — if the sum of coefficients is one or greater than one and it is obtained by dividing the concentration limit of each very toxic chemical substance in the product by the lowest limit value of the concentration of the chemical substance starting with which the product is classified as very toxic:

$$\Sigma (P_{T+}/L_{T+-T+}) \geq 1, \text{ where}$$

$P_{T+}$  – concentration of each very toxic chemical substance in the product (in percentage by weight);

$L_{T+-T+}$  – limit values specified for each very toxic chemical substance (in percent);

4.4.1.1. the lowest limit value — the lowest concentration limit of a chemical substance in the chemical product starting with which the relevant product is classified (it is assumed that this substance is the only one in the relevant dangerous product);

4.4.1.2. if in the list of dangerous chemical substances no other limit value for the substance has been indicated, the following value shall be used:

$L_{T+-T+} : 7\%$ ;

4.4.1.3. for gaseous chemical products:

$L_{T+-T+} : 1\%$ ;

4.4.2. toxic — if the sum of coefficients is one or greater than one and it is obtained by dividing the concentration limit of each very toxic or toxic chemical

substance in the product by the lowest limit value of the concentration of the chemical substance starting with which the product is classified as toxic:

$$(P_{T+}/L_{T+T} + P_T/L_{T-T}) \geq 1, \text{ where}$$

$P_{T+}$  – concentration of each very toxic chemical substance in the product (in percentage by weight);

$P_T$  – concentration of each toxic chemical substance (in percentage by weight);

$L_{T+T}$  and  $L_{T-T}$  – limit values that have been specified for each very toxic and toxic chemical substance (in percent);

4.4.2.1. if in the list of dangerous chemical substances no other limit values for the substance have been indicated, the following values shall be used:

$$L_{T+T} : 1\%;$$

$$L_{T-T} : 25\%;$$

4.4.2.2. for gaseous chemical products:

$$L_{T+T} : 0,2\%;$$

$$L_{T-T} : 5\%;$$

4.4.3. harmful – if the sum of coefficients is one or greater than one and it is obtained by dividing the concentration limit of each very toxic, toxic or harmful chemical substance in the product by the lowest limit value of the concentration of the chemical substance starting with which the product is classified as harmful:

$$\Sigma (P_{T+}/L_{T+Xn} + P_T/L_{T-Xn} + P_{Xn}/L_{Xn-Xn}) \geq 1, \text{ where}$$

$P_{T+}$  – concentration of each very toxic chemical substance in the product (in percentage by weight);

$P_T$  – concentration of each toxic chemical substance (in percentage by weight);

$P_{Xn}$  – concentration of each harmful chemical substance (in percentage by weight);

$L_{T+Xn}$ ,  $L_{T-Xn}$ ,  $L_{Xn-Xn}$  – limit values, which have been specified for each very toxic, toxic and harmful chemical substance (in percent);

4.4.3.1. if in the list of dangerous chemical substances no other limit values for the substance have been indicated, the following values shall be used:

$$L_{T+Xn} : 0,1\%;$$

$$L_{T-Xn} : 3\%;$$

$$L_{Xn-Xn} : 25\%;$$

4.4.3.2. for gaseous chemical products:

$$L_{T+Xn} : 0,02\%;$$

$$L_{T-Xn} : 0,5\%;$$

$$L_{Xn-Xn} : 5\%.$$

5. Chemical products that produce non-lethal irreversible effects shall be classified:

5.1. in accordance with the correspondence of the constituents thereof with the chemical substances prescribed in this Annex which produce non-lethal irreversible effects; or

5.2. in accordance with Table 3 of this Annex — if the chemical product contains at least one chemical substance producing non-lethal irreversible effects. The concentration limit set out in the Table shall be used if another concentration limit is not specified in the list of dangerous chemical substances;

Table 3

Classification of the chemical substance	Classification of the chemical product		
	T+	T	Xn
T+ with R39 (route of exposure shall be indicated)	$c \geq 10\%$ R39* obligatory	$1 \leq c < 10\%$ R39* obligatory	$0,1 \leq c < 1\%$ R40* obligatory
T with R39 (route of exposure shall be indicated)		$c \geq 10\%$ R39* obligatory	$1 \leq c < 10\%$ R40* obligatory
Xn with R40 (route of exposure shall be indicated)			$c \geq 10\%$ R40* obligatory

Note.  
\* In order to indicate the route of exposure of the chemical substance, the combined characterisations of the effect of chemical substances in accordance with Paragraphs 1, 2 and 3 of this Annex shall be used;

5.3. for gases, which produce non-lethal irreversible effects, the individual concentration limit for classification of chemical products is specified in Table 4 of this Annex.

Table 4

Classification of the chemical substance (gas)	Classification of the gaseous chemical product		
	T+	T	Xn
T+ with R39 (route of exposure shall be indicated)	$c \geq 1\%$	$0,2 \leq c < 1\%$ R39* obligatory	$0,02 \leq c < 0,2\%$ R40* obligatory
T with R39 (route of exposure shall be indicated)		$c \geq 5\%$ R39* obligatory	$0,5 \leq c < 5\%$ R40* obligatory
Xn with R40 (route of exposure shall be indicated)			$c \geq 5\%$ R40* obligatory

Note.  
\* In order to indicate the route of exposure of the chemical substance, the combined characterisations of the effect of chemical substances in accordance with Paragraphs 1, 2 and 3 of this Annex shall be used.

6. Chemical products that produce severe effects after repeated or prolonged exposure shall be classified:

6.1. in accordance with the correspondence of their components with the chemical substances prescribed in this Annex which produce severe effects after repeated or prolonged exposure; or

6.2. in accordance with Table 5 of this Annex. The concentration limit set out in the Table shall be used if another concentration is not specified in the list of dangerous chemical substances;

Table 5

Classification of the chemical substance	Classification of the chemical product	
	T	Xn
T with R48 (route of exposure shall be indicated)	$c \geq 10\%$ R48* obligatory	$1 \leq c < 10\%$ R48* obligatory
Xn with R48 (route of exposure shall be indicated)		$c \geq 10\%$ R48* obligatory
Note. * In order to indicate the route of exposure of the chemical substance, the combined characterisations of the effect of the chemical substance in accordance with Paragraphs 1, 2 and 3 of this Annex shall be used.		

6.3. for gases, which produce severe effects after repeated or prolonged exposure, the individual concentration limit for classification of gaseous chemical products is prescribed in Table 6 of this Annex.

Table 6

Classification of the chemical substance (gas)	Classification of the gaseous chemical product	
	T	Xn
T with R48 (route of exposure shall be indicated)	$c \geq \%$ R48* obligatory	$0,5 \leq c < 5\%$ R48* obligatory
Xn with R48 (route of exposure shall be indicated)		$c \geq 5\%$ R48* obligatory
Note. * In order to indicate the route of exposure of the chemical substance, the combined characterisations of the effect of the chemical substance in accordance with Paragraphs 1, 2 and 3 of this Annex shall be used.		

Minister for Environmental Protection and Regional Development

V. Makarovs

## **Criteria for Classification and Labelling of Corrosive and Irritant Chemical Substances and Chemical Products**

1. Chemical substances and chemical products are corrosive if coming into contact with healthy skin they produce damage in full thickness of the skin layer to at least one experimental animal during a specific skin irritation test or such result of the effect can be predicted taking into account the chemical properties of the substance (for example, acids with a pH of 2 or less, alkaline solutions with a pH of 11,5 or greater). In classification buffer properties of acid and base solutions shall be taken into account. Chemical substances and chemical products shall be classified as corrosive, labelled with the symbol of danger (C) and the indication of danger "kodīgs" [corrosive], as well as have at least one of the following characterisations of the effect of the chemical substance indicated:

1.1. **causes severe burns (R35)**. Shall be indicated for chemical substances and chemical products which when applied to healthy skin after contact of three minutes or less cause damage in the full thickness of the skin layer, or such result can be predicted taking into account the chemical properties of the substance;

1.2. **causes burns (R34)**. Shall be indicated:

1.2.1. for chemical substances and chemical products which when applied to healthy skin after a contact of three hours or less cause damage in the full thickness of the skin layer or such result of the exposure can be predicted taking into account the chemical properties of the substance; or

1.2.2. for organic peroxides, except for the cases where there is evidence that they do not cause burns.

2. Chemical substances and chemical products shall be classified as irritant, labelled with the symbol of danger (Xi) and the indication of danger "kairinošs" [irritant], as well as have at least one of the following characterisations of the effect of the chemical substance indicated:

2.1. classification according to the effect on skin: **irritating to skin (R38)**. Shall be indicated:

2.1.1. for chemical substances and chemical products which within 24 hours or a shorter time period after contact cause significant inflammation (reddening) of the skin which persists for at least 24 hours (rabbits shall be used as experimental animals in accordance with internationally recognised methods);

2.1.2. for chemical substances and chemical products which cause essential skin inflammation (observing the effect on humans); and

2.1.3. for organic peroxides except for the cases when there is evidence that they do not irritate the skin;

2.2. classification according to the effect on eyesight:

2.2.1. **irritating to eyes (R36)**. Shall be indicated:

2.2.1.1. for chemical substances and chemical products which within 72 hours after contact cause significant eye damage to experimental animals which persist for at least 24 hours;



2.2.1.2. for chemical substances and chemical products which cause significant eye inflammation (the effect on humans shall be observed); and

2.2.1.3. for organic peroxides except for the cases when there is evidence that they are not irritating to eyes;

2.2.2. **risk of serious damage to eyes (R41)**. Shall be indicated:

2.2.2.1. for chemical substances and chemical products which within 72 hours after contact cause significant eye damage to experimental animals which persist for at least 24 hours; and

2.2.2.2. for chemical substances and chemical products which cause serious damage to eyes (the effect on humans shall be observed);

2.3. classification according to the effect on the respiratory system: **irritation to respiratory system (R37)**. Shall be indicated for chemical substances and chemical products which cause significant inflammation of the respiratory tract which shall be proved by:

2.3.1. observations on humans; and

2.3.2. positive results in appropriate tests with animals.

3. Corrosive and irritant chemical products shall be classified:

3.1. in accordance with the correspondence of the constituents thereof with the classification prescribed in Paragraphs 1 and 2 of this Annex; or

3.2. in accordance with Table 1 of this Annex — if the chemical product contains at least one corrosive (R34, R35) or irritant (R37, R38, R41) chemical substance;

Table 1

Classification of the chemical substance	Classification of the chemical product			
	C with R35	C with R34	Xi with R41	Xi with R37, R36, R38
C with R35	$c \geq 10\%$ R35 obligatory	$5 \leq c < 10\%$ R34 obligatory	5%*	$1\% \leq c < 5\%$ R36/38 obligatory
C with R34		$c \geq 10\%$ R34 obligatory	10%*	$5\% \leq c < 10\%$ R36/38 obligatory
Xi with R41			$c \geq 10\%$ R41 obligatory	$5\% \leq c < 10\%$ R36 obligatory
Xi with R36, R37, R38				$c \geq 20\%$ R36, R37, R38 obligatory

Note.  
\* Corrosive chemical substances shall be considered as being marked with the characterisation of the effect of the chemical substance R41 if such substances have the characterisation of the effect of the chemical substance R35 or R34. If the chemical product contains corrosive chemical substances with the characterisation of the effect of the substance R35 or R34 in a concentration lower than the concentration limit according to which a product is classified as corrosive, the chemical product may be classified as irritant with the characterisation of the effect of the substance R41 or R36;

3.3. for corrosive and irritant gaseous chemical products (R33; R35 or R37; R38; R41) the individual concentration limit for classification of chemical products has been specified in Table 2 of this Annex.

Table 2

Classification of the chemical substance (gas)	Classification of the gaseous chemical product			
	C with R35	C with R34	Xi with R41	Xi with R37, R36, R38
C with R35	$c \geq 1\%$ R35 obligatory	$0,2\% \leq c < 1\%$ R34 obligatory	0,2%*	$0,02\% \leq c < 0,2\%$ R37 obligatory
C with R34		$c \geq 5\%$ R34 obligatory	5%*	$0,5\% \leq c < 5\%$ R37 obligatory
Xi with R41			$c \geq 5\%$ R41 obligatory	$0,5\% \leq c < 5\%$ R36 obligatory
Xi with R36, R37, R38				$c \geq 5\%$ R36, R37, R38 obligatory (as appropriate)

Note.  
\* Corrosive chemical substances shall be considered as being marked with the characterisation of the effect of the chemical substance R41 if such substances have the characterisation of the effect of the chemical substance R35 or R34. If the chemical product contains corrosive chemical substances with the characterisation of the effect of the substance R35 or R34 in a concentration lower than the concentration limit according to which a product is classified as corrosive, the chemical product may be classified as irritant with the characterisation of the effect of the substance R41 or R36.

4. If a chemical product contains more than one substance, which is classified in accordance with Paragraphs 1 and 2 of this Annex, it shall be classified in accordance with the following criteria:

4.1. a chemical product shall be classified as corrosive, labelled with the symbol of danger (C) and have the characterisation of the effect of the substance R35 indicated if the sum of coefficients is one or greater than one and it is obtained by dividing the lowest concentration limit of each corrosive chemical substance with the characterisation of the effect of the chemical substance R35 in the chemical product by the concentration of the chemical substance according to which the chemical product is classified as very corrosive with the characterisation of the effect of the substance R35:

$$\Sigma (P_{R35}/L_{R35-R35}) \geq 1, \text{ where}$$

$P_{R35}$  – concentration of each corrosive substance in the product (in percentage by weight);

$L_{R35-R35}$  – limit values specified for each very corrosive chemical substance (in percent);

4.1.1. if in the list of dangerous chemical substances no other limit value for the substance has been indicated, the following value shall be used:

$L_{R35-R35}$  : 10%;

4.1.2. for gaseous chemical products:

$L_{R35-R35}$  : 1%;

4.2. a chemical product shall be classified as corrosive and have the characterisation of the effect of the substance R34 indicated if the sum of coefficients is one or greater than one and it is obtained by dividing the concentration of each very corrosive chemical substance with the characterisation of the effect of the chemical substance R35 or the concentration of each corrosive chemical substance with the characterisation of the effect of the chemical substance R34 in the product by its lowest concentration limit according to which the chemical product is classified as corrosive with the characterisation of the effect of the substance R34:

$$\Sigma (P_{R35}/L_{R35-R34} + P_{R34}/L_{R34-R34}) \geq 1, \text{ where}$$

$P_{R35}$  – concentration of each very corrosive chemical substance with the characterisation of the effect of the chemical substance R35 in the product (in percentage by weight);

$P_{R34}$  – concentration of each corrosive chemical substance with the characterisation of the effect of the chemical substance R34 in the product (in percentage by weight);

$L_{R35-R34}$  and  $L_{R34-R34}$  – limit values specified for each very corrosive and corrosive substance (in percent);

4.2.1. if in the list of dangerous chemical substances no other limit values for the substance have been indicated, the following values shall be used:

**$L_{R35-R34}$  : 5%;**

**$L_{R34-R34}$  : 10%;**

4.2.2. for gaseous chemical products:

**$L_{R35-R34}$  : 0,2%;**

**$L_{R34-R34}$  : 5%;**

4.3. a chemical product shall be classified as causing damage to eyes and have the characterisation of the effect of the substance R41 indicated if the sum of coefficients is one or greater than one and it is obtained by dividing the concentration of each corrosive chemical substance or irritant chemical substance with the characterisation of the effect of the chemical substance R41 in the chemical product by its lowest concentration limit according to which the chemical product is classified as irritant with the characterisation of the effect of the substance R41:

$$(P_{R35}/L_{R35-R41} + P_{R34}/L_{R34-R41} + P_{R41}/L_{R41-R41}) \geq 1, \text{ where}$$

$P_{R35}$ ,  $P_{R34}$  and  $P_{R41}$  – concentration of each corrosive substance with the characterisation of the effect of the substance R35 and R34 or irritant substances with the characterisation of the effect of the substance R41 in the product (in percentage by weight);

$L_{R35-R41}$ ,  $L_{R34-R41}$  and  $L_{R41-R41}$  – limit values specified for each irritant and corrosive substance (in percent);

4.3.1. if in the list of dangerous chemical substances no other limit values for the substance have been indicated, the following values shall be used:

**L<sub>R35-R41</sub> : 5%;**  
**L<sub>R34-R41</sub> : 10%;**  
**L<sub>R41-R41</sub> : 10%;**

4.3.2. for gaseous chemical products:

**L<sub>R35-R41</sub> : 0,2%;**  
**L<sub>R34-R41</sub> : 5%;**  
**L<sub>R41-R41</sub> : 5%;**

4.4. a chemical product shall be classified as irritant to skin if the sum of coefficients is one or greater than one and it is obtained by dividing the concentration of each corrosive chemical substance or irritant chemical substance with the characterisation of the effect of the chemical substance R34, R34 or R38 in the chemical product by its lowest concentration limit:

$$(P_{R35}/L_{R35-R38} + P_{R34}/L_{R34-R38} + P_{R38}/L_{R38-R38}) \geq 1, \text{ where}$$

P<sub>R35</sub>, P<sub>R34</sub> and P<sub>R38</sub> – concentration of each corrosive substance with the characterisation of the effect of the substance R35 and R34 or irritant substances with the characterisation of the effect of the substance R38 in the product (in percentage by weight);

L<sub>R35-R38</sub>, L<sub>R34-R38</sub> and L<sub>R38-R38</sub> – limit values specified for each irritant and corrosive chemical substance (in percent);

4.4.1. if in the list of dangerous chemical substances no other limit values for the substance have been indicated, the following values shall be used:

**L<sub>R35-R38</sub> : 1%;**  
**L<sub>R34-R38</sub> : 5%;**  
**L<sub>R38-R38</sub> : 20%;**

4.4.2. for gaseous chemical products:

**L<sub>R35-R38</sub> : 0,02%;**  
**L<sub>R34-R38</sub> : 0,5%;**  
**L<sub>R38-R38</sub> : 5%;**

4.5. a chemical product shall be classified as irritant to eyes with the characterisation of the effect of the substance R41 or R36 if the sum of coefficients is one or greater than one and it is obtained by dividing the concentration of each chemical substance in the chemical product by its lowest concentration limit:

$$\Sigma (P_{R35}/L_{R35-R36} + P_{R34}/L_{R34-R36} + P_{R41}/L_{R41-R36} + P_{R36}/L_{R36-R36}) \geq 1, \text{ where}$$

P<sub>R35</sub>, P<sub>R34</sub> and P<sub>R38</sub> – concentration of each corrosive substance with the characterisation of the effect of the substance R35 and R34, irritant substance with the characterisation of the effect of the substance R38 and R41 in the product (in percentage by weight);

$L_{R35-R36}$ ,  $L_{R34-R36}$ ,  $L_{R41-R36}$  and  $L_{R36-R36}$  – limit values specified for each irritant and corrosive substance (in percent);

4.5.1. if in the list of dangerous chemical substances no other limit values for the substance have been indicated, the following values shall be used:

$L_{R35-R36} : 1\%$ ;  
 $L_{R34-R36} : 5\%$ ;  
 $L_{R41-R36} : 5\%$ ;  
 $L_{R36-R36} : 20\%$ ;

4.5.2. for gaseous chemical products:

$L_{R35-R36} : 0,02\%$ ;  
 $L_{R34-R36} : 0,5\%$ ;  
 $L_{R41-R36} : 0,5\%$ ;  
 $L_{R36-R36} : 5\%$ ;

4.6. a chemical product shall be classified as irritant to respiratory system with the characterisation of the effect of the chemical substance R37 if the sum of coefficients is one or greater than one and it is obtained by dividing the concentration of each irritant chemical substance in the chemical product by the lowest concentration limit thereof:

$$(P_{R37}/L_{R37-R37}) \geq 1, \text{ where}$$

$P_{R37}$  – concentration of each irritant substance with the characterisation of the effect of the chemical substance R37 in the product (in percentage by weight);

$L_{R37-R37}$  – limit values (in percentage by weight);

4.6.1. if in the list of dangerous chemical substances no other limit value for the substance has been indicated, the following value shall be used:

$L_{R37-R37} : 20\%$ ;

4.6.2. for gaseous chemical products:

$L_{R37-R37} : 5\%$ .

Minister for Environmental Protection and Regional Development

V. Makarovs

## **Criteria for Classification and Labelling of Sensitising Chemical Substances and Chemical Products**

1. Chemical substances and chemical products shall be classified as sensitising, labelled with the symbol of danger (Xn) and the indication of danger "kaitīgs" [harmful], as well as have at least one of the following characterisations of the effect of the chemical substance indicated:

1.1. **may cause sensitisation by inhalation** (R42). Shall be indicated:

1.1.1. for chemical substances and chemical products which may cause hypersensitivity (there is practical evidence) when inhaled;

1.1.2. for isocyanates, except for the cases when there is evidence that they do not cause hypersensitivity when inhaled; or

1.1.3. for chemical substances and chemical products which have positive results in appropriate tests with experimental animals;

1.2. **may cause sensitisation by skin contact** (R43). Shall be indicated for chemical substances and chemical products if:

1.2.1. there is practical evidence that the relevant chemical substance or chemical product by skin contact causes hypersensitivity in a significant number of cases; or

1.2.2. there are positive results in appropriate tests with experimental animals.

2. Sensitising chemical products shall be classified:

2.1. in accordance with the correspondence of their constituents with the classification prescribed in Paragraph 1 of this Annex;

2.2. in accordance with Table 1 of this Annex. The limit concentration set in the Table shall be used if the list of dangerous chemical substances does not specify another concentration limit.

Table 1

Classification of the chemical substance	Classification of the chemical product	
	sensitising with the characterisation of the effect of the chemical substance R42	sensitising with the characterisation of the effect of the chemical substance R43
sensitising with the characterisation of the effect of the chemical substance R42	$c \geq 1\%$ with the characterisation of the effect of the chemical substance R42 obligatory	
sensitising with the characterisation of the effect of the chemical substance R43		$c \geq 1\%$ with the characterisation of the effect of the chemical substance R43 obligatory

3. Sensitising gaseous chemical products shall be classified in accordance with the individual concentration limit specified in Table 2 of this Annex.

Table 2

Classification of the chemical substance	Classification of the chemical product	
	sensitising with the characterisation of the effect of the chemical substance R42	sensitising with the characterisation of the effect of the chemical substance R43
Sensitising with the characterisation of the effect of the chemical substance R42	$c \geq 0,2\%$ with the characterisation of the effect of the chemical substance R42 obligatory	
Sensitising with the characterisation of the effect of the chemical substance R43		$c \geq 0,2\%$ with the characterisation of the effect of the chemical substance R43 obligatory

Minister for Environmental Protection and Regional Development

V. Makarovs

## **Criteria for Classification and Labelling of Carcinogenic, Mutagenic Chemical Substances and Chemical Products and Chemical Substances and Chemical Products Toxic to Reproduction**

1. Carcinogenic chemical substances shall be divided into the following categories:

1.1. carcinogenic chemical substances of category 1 – the carcinogenic effect thereof on humans is proven. There is sufficient evidence to substantiate a causal relationship between human contact with a chemical substance and the development of a malignant tumour;

1.2. carcinogenic chemical substances of category 2 – are regarded as carcinogenic to humans. There is sufficient evidence to assume that human contact with a chemical substance may promote the development of malignant tumours, which evidence is based on:

1.2.1. extensive long-term studies with animals; and

1.2.2. other appropriate information;

1.3. carcinogenic chemical substances of category 3 – may promote the development of malignant tumour in humans but the information regarding the nature and intensity of the effect of the chemical substance is insufficient to place the chemical substance in categories 1 or 2.

2. Carcinogenic chemical substances:

2.1. carcinogenic chemical substances and chemical products of categories 1 and 2 shall be labelled with the symbol of danger (T) and the following shall be indicated:

2.1.1. the characterisation of the effect of the substance "kancerogēna ķīmiskā viela" [may cause cancer] (R45). Shall be indicated for all carcinogenic chemical substances and chemical products of category 1 and 2, except for chemical substances and chemical products which correspond to the characterisation of the effect of the chemical substances R49;

2.1.2. the characterisation of the effect of the substance "ieelpojot var izraisīt ļaundabīgus audzējus" [may cause cancer by inhalation] (R49). Shall be indicated for chemical substances and chemical products which increase the risk of malignant tumours if the relevant substance is inhaled (for example, in the form of dust or vapour) but other type of contact does not increase the risk of malignant tumours;

2.2. carcinogenic chemical substances and chemical products of category 3 shall be labelled with the symbol of danger (Xn) and have the characterisation of the effect of the substance "kancerogenitāte ir daļēji pierādīta" [limited evidence of a carcinogenic effect] (R40) indicated;

2.3. additional criteria for classification of carcinogenic chemical substances:

2.3.1. carcinogenic chemical substances shall be placed into category 1 on the basis of the results of epidemiological study. Carcinogenic chemical substances shall be placed into category 2 and 3 mainly on the basis of the results obtained in studies with animals;

2.3.2. carcinogenic chemical substances shall be placed into category 2 on the basis of results obtained in studies with at least two animal species or one animal species



if there is additional information regarding the carcinogenic effect of the chemical substance (for example, genotoxicity data of the chemical substance, metabolic studies of the chemical substance) or the molecules or the composition of the chemical substance are similar to known carcinogens, and there are data from epidemiological studies which assume that the chemical substance may be carcinogenic;

2.3.3. category 3 of carcinogenic chemical substances shall have the following sub-categories:

2.3.3.1. chemical substances properties of which are well investigated but the carcinogenic effect is not sufficiently substantiated to place them in category 2; and

2.3.3.2. chemical substances properties of which are not substantially investigated and cannot be interpreted unequivocally but it is possible that the chemical substance may cause a malignant tumour to humans. This classification shall be regarded as provisional and further studies shall be necessary in order to determine the properties of the chemical substance;

2.3.4. when deciding whether a chemical substance shall be placed into category 2 or 3 of carcinogenic chemical substances, the chemical substance shall be placed into category 3 if:

2.3.4.1. carcinogenic effects are observed only when very high doses of the chemical substance are used which exceed the maximal tolerated dose (the maximal tolerated dose is characterised by toxic effects that although do not reduce the lifespan, cause physical changes);

2.3.4.2. under test conditions of the properties of the chemical substance the tumour develops only when using very high doses of the chemical substance and only in organs in which the probability of spontaneous tumour formation is high;

2.3.4.3. a tumour develops only at the site where the chemical substance is administered or in very sensitive test systems;

2.3.4.4. the chemical substance is not genotoxic under in vivo and in vitro test conditions; or

2.3.4.5. the chemical substance induces malignant tumours to experimental animals due to specific metabolic processes that are not typical to the human organism;

2.4. a chemical substance shall not be regarded as carcinogenic if:

2.4.1. there is unequivocal evidence that biochemical mechanisms that induce tumours to experimental animals do not function in the human organism;

2.4.2. it is proven that the chemical substance causes liver tumours only in particularly sensitive species of mice; or

2.4.3. the only evidence of tumour occurrence is the formation of neoplasms at sites where the possibility of spontaneous tumour formation is high.

3. Mutagenic chemical substances shall be divided into the following categories:

3.1. mutagenic chemical substances of category 1 — the mutagenic effect on humans is proven. There is sufficient evidence to justify the causal relationship between human contact with the substance and the occurrence of heritable genetic defects;

3.2. mutagenic chemical substances of category 2 – are regarded as mutagenic to humans. There is sufficient evidence to assume that human contact with the chemical substance may promote the occurrence of heritable genetic defects which evidence is based on:

- 3.2.1. extensive long-term studies with animals; and
- 3.2.2. other appropriate information;

3.3. mutagenic chemical substances of category 3 – are considered as potentially mutagenic to humans but the information regarding the nature and intensity of the effect of the chemical substance is insufficient to place the chemical substance into category 1 or 2.

4. Mutagenic chemical substances:

4.1. mutagenic chemical substances of category 1 and 2 shall be labelled with the symbol of danger (T) and have the characterisation of the effect of the chemical substance "var radīt pārmantojamus ģenētiskus defektus" [may cause heritable genetic damage] (R46) indicated;

4.2. mutagenic chemical substances of category 3 shall be labelled with the symbol of danger (Xn) and have the characterisation of the effect of the chemical substance "iespējams neatgriezeniskas iedarbības risks" [possible risk of irreversible effects] (R68) indicated;

4.3. additional criteria for classification of mutagenic chemical substances:

4.3.1. mutagenic chemical substances shall be placed into category 1 on the basis of the results of epidemiological studies (at present no such chemical substances are known);

4.3.2. mutagenic chemical substances shall be placed into category 2 on the basis of the study results that verify:

4.3.2.1. mutagenic effect of the chemical substance;

4.3.2.2. other effects related to mutagenicity on germ cells in vivo; or

4.3.2.3. that the chemical substance causes mutation in somatic cells of mammals in vivo tests if the chemical substance or metabolites thereof may reach the germ cells;

4.4. mutagenic chemical substances shall be placed in category 3 on the basis of study results that verify:

4.4.1. mutagenic effect of the chemical substance; or

4.4.2. other effects related to mutagenicity on somatic cells of mammals in vivo tests;

4.5. chemical substances whose mutagenic effects have only been determined in one or some in vivo tests normally shall not be regarded as mutagenic. However, if the constitution of the chemical substance or the composition of the chemical product is similar to known mutagenic substances, the chemical substance shall be placed into category 3.

5. Chemical substances toxic for reproduction shall be divided into the following categories:

5.1. chemical substances toxic for reproduction of category 1 – the adverse effect on the human reproductive capacity is proven. There is sufficient evidence to substantiate the causal relationship between human contact with the chemical substance and human infertility or toxic effect on the development of the foetus.

5.2. chemical substances toxic for reproduction of category 2 – it is considered that they adversely affect human reproductive capacity. There is sufficient evidence to assume that human contact with the chemical substance may promote non-heritable adverse effects on reproductive capacity which evidence is based on:

5.2.1. animal studies which have verified the adverse effects on the reproductive capacity without other toxic effect or adverse effect on the reproductive capacity which manifests itself as another toxic effect, using the same doses, and there are no secondary non-specific consequences of the other toxic effect; and

5.2.2. other relevant information;

5.3. chemical substances toxic for reproduction of category 2 which are considered as toxic during the foetus development process. There is sufficient evidence to assume that human contact with the chemical substance may cause toxic effects on the foetus development which evidence is based on:

5.3.1. animal studies where adverse effects on the foetal development have been verified without other toxic effects on mother or adverse effects on the reproductive capacity which is manifested as another toxic effect, using the same doses, and there are no secondary non-specific consequences of the other toxic effects; and

5.3.2. other relevant information;

5.4. chemical substances toxic for reproduction of category 3 – cause suspicion regarding the effect on the human reproductive capacity on the basis of the following information:

5.4.1. animal studies which have verified adverse effects on the reproductive capacity without other toxic effects or adverse effects on the reproductive capacity which manifest themselves as other toxic effects, using the same doses, and there are no secondary non-specific consequences of the relevant toxic effects. Nevertheless, the information is not sufficient to place the chemical substance into category 2; and

5.4.2. other relevant information.

6. Chemical substances toxic for reproduction:

6.1. chemical substances toxic for reproduction of category 1 and 2 shall be labelled with the symbol of danger (T) and have at least one of the following characterisations of the effect of the chemical substance indicated:

6.1.1. **may impair fertility** (R60). Shall be indicated for chemical substances which may adversely affect the human reproductive capacity or cause such effect; or

6.1.2. **may cause harm to the unborn child** (R61). Shall be indicated for chemical substances that adversely affect the development of the foetus or may cause such effect;

6.2. chemical substances toxic for reproduction of category 3 shall be labelled with the symbol of danger (Xn) and have at least one of the following characterisations of the effect of the chemical substance indicated:

6.2.1. **possible risk of impaired fertility** (R62). Shall be indicated for chemical substances which may adversely affect the human reproductive capacity; or

6.2.2. **possible risk of harm to the unborn child** (R63). Shall be indicated for chemical substances that may adversely affect the development of the foetus;

6.3. an additional criterion for classification of chemical substances toxic for reproduction — reproductive toxicity includes impairment of male and female reproductive functions or capacity and the occurrence of such non-inheritable harmful effects on the progeny:

6.3.1. effects on male or female fertility – adverse effects on libido, sexual behaviour, any aspect of spermatogenesis or oogenesis, or on hormonal activity or physiological response which may interfere with the capacity to fertilise, fertilisation itself or the development of the fertilised ovum up to and after implantation;

6.3.2. effects on the development of the foetus (in the widest sense of the word) – any effect related to the development of a child, both before and after birth, for example, reduced body weight, growth and developmental retardation, toxic effects on organs, death, abortion, structural and functional defects of the foetus, as well as impaired development after birth and up to puberty;

6.4. chemical substances toxic for reproduction shall be placed into category 1 (effects on the reproductive capacity and/or foetal development) on the basis of the results of epidemiological studies;

6.5. chemical substances toxic for reproduction shall be placed into category 2 or 3 on the basis of results obtained in studies with animals. In vitro studies on avian eggs shall be regarded as supportive evidence and they may be used for classification only in exceptional cases if the results of in vivo studies are lacking;

6.6. positive results in animal studies shall not confirm significant effects on humans if the doses administered are very high and there are toxicokinetic differences or the route of administration of the chemical substance is not appropriate for humans. In the cases referred to the chemical substance shall be placed into category 3 or not classified altogether;

6.7. effects on the reproductive capacity:

6.7.1. in order to place a chemical substance toxic for reproduction into category 2 there shall be safe evidence obtained in studies with one animal species and supporting evidence on the mechanism of action or site of action, or the relevant chemical substance shall chemically be similar to other known agents or there shall be other information which would allow to conclude that adverse effects on the reproductive capacity would be related to humans;

6.7.2. if the evidence has been obtained only in studies with one animal species (there is no supporting evidence), the chemical substance toxic for reproduction shall be placed into category 3. In such case the relevant chemical substance may only be placed into category 2 if there is evidence that the specific toxicity for the reproductive system is known, and it shall be necessary to have supporting evidence on the mechanism of action of the chemical substance in order to be able to relate it to the effects on humans;

6.8. toxicity of the foetal development:

6.8.1. in order to place a chemical substance toxic for reproduction into category 2 it shall be necessary to have safe evidence obtained in studies with one or several animal species. Since adverse effects may occur also as a secondary consequence of maternal toxicity (for example, reduced food or water intake, stress, lack of care, deficit caused by the diet, intercurrent infections) it is very important that the evidence is obtained in well-organised studies not affected by maternal toxicity. The route of exposure of the relevant chemical substance is also important: an injection or intraperitoneal administration that may cause local damage to the uterus and such results may be doubtful in classification;

6.8.2. placement of a chemical substance toxic for reproduction into category 3 or none of the categories may be substantiated only by the effect registered as small changes due to spontaneous defects or as small changes in comparison with general variants in postnatal developmental assessments;

6.9. effects during lactation period:

6.9.1. chemical substances which are classified as toxic for reproduction and which affect lactation shall also have the characterisation of the effect of the chemical

substance "may cause harm to breastfed babies" (R64) indicated. If toxic effects on offspring occur only when using mother's milk or from direct exposure of a child to the chemical substance, the relevant chemical substance shall not be regarded as toxic for reproduction if the development of the offspring has not been impaired;

6.9.2. the characterisation of the effect of the substance R64 shall be indicated on the basis of:

6.9.2.1. kinetic toxicity studies which prove the possibility of the presence of the chemical substance in mother's milk in potentially toxic levels;

6.9.2.2. results of one or two generation studies in experimental animals which prove the adverse effects on the offspring due to the changes in the chemical content of milk; and

6.9.2.3. evidence that proves a risk to babies during the lactation period.

7. Carcinogenic chemical products of category 1 and 2 shall be labelled with the symbol of danger (T) and the characterisation of the effect of the chemical substance R45 or R49 shall be indicated for chemical products which contain one or more carcinogenic chemical substances of category 1 or 2 with the characterisation of the effect R45 or R49 in a concentration equal to or greater than:

7.1. the concentration specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

7.2. the concentration specified in Table 1 and 2 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated.

8. Carcinogenic chemical products of category 3 shall be labelled with the symbol of danger (Xn) and the characterisation of the effect of chemical substances R40 shall be indicated for chemical products containing one or more carcinogenic chemical substances of category 3 with the characterisation of the effect of chemical substance R40 in a concentration equal to or greater than:

8.1. the concentration specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

8.2. the concentration specified in Table 1 and 2 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated.

9. Mutagenic chemical products of category 1 and 2 shall be labelled with the symbol of danger (T) and the characterisation of the effect of the chemical substance R46 shall be indicated for chemical products containing one or more mutagenic chemical substances of category 1 and 2 with the characterisation of the effect of the chemical substance R46 in a concentration equal to or greater than:

9.1. the concentration specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

9.2. the concentration specified in Table 1 and 2 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated.

10. Mutagenic chemical products of category 3 shall be labelled with the symbol of danger (Xn) and the characterisation of the effect of the chemical substance R40 shall be indicated for chemical products containing one or more mutagenic chemical substances of category 3 with the characterisation of the effect of the chemical substance R40 in a concentration equal to or greater than:

10.1. the concentration specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

10.2. the concentration specified in Table 1 and 2 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated.

11. Chemical products toxic for reproduction of category 1 and 2 shall be labelled with the symbol of danger (T) and the characterisation of the effect of the chemical substance R60 shall be indicated for chemical products containing one or more chemical substances toxic for reproduction of category 1 and 2 with the characterisation of the effect of the chemical substance R60 in a concentration equal to or greater than:

11.1. the concentration specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

11.2. the concentration specified in Table 1 and 2 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated.

12. Chemical products toxic for reproduction of category 3 shall be labelled with the symbol of danger (Xn) and the characterisation of the effect of the chemical substance R62 shall be indicated for chemical products containing one or more chemical substances toxic for reproduction of category 3 with the characterisation of the effect of the chemical substance R62 in a concentration equal to or greater than:

12.1. the concentration specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

12.2. the concentration specified in Table 1 and 2 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated.

13. Chemical products toxic for reproduction of category 1 and 2 shall be labelled with the symbol of danger (T) and the characterisation of the effect of the chemical substance R61 shall be indicated for chemical products containing one or more chemical substances toxic for reproduction of category 1 and 2 with the characterisation of the effect of the chemical substance R61 in a concentration equal to or greater than:

13.1. the concentration specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

13.2. the concentration specified in Table 1 and 2 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated.

14. Chemical products toxic for reproduction of category 3 shall be labelled with the symbol of danger (Xn) and the characterisation of the effect of the chemical substance R63 shall be

indicated for chemical products containing one or more chemical substances toxic for reproduction of category 3 with the characterisation of the effect of the chemical substance R63 in a concentration equal to or greater than:

14.1. the concentration specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

14.2. the concentration specified in Table 1 and 2 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated.

15. Concentration limits (in percentage by weight) of chemical substances contained by carcinogenic, mutagenic chemical products and chemical products toxic for reproduction at which the relevant harmful effect occurs are specified in Table 1 of this Annex. Chemical products shall have the following symbols of danger and characterisations of the effect of the chemical substance indicated:

15.1. carcinogenic chemical substances of category 1 and 2 – T; R45 or R49;

15.2. carcinogenic chemical substances of category 3 – Xn; R40;

15.3. mutagenic chemical substances of category 1 and 2 – T; R46;

15.4. mutagenic chemical substances of category 3 – Xn; R40;

15.5. chemical substances toxic for reproduction causing infertility of category 1 and 2 – T; R60;

15.6. chemical substances toxic for reproduction causing impaired development of category 1 and 2 – T; R60;

15.7. chemical substances toxic for reproduction causing infertility of category 3 – Xn; R62;

15.8. chemical substances toxic for reproduction causing impaired development of category 3 – Xn; R63.

Table 1

Classification of chemical substances	Classification of chemical products	
	Categories 1 and 2	Category 3
1	2	3
Carcinogenic chemical substances of category 1 or 2 with the characterisation of the effect of the chemical substance R45 or R49	concentration $\geq 0,1\%$ carcinogenic R45 or R49 obligatory	
Carcinogenic chemical substances of category 3 with the characterisation of the effect of the chemical substance R40		concentration $\geq 1\%$ carcinogenic R40 obligatory
Mutagenic chemical substances of category 1 or 2 with the characterisation of the effect of the chemical substance R46	concentration $\geq 0,1\%$ mutagenic R46 obligatory	

Mutagenic chemical substances of category 3 with the characterisation of the effect of the chemical substance R40		concentration $\geq$ 0,1% mutagenic R40 obligatory
Chemical substances toxic for reproduction of category 1 and 2 with the characterisation of the effect of the chemical substance R60 (fertility)	concentration $\geq$ 0,5% toxic for reproduction (fertility) R60 obligatory	
Chemical substances toxic for reproduction of category 3 with the characterisation of the effect of the chemical substance R62 (fertility)		concentration $\geq$ 5% toxic for reproduction (fertility) R62 obligatory
Chemical substances toxic for reproduction of category 1 and 2 with the characterisation of the effect of the chemical substance R61 (development)	concentration $\geq$ 5% toxic for reproduction (development) R61 obligatory	
Chemical substances toxic for reproduction of category 3 with the characterisation of the effect of the chemical substance R63 (development)		concentration $\geq$ 5% toxic for reproduction (development) R63 obligatory

16. Concentration limits (in percentage by weight) of gaseous chemical substances contained by carcinogenic, mutagenic gaseous chemical products and gaseous chemical products toxic for reproduction at which the relevant harmful effect occurs are specified in Table 2 of this Annex. Gaseous chemical products shall have the following symbols of danger and characterisations of the effect of the chemical substance indicated:

- 16.1. carcinogenic chemical substances of category 1 and 2 – T; R45 or R49;
- 16.2. carcinogenic chemical substances of category 3 – Xn; R40;
- 16.3. mutagenic chemical substances of category 1 and 2 – T; R46;
- 16.4. mutagenic chemical substances of category 3 – Xn; R40;
- 16.5. chemical substances toxic for reproduction causing infertility of category 1 and 2 – T; R60;
- 16.6. chemical substances toxic for reproduction causing impaired development of category 1 and 2 – T; R60;
- 16.7. chemical substances toxic for reproduction causing infertility of category 3 – Xn; R62;
- 16.8. chemical substances toxic for reproduction causing impaired development of category 3 – Xn; R63.

Table 2



Classification of chemical substances	Classification of chemical products	
	Categories 1 and 2	Category 3
Carcinogenic chemical substances of category 1 or 2 with the characterisation of the effect of the chemical substance R45 or R49	concentration $\geq$ 0,1% carcinogenic R45 or R49 obligatory	
Carcinogenic chemical substances of category 3 with the characterisation of the effect of the chemical substance R40		concentration $\geq$ 1% carcinogenic R40 obligatory
Mutagenic chemical substances of category 1 and 2 with the characterisation of the effect of the chemical substance R46	concentration $\geq$ 0,1% mutagenic R46 obligatory	
Mutagenic chemical substances of category 3 with the characterisation of the effect of the chemical substance R40		concentration $\geq$ 1% mutagenic R40 obligatory
Chemical substances toxic for reproduction of category 1 and 2 with the characterisation of the effect of the chemical substance R60 (fertility)	concentration $\geq$ 0,2% toxic for reproduction (fertility) R60 obligatory	
Chemical substances toxic for reproduction of category 3 with the characterisation of the effect of the chemical substance R62 (fertility)		concentration $\geq$ 1% toxic for reproduction (fertility) R62 obligatory
Chemical substances toxic for reproduction of category 1 and 2 with the characterisation of the effect of the chemical substance R61 (development)	concentration $\geq$ 0,2% toxic for reproduction (development) R61 obligatory	
Chemical substances toxic for reproduction of category 3 with the characterisation of the effect of the chemical substance R63 (development)		concentration $\geq$ 1% toxic for reproduction (development) R63 obligatory

Minister for Environmental Protection and Regional Development

V. Makarovs

## **Criteria for Classification and Labelling of Chemical Substances Dangerous for the Environment**

1. Chemical substances shall be classified as dangerous for the environment in order to warn the users regarding the threats these substances pose to ecosystems. Criteria referred to further on basically refer to hydro-ecosystems, but some chemical substances may also affect other ecosystems, for example, live organisms from soil microflora and microfauna to primates.

2. On the basis of the current level of knowledge the relevant chemical substances shall be divided into two groups taking into account the acute or long-term toxic effect thereof on aquatic and non-aquatic ecosystems.

3. Chemical substances dangerous for the aquatic environment shall be labelled and shall have the following effect characterisations of the substance indicated:

3.1. **very toxic to aquatic organisms (R50), may cause long-term adverse effects in the aquatic environment (R53)**. Both effect characterisations of the substance referred to shall be indicated:

3.1.1. for chemical substances with the following acute toxicity in the aquatic environment:

3.1.1.1. 96 h  $LC_{50} \leq 1$  mg/l (for fish);

3.1.1.2. 48 h  $\leq 1$  mg/l  $EC_{50}$  (in *Daphnia magna* test); or

3.1.1.3. 72 h  $IC_{50} \leq 1$  mg/l (in algae test);

3.1.2. for chemical substances which are stable in the environment or whose decimal logarithm of the substance octanol/water partition coefficient is  $\log P_{ow} \geq 3,0$  (except for the cases when the experimentally determined bio-concentration factor (BCF) is  $\leq 100$ ). (Bio-concentration factor (BCF) is the ratio of the concentration of a substance under balance conditions in a biological organism and the environment);

3.2. **very toxic for aquatic organisms (R50)**. Shall be indicated for chemical substances with the following acute toxicity in the aquatic environment:

3.2.1. 96 h  $\leq 1$  mg/l  $LC_{50}$  (for fish);

3.2.2. 48 h  $EC_{50} \leq 1$  mg/l (in *Daphnia magna* test); or

3.2.3. 72 h  $IC_{50} \leq 1$  mg/l (in algae test);

3.3. **toxic to aquatic organisms (R51), may cause long-term adverse effects in the aquatic environment (R53)**. Both effect characterisations of the substance referred to shall be indicated:

3.3.1. for chemical substances with the following acute toxicity in the aquatic environment:

3.3.1.1. 96 h  $LC_{50} 1$  mg/l  $< LC_{50} \leq 10$  mg/l (for fish);

3.3.1.2. 48 h  $1$  mg/l  $< EC_{50} \leq 10$  mg/l  $EC_{50}$  (in *Daphnia magna* test); or

3.3.1.3. 72 h  $IC_{50} 1$  mg/l  $< IC_{50} \leq 10$  mg/l (in algae test);

3.3.2. for chemical substances which are stable in the environment or whose decimal logarithm of the substance octanol/water partition coefficient is  $\log P_{ow} \geq 3,0$  (except for the cases when the experimentally determined BCF is  $\leq 100$ ).

3.4. **harmful to aquatic organisms (R52), may cause long-term adverse effects in the aquatic environment (R53)**. Both effect characterisations of the substance shall be indicated:

3.4.1. for chemical substances with the following acute toxicity in the aquatic environment:

3.4.1.1. 96 h  $LC_{50}$  10 mg/l  $< LC_{50} \leq 100$  mg/l (for fish);

3.4.1.2. 48 h  $EC_{50}$  10 mg/l  $< EC_{50} \leq 100$  mg/l (in *Daphnia magna* test); or

3.4.1.3. 72 h  $IC_{50}$  10 mg/l  $< IC_{50} \leq 100$  mg/l (in algae test);

3.4.2. for chemical substances which are stable in the environment;

3.5. **harmful to aquatic organisms (R52)**. Shall be indicated for chemical substances which do not meet the criteria referred to in Sub-paragraphs 3.1, 3.2, 3.3 or 3.4 of this Annex but regarding which there is reliable evidence that the toxicity thereof may endanger the structure and functioning of aquatic ecosystems;

3.6. **may cause long-term adverse effects in the aquatic environment (R53)**. Shall be indicated for chemical substances which do not meet the criteria referred to in Sub-paragraphs 3.1, 3.2, 3.3, 3.4 or 3.5 of this Annex but which on the basis of the data regarding the stability thereof in the environment, bio-accumulation potential and the properties of the potential transformation products thereof may adversely affect aquatic ecosystems.

4. Chemical substances dangerous for the non-aquatic environment which are not classified in accordance with Paragraph 3 of this Annex but which by their toxic properties, stability in the environment, the ability to accumulate in live organisms and possible transformations in the environment may present immediate danger or affect the functioning of natural ecosystems in the future, shall be labelled and have at least one of the following characterisations of the effect of the chemical substance indicated:

4.1. **toxic to flora (R54)**;

4.2. **toxic to fauna (R55)**;

4.3. **toxic to soil organisms (R56)**;

4.4. **toxic to bees (R57)**; or

4.5. **may cause long-term adverse effects in the environment (R58)**.

5. Chemical substances dangerous for the non-aquatic environment which by their toxic properties, stability in the environment and observed or possible transformations in the environment may present a danger to the stratospheric ozone layer, as well as affect its structure in the future shall be labelled and have the characterisation of the effect of the chemical substance "dangerous for the ozone layer" (R59) indicated.

Minister for Environmental Protection and Regional Development

V. Makarovs

## Criteria for Classification and Labelling of Chemical Products Dangerous for the Environment

1. Chemical products shall be classified as dangerous for the environment taking into account the concentration limit of the chemical substances contained by them. The concentration limit shall be expressed in percentage by weight, for gaseous chemical products – in percentage by volume.

### I. Classification and Labelling of Chemical Products Dangerous for the Aquatic Environment

2. Chemical products dangerous for the aquatic environment shall be labelled with the symbol of danger (N) and the indication of danger "dangerous for the environment", as well as have the characterisation of the effect of the substance R50 and R53 (R50/53) indicated:

2.1. for chemical products containing one or more chemical substances which are classified as dangerous for the environment with the characterisation of the effect of the chemical substance R50/53 in the concentration equal to or greater than:

2.1.1. the concentration limit specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

2.1.2. the concentration specified in Table 1 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated;

2.2. for chemical products containing one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R50/53 in the concentration lower than that specified in Sub-paragraph 2.1 of this Annex if:

$$\Sigma \frac{P_{N, R50/53}}{L_{N, R50/53}} \geq 1, \text{ where}$$

$P_{N, R50/53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R51/53 (in percentage by weight);

$L_{N, R50/53}$  – concentration limit of the characterisation of the effect of the chemical substance R50/53 which is indicated for each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R50/53 (in percentage by weight).

3. Chemical products dangerous for the environment which are not classified in accordance with Paragraph 2 of this Annex shall be labelled with the symbol of danger (N) and the indication of danger "dangerous for the environment", as well as have the characterisation of the effect of the substance R51 and R53 (R51/53) indicated:

3.1. for chemical products containing one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R51 and R53 (R51/53) in the concentration equal to or greater than:

3.1.1. the concentration limit specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

3.1.2. the concentration specified in Table 1 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated;

3.2. for chemical products containing one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R50/53 or R51/53 in the concentration lower than that specified in Sub-paragraph 3.1 of this Annex if:

$$\Sigma \frac{P_{N, R50/53}}{L_{N, R50/53}} + \frac{P_{N, R51/53}}{L_{N, R51/53}} \geq 1, \text{ where}$$

$P_{N, R50/53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R50/53 (in percentage by weight);

$P_{N, R51/53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R51/53 (in percentage by weight);

$L_{N, R51/53}$  – concentration limit of the characterisation of the effect of the chemical substance R51/53 which is indicated for each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R50/53 or R51/53 (in percentage by weight).

4. Chemical products dangerous for the environment which are not classified in accordance with Paragraphs 2 or 3 of this Annex shall have the characterisation of the effect of the chemical substance R52 and R53 (R52/53) indicated:

4.1. for chemical products containing one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R50/53, R51/53 or R52/53 in the concentration equal to or greater than:

4.1.1. the concentration limit specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

4.1.2. the concentration specified in Table 1 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated;

4.2. for chemical products containing one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R50/53, R51/53 or R52/53 in the concentration lower than that specified in Sub-paragraph 4.1 of this Annex if:

$$\Sigma \frac{P_{N, R50/53}}{L_{N, R50/53}} + \frac{P_{N, R51/53}}{L_{N, R51/53}} + \frac{P_{N, R52/53}}{L_{N, R52/53}} \geq 1, \text{ where}$$

$P_{N, R50/53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R50/53 (in percentage by weight);

$P_{N, R51/53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R51/53 (in percentage by weight);

$P_{N, R52/53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R52/53 (in percentage by weight);

$L_{N, R52/53}$  – concentration limit of the characterisation of the effect of the chemical substance R52/53 which is indicated for each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R50/53, R51/53 or R52/53 (in percentage by weight).

5. Chemical products dangerous for the environment which are not classified in accordance with Paragraph 2 of this Annex shall be labelled with the symbol of danger (N) and the indication of danger "dangerous for the environment", as well as have the characterisation of the effect of the substance R50 indicated:

5.1. for chemical products containing one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R50 in the concentration equal to or greater than:

5.1.1. the concentration specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or

5.1.2. the concentration specified in Table 2 of this Annex if the relevant chemical substance (substances) is not mentioned in the list of dangerous chemical substances or the concentration limit thereof has not been indicated;

5.2. for chemical products containing one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R50 in the concentration lower than that specified in Sub-paragraph 5.1 of this Annex if:

$$\sum \frac{P_{N, R50}}{L_{N, R50}} \geq 1, \text{ where}$$

$P_{N, R50}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R50 (in percentage by weight);

$L_{N, R50}$  – the concentration limit of the characterisation of the effect of the chemical substance R50 which is indicated for each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R50 (in percentage by weight);

5.3. for chemical products which contain one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R50 but which do not meet the criteria specified in Sub-paragraphs 5.1 or 5.2 of this Annex, as well as contain one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R50/53 if:

$$\Sigma \frac{P_{N, R50}}{L_{N, R50}} + \frac{P_{N, R50/53}}{L_{N, R50/53}} \geq 1, \text{ where}$$

$P_{N, R50}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R50 (in percentage by weight);

$P_{N, R50/53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R50/53 (in percentage by weight);

$L_{N, R50}$  – the concentration limit of the characterisation of the effect of the chemical substance R50 which is indicated for each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R50 or R50/53 (in percentage by weight).

6. Chemical products dangerous for the environment which are not classified in accordance with Paragraphs 2, 3, 4 or 5 of this Annex shall have the characterisation of the effect of the chemical substance R52 indicated:

6.1. for chemical products containing one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R52 in the concentration equal to or greater than:

6.1.1. the concentration limit specified in the list of dangerous chemical substances;

6.1.2. the concentration specified in Table 3 of this Annex if the relevant chemical substance (substances) is not included in the list of dangerous chemical substances or the concentration limit thereof has not been indicated;

6.2. for chemical products containing one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R52 in the concentration lower than that specified in Sub-paragraph 6.1 of this Annex if:

$$\Sigma \frac{P_{R52}}{L_{R52}} \geq 1, \text{ where}$$

$P_{R52}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R52 (in percentage by weight);

$L_{R52}$  – the concentration limit of the characterisation of the effect of the chemical substance R52 which is indicated for each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R52 (in percentage by weight).

7. Chemical products dangerous for the environment which are not classified in accordance with Paragraphs 2, 3 or 4 of this Annex shall have the characterisation of the effect of the chemical substance R53 indicated:

7.1. for chemical products containing one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R53 in the concentration equal to or greater than:

7.1.1. the concentration limit specified in the list of dangerous chemical products;

or

7.1.2. the concentration specified in Table 4 of this Annex if the relevant chemical substance (substances) is not included in the list of dangerous chemical substances or the concentration limit thereof has not been indicated;

7.2. for chemical products containing one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R53 in the concentration lower than that specified in Sub-paragraph 7.1 of this Annex if:

$$\Sigma \frac{P_{R53}}{L_{R53}} \geq 1, \text{ where}$$

$P_{R53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R53 (in percentage by weight);

$L_{R53}$  – the concentration limit of the characterisation of the effect of the chemical substance R53 which is indicated for each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R53 (in percentage by weight);

7.3. for chemical products which contain one or more dangerous chemical substances with the characterisation of the effect of the chemical substance R53 but which do not meet the criteria prescribed in Sub-paragraph 7.1 of this Annex, as well as contain one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R50/53, R51/53 or R52/53 if:

$$\Sigma \frac{P_{R53}}{L_{R53}} + \frac{P_{N, R50/53}}{L_{R53}} + \frac{P_{N, R51/53}}{L_{R53}} + \frac{P_{N, R52/53}}{L_{R53}} \geq 1, \text{ where}$$

$P_{R53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R53 (in percentage by weight);

$P_{N, R50/53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R50/53 (in percentage by weight);

$P_{N, R51/53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R51/53 (in percentage by weight);

$P_{N, R52/53}$  – the concentration in the chemical product of each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R52/53 (in percentage by weight);



$L_{R53}$  – the concentration limit of the characterisation of the effect of the chemical substance R53 which is indicated for each chemical substance dangerous for the environment with the characterisation of the effect of the chemical substance R53, R50/53, R51/53 or R52/53 (in percentage by weight).

## **II. Classification and Labelling of Chemical Products Dangerous for Non-aquatic Environment**

8. Chemical products shall be classified as dangerous for the environment, labelled with the symbol of danger (N) and the indication of danger "dangerous for the environment", and the chemical products, which are not classified in accordance with Annex 9, Paragraph 3 of these Regulations but according to the toxic properties thereof, stability in the environment, ability to accumulate in live organisms and to transform in the environment may cause immediate danger or affect the functioning of natural ecosystems in the future, shall have at least one of the following characterisations of the effect of the substance indicated:

- 8.1. **toxic to flora** (R54);
- 8.2. **toxic to fauna** (R55);
- 8.3. **toxic to soil organisms** (R56);
- 8.4. **toxic to bees** (R57); or
- 8.5. **may cause long-term adverse effects in the environment** (R58).

9. Chemical products shall be classified as dangerous for the environment, labelled with the symbol of danger (N) and the indication of danger "dangerous for the environment", as well as have the characterisation of the effect of the chemical substance "dangerous for the ozone layer" (R59) indicated for chemical products which contain one or more chemical substances dangerous for the environment with the symbol of danger N and the characterisation of the effect of the chemical substance R59 in the concentration equal to or greater than:

- 9.1. the concentration specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or
- 9.2. the concentration specified in Table 5 of this Annex if the relevant chemical substance (substances) is not included in the list of dangerous chemical substances or the concentration limit thereof has not been indicated.

10. Chemical products shall be classified as dangerous for the environment and have the characterisation of the effect of the chemical substance R59 indicated for chemical products which contain one or more chemical substances dangerous for the environment with the characterisation of the effect of the chemical substance R59 in the concentration equal to or greater than:

- 10.1. the concentration limit specified for the relevant chemical substance (substances) in the list of dangerous chemical substances; or
- 10.2. the concentration set out in Table 5 of this Annex if the relevant chemical substance (substances) is not included in the list of dangerous chemical substances or the concentration limit thereof has not been indicated.

### III. Environmental Hazard of Chemical Products Depending on Concentration Limits

11. Chemical products dangerous for the aquatic environment depending on the concentration limits set out in Tables 1, 2, 3 and 4 of this Annex (in percentage by weight) shall be classified in accordance with the concentration of the chemical substances contained by the chemical products.

Table 1

#### Acute toxicity for the aquatic environment and long-term adverse effects

Classification of the chemical substance	Classification of the chemical product		
	N, R50/53	N, R51/53	R52/53
N; R50/53	$C_n \geq 25\%$	$2,5\% \leq C_n < 25\%$	$0,25\% \leq C_n < 2,5\%$
N; R51/53		$C_n \geq 25\%$	$2,5\% \leq C_n < 25\%$
R52/53			$C_n \geq 25\%$

Table 2

#### Acute toxicity for the aquatic environment

Classification of the chemical substance	Classification of the chemical product
	N; R50
N; R50	$C_n \geq 25\%$
N; R50/53	$C_n \geq 25\%$

Table 3

#### Toxicity for the aquatic environment

Classification of the chemical substance	Classification of the chemical product
	R52
R52	$C_n \geq 25\%$

Table 4

#### Long-term adverse effects

Classification of the chemical substance	Classification of the chemical product
	R53
R53	$C_n \geq 25\%$
N; R50/53	$C_n \geq 25\%$
N; R51/53	$C_n \geq 25\%$

R52/53	$C_n \geq 25\%$
--------	-----------------

12. Chemical products dangerous for the non-aquatic environment depending on the concentration limits specified in Table 5 and 6 of this Annex (in percentage by weight or for gaseous substances – in percentage by volume) shall be classified according to the concentration of the chemical substances contained by the chemical products.

Table 5

**Dangerous for the ozone layer**

Classification of the chemical substance	Classification of the chemical product N; R59
N with R59	$C_n \geq 0,1\%$

Table 6

Classification of the chemical substance	Classification of the chemical product R59
R59	$C_n \geq 0,1\%$

Minister for Environmental Protection and Regional Development

V. Makarovs

## **Other Criteria for Classification of Chemical Substances and Chemical Products**

Chemical substances and chemical products classified in accordance with Annexes 4, 5, 6, 7, 8, 9 and 10 of these Regulations may have the following additional effect characterisations of the chemical substance indicated:

1. **Contact with water liberates toxic gas (R29)**. Shall be indicated for chemical substances and chemical products that evolve very toxic or toxic gases in potentially dangerous amounts in contact with water or water vapour (for example, aluminium phosphide, phosphorus pentasulphide).

2. **Contact with acids liberates toxic gas (R31)**. Shall be indicated for chemical substances and chemical products that evolve toxic gases in potentially dangerous amounts when reacting with acids (for example, sodium hypochlorite, barium polysulphide). For chemical substances that may be used for domestic purposes it is advisable to indicate the designation of safety requirements S50.

3. **Contact with acids liberates very toxic gas (R32)**. Shall be indicated for chemical substances and chemical products evolve toxic gases in potentially dangerous amounts when reacting with acids (for example, salts of hydrogen cyanide, sodium azide). For chemical substances that may be used for domestic purposes it is advisable to indicate the designation of safety requirements S50.

4. **Danger of cumulative effects (R33)**. Shall be indicated for chemical substances and chemical products which may accumulate in the human body and may affect the human health, however, not so seriously as to indicate the characterisation of the effect of the chemical substance R48 for the relevant chemical substance or chemical product.

5. **May cause harm to breastfed babies (R64)**. Shall be indicated for chemical substances and chemical products that may accumulate in the mother's organism in such concentration that may impair the health of the breastfed child.

6. **Repeated exposure may cause skin dryness or cracking (R66)**. Shall be indicated for chemical substances and chemical products which may cause skin dryness, flaking and cracking but which is not related to the effect characterisation of the substance R38 and is based on:

- 6.1. practical observations under normal conditions of use; or
- 6.2. relevant experimentation data regarding the potential effect on the skin.

7. **Vapours may cause drowsiness and dizziness (R67)**. Shall be indicated for chemical substances and chemical products that may cause impairment of the central nervous system by

inhalation and which are not classified as toxic by inhalation (R20, R23, R26, R40/20, R39/23 or R39/26) on the basis of:

7.1. data obtained in experiments with animals and unequivocally confirming impairment of the central nervous system, for example, drowsiness, lack of co-ordination (including loss of righting reflex) and ataxia:

7.1.1. if the concentration and exposure time does not exceed 20 mg/l in four hours; or

7.1.2. if the dose concentration administered to animals during a time period  $\leq 4$  h against the saturated vapour concentration at 20 °C is  $\leq 1/10$ ;

7.2. practical observation of humans (for example, drowsiness, reduced alertness, loss of reflexes, lack of co-ordination, vertigo) under conditions which may be unambiguously compared with the specified exposure conditions on animals.

Minister for Environmental Protection and Regional Development

V. Makarovs

## **Designations and Combined Designations of Safety Requirements**

### 1. Designations of safety requirements

- 1.1. S1 Keep locked up
- 1.2. S2 Keep out of the reach of children
- 1.3. S3 Keep in a cool place
- 1.4. S4 Keep away from living quarters
- 1.5. S5 Keep contents under ... (appropriate liquid to be specified by the manufacturer)
- 1.6. S6 Keep under ... (inert gas to be specified by the manufacturer)
- 1.7. S7 Keep container tightly closed
- 1.8. S8 Keep container dry
- 1.9. S9 Keep container in a well-ventilated place
- 1.10. S12 Do not keep the container sealed
- 1.11. S13 Keep away from food, drink and animal feed
- 1.12. S14 Keep away from ... (incompatible substances to be indicated by the manufacturer)
- 1.13. S15 Keep away from heat
- 1.14. S16 Keep away from sources of ignition – No smoking
- 1.15. S17 Keep away from combustible material
- 1.16. S18 Handle and open container with care
- 1.17. S20 When using the substance do not eat or drink
- 1.18. S21 When using the substance do not smoke
- 1.19. S22 Do not breathe dust
- 1.20. S23 Do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer)
- 1.21. S24 Avoid contact with skin
- 1.22. S25 Avoid contact with eyes
- 1.23. S26 In case of contact with eyes, rinse immediately with a large quantity of water and seek medical advice
- 1.24. S27 Take off immediately all contaminated clothing
- 1.25. S28 After contact with skin, wash immediately with a large quantity of ... (to be specified by the manufacturer)
- 1.26. S29 It is prohibited to pour into drains
- 1.27. S30 It is strictly prohibited to add water to this product
- 1.28. S33 Take precautionary measures against static discharges
- 1.29. S34 Avoid shock and friction
- 1.30. S35 This material and the container thereof must be disposed of in a safe way
- 1.31. S36 Wear suitable protective clothing
- 1.32. S37 Wear protective gloves
- 1.33. S38 In case of insufficient ventilation, wear suitable respiratory equipment
- 1.34. S39 Wear eye or face protection

- 1.35. S40 To clean the floor and all contaminated objects, use ... (to be specified by the manufacturer)
- 1.36. S41 In case of fire and/or explosion do not breathe fumes
- 1.37. S42 During spraying wear the following suitable respiratory equipment (appropriate wording to be specified by the manufacturer)
- 1.38. S43 In case of fire, use ... (indicate the precise type of fire-fighting equipment. If water increases risk, add a notification "Aizliegts izmantot ūdeni" [It is prohibited to use water])
- 1.39. S45 In case of an accident or if you feel unwell, seek medical advice immediately (show the label where possible)
- 1.40. S46 If swallowed, seek medical advice immediately and show this container or label
- 1.41. S47 Keep at temperature not exceeding ... °C (to be specified by the manufacturer)
- 1.42. S48 Keep wet with ... (appropriate material to be specified by the manufacturer)
- 1.43. S49 Keep only in the original container
- 1.44. S50 Do not mix with ... (to be specified by the manufacturer)
- 1.45. S51 Use only in well-ventilated areas
- 1.46. S52 Not recommended for interior use on large surface areas
- 1.47. S53 Avoid exposure — obtain special instructions before use
- 1.48. S56 Dispose of this material and the container thereof to hazardous or special waste collection point
- 1.49. S57 Use appropriate container to avoid environmental contamination
- 1.50. S58 To be disposed of as hazardous waste
- 1.51. S59 Refer to manufacturer or supplier for information regarding recovery or recycling
- 1.52. S60 This material and the container thereof must be disposed of as hazardous waste
- 1.53. S61 Avoid release into the environment. Refer to special instructions or utilise safety data sheets
- 1.54. S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label
- 1.55. S63 In case of accident by inhalation: remove casualty to fresh air and keep at rest
- 1.56. S64 If swallowed, rinse mouth with water (only if the person is conscious)

## 2. Combined designations of safety requirements

- 2.1. S1/2 Keep locked and out of the reach of children
- 2.2. S3/7 Keep container tightly closed in a cool place
- 2.3. S3/9 Keep in a cool, well ventilated place
- 2.4. S3/9/14 Keep in a cool, well-ventilated place away from ... (incompatible substances to be indicated by the manufacturer)
- 2.5. S3/9/14/49 Keep only in the original container in a cool, well-ventilated place away from ... (incompatible materials to be indicated by the manufacturer)
- 2.6. S3/9/49 Keep only in the original container in a cool, well-ventilated place
- 2.7. S3/14 Keep in a cool place away from ... (incompatible substances to be indicated by the manufacturer)
- 2.8. S7/8 Keep container tightly closed and dry
- 2.9. S7/9 Keep container tightly closed and in a well-ventilated place

- 2.10. S7/47 Keep container tightly closed and at a temperature not exceeding .. °C (to be specified by the manufacturer)
- 2.11. S20/21 Do not eat, drink or smoke while using the substance
- 2.12. S24/25 Avoid contact with skin and eyes
- 2.13. S27/28 After contact with skin, take off immediately all contaminated clothing and wash immediately with a large quantity of ... (to be specified by the manufacturer)
- 2.14. S29/35 It is prohibited to pour the substance into drains; dispose of this material and the container thereof in a safe way
- 2.15. S29/56 It is prohibited to pour the substance or product into drains, dispose of the substance, product or the container thereof at a hazardous or special waste collection point
- 2.16. S36/37 Wear suitable protective clothing and protective gloves
- 2.17. S36/39 Wear suitable protective clothing and eye or face protection
- 2.18. S37/39 Wear suitable protective gloves and eye or face protection
- 2.19. S36/37/39 Wear suitable protective clothing, protective gloves and eye or face protection
- 2.20. S47/49 Keep only in the original container at a temperature not exceeding ... °C (to be specified by the manufacturer)

Minister for Environmental Protection and Regional Development

V. Makarovs



## **Criteria for Selection of Designations of Safety Requirements**

Designations of safety requirements for chemical substances and chemical products shall be selected according to the following criteria:

**1. S1 – keep locked up:**

1.1. shall be used to mark very toxic, toxic and corrosive chemical substances and chemical products;

1.2. criterion for use – obligatory for marking of very toxic, toxic and corrosive chemical substances and chemical products used for domestic purposes.

**2. S2 – keep out of the reach of children:**

2.1. shall be used to mark all dangerous chemical substances and chemical products;

2.2. criterion for use – obligatory for marking of all dangerous chemical substances and chemical products used for domestic purposes, except for the chemical substances and chemical products only classified as dangerous for the environment.

**3. S3 – keep in a cool place:**

3.1. shall be used to mark such organic peroxides and other dangerous chemical substances and chemical products whose boiling point is 40 °C or lower;

3.2. criteria for use – obligatory for marking of organic peroxides (except for the cases when the designation of safety requirements S47 is used), as well as recommended for marking of other dangerous chemical substances and chemical products whose boiling point is 40 °C or lower.

**4. S4 – keep away from living quarters:**

4.1. shall be used to mark very toxic and toxic chemical substances and chemical products;

4.2. criteria for use – recommended for marking of very toxic and toxic chemical substances and chemical products in addition to the designation of safety requirements S13, for example, if there is an inhalation risk and the relevant chemical substances or chemical products may not be stored in living quarters, however, the condition referred to shall not preclude proper use of the chemical substances and chemical products in living quarters.

**5. S5 – keep contents under ...** (appropriate liquid to be specified by the manufacturer):

5.1. shall be used to mark spontaneously flammable solid chemical substances and chemical products;

5.2. criterion for use – special cases, for example, marking of sodium, potassium or white phosphorous.

**6. S6 – keep under ...** (inert gas to be specified by the manufacturer):

6.1. shall be used to mark dangerous chemical substances and chemical products that are to be kept under an inert atmosphere;

6.2. criterion for use – special cases, for example, marking of organo-metallic compounds.

**7. S7 – keep container tightly closed:**

7.1. shall be used to mark:

7.1.1. organic peroxides;

7.1.2. chemical substances and chemical products which may give off very toxic, toxic, harmful or extremely flammable gases;

7.1.3. chemical substances and chemical products which in contact with moisture may give off extremely flammable gases; and

7.1.4. highly flammable solid chemical substances;

7.2. criteria for use – obligatory for marking of organic peroxides, recommended for marking of other dangerous chemical substances and chemical products referred to in Sub-paragraph 7.1 of this Annex.

**8. S8 – keep container dry:**

8.1. shall be used to mark:

8.1.1. chemical substances and chemical products that react violently with water;

8.1.2. chemical substances and chemical products which when reacting with water liberate extremely flammable gases; and

8.1.3. chemical substances and chemical products which when reacting with water liberate very toxic or toxic gases;

8.2. criterion for use – shall be used for marking of chemical substances and chemical products referred to in Sub-paragraph 8.1 of this Annex to emphasise the warning which refers to the characterisation of the effect of the chemical substance R14, R15 and R29.

**9. S9 – keep container in a well-ventilated place:**

9.1. shall be used to mark:

9.1.1. volatile chemical substances and chemical products which may give off very toxic, toxic or harmful vapours; and

9.1.2. extremely flammable or highly flammable liquid chemical substances and extremely flammable gases;

9.2. criteria for use:

9.2.1. recommended for marking of volatile chemical substances and chemical products which give off very toxic, toxic or harmful vapours; and

9.2.2. recommended for marking of extremely flammable or highly flammable liquids or extremely flammable gases.

**10. S12 – do not keep the container sealed:**

10.1. shall be used to mark such chemical substances and chemical products that give off gases or vapours that may destroy the container;

10.2. criterion for use – recommended for marking of chemical substances and chemical products that decompose during the storage, forming gases.

**11. S13 – keep away from food, drink and animal feed:**

11.1. shall be used to mark very toxic, toxic and harmful chemical substances and chemical products;

11.2. criterion for use – recommended to be used if the chemical substances and chemical products may be widely available and used for domestic purposes.

**12. S14 – keep away from ... (incompatible substances to be indicated by the manufacturer):**

12.1. shall be used to mark organic peroxides;

12.2. criterion for use – obligatory for marking of organic peroxides, and may be used for marking of other dangerous chemical substances and chemical products if they may be widely available and used for domestic purposes.

**13. S15 – keep away from heat:**

13.1. shall be used to mark such chemical substances and chemical products that may decompose or react spontaneously under the effect of temperature;

13.2. criterion for use – special cases, for example, marking of monomers. Shall not be used if the characterisation of the effect of the chemical substance is R2, R3 and R5.

**14. S16 – keep away from sources of ignition – No smoking:**

14.1. shall be used to mark extremely flammable and highly flammable liquids and extremely flammable gases;

14.2. criterion for use – recommended for marking of chemical substances and chemical products referred to in Sub-paragraph 14.1 of this Annex. Shall not be used for marking of such chemical substances and chemical products whose characterisation of the effect of the chemical substance is R2, R3 and R5.

**15. S17 – keep away from combustible material:**

15.1. shall be used to mark such chemical substances and chemical products that in mixture with combustible material may explode or spontaneously catch fire;

15.2. criterion for use – special cases, for example, to intensify the characterisation of the effect of the substance R8 and R9.

**16. S18 – handle and open container with care:**

16.1. shall be used to mark such chemical substances and chemical products that may give off gases during storage;

16.2. shall be used to mark such chemical substances and chemical products that may form explosive peroxides during storage;

16.3. criterion for use – normally shall be used in cases referred to in Sub-paragraphs 16.1 and 16.2 of this Annex when there is a risk that damage to eyes (eyesight) may have been done and the relevant chemical substance or chemical product is available in the household.

**17. S20 – when using the substance do not eat or drink:**

17.1. shall be used to mark very toxic, toxic and corrosive chemical substances and chemical products;

17.2. criterion for use – special cases, for example, for marking of arsenic and its compounds, fluoracetates, in particular if the relevant chemical substance or chemical product may be available in the household.

**18. S21 – when using the substance do not smoke:**

18.1. shall be used to mark such chemical substances and chemical products that may produce toxic substances on combustion;

18.2. criterion for use – special cases, for example, for marking of halogenated compounds.

**19. S22 – do not breathe dust:**

19.1. shall be used to mark all solid chemical substances and chemical products dangerous for health;

19.2. criteria for use:

19.2.1. obligatory for marking of such chemical substances and chemical products referred to in Sub-paragraph 19.1 of this Annex whose characterisation of the effect of the chemical substance is R42; and

19.2.2. recommended for marking of such chemical substances and chemical products referred to in Sub-paragraph 19.1 of this Annex which are placed on the market in the form of powder and which may be inhaled but inhalation thereof does not create hazard to health.

**20. S23 – do not breathe gas/fumes/vapour/spray** (appropriate wording to be specified by the manufacturer):

20.1. shall be used to mark all liquid and gaseous chemical substances and chemical products dangerous for health;

20.2. criteria for use:

20.2.1. obligatory for marking of such chemical substances and chemical products whose characterisation of the effect of the chemical substance is R42;

20.2.2. obligatory for marking of such chemical substances and chemical products which are intended for spraying. In such cases the designation of safety requirements S38 or S51 shall be used in addition; and

20.2.3. recommended to be used when it is necessary to additionally draw the attention of users to risks caused by inhalation and which are not specified in the relevant characterisation of the effect of the chemical substance.

**21. S24 – avoid contact with skin:**

21.1. shall be used to mark all chemical substances and chemical products dangerous for health;

21.2. criteria for use:

21.2.1. obligatory for marking of such chemical substances and chemical products whose characterisation of the effect of the chemical substance is R43, except for the cases when the designation of safety requirements S36 has also been used; and

21.2.2. recommended to be used when it is necessary to additionally draw the attention of users to risks caused by the effect on skin and which are not mentioned in the relevant characterisation of the effect of the chemical substance.

**22. S25 – avoid contact with eyes:**

22.1. shall be used to mark chemical substances and chemical products dangerous for health;

22.2. criteria for use:

22.2.1. recommended to be used when it is necessary to draw particular attention of users to the effect the relevant chemical substance or chemical product has on eyes (eyesight) if it is not specified in the characterisation of the effect of the chemical substance. May be used to emphasise the characterisation of the effect of the substance; and

22.2.2. recommended for marking of such chemical substances and chemical products whose characterisation of the effect of the chemical substance is R34, R35, R36 or R41 and which may be used for domestic purposes.

**23. S26 – in case of contact with eyes, rinse immediately with a large quantity of water and seek medical advice:**

23.1. shall be used to mark corrosive and irritant chemical substances and chemical products;

23.2. criteria for use:

23.2.1. obligatory for marking of such corrosive chemical substances and chemical products whose characterisation of the effect of the chemical substance is R41; and

23.2.2. recommended for marking of such irritant chemical substances and chemical products whose characterisation of the effect of the chemical substance is R36.

**24. S27 – take off immediately all contaminated clothing:**

24.1. shall be used to mark very toxic, toxic and corrosive chemical substances and chemical products;

24.2. criteria for use:

24.2.1. obligatory for marking of very toxic chemical substances and chemical products;

24.2.2. recommended for marking of such very toxic chemical substances and chemical products whose characterisation of the effect of the substance is R27 and which are used in industry. Shall not be used if a chemical substance or a chemical product has the designation of safety requirements S36; and

24.2.3. recommended for marking of such toxic chemical substances and chemical products whose characterisation of the effect of the substance is R24, as well as for marking of corrosive chemical substances and chemical products used for domestic purposes.

**25. S28 – after contact with skin, wash immediately with a large quantity of ... (to be specified by the manufacturer):**

25.1. shall be used to mark very toxic, toxic and corrosive chemical substances and chemical products;

25.2. criteria for use:

25.2.1. obligatory for marking of very toxic chemical substances and chemical products;

25.2.2. recommended for marking of other chemical substances and chemical products referred to in Sub-paragraph 25.1 of this Annex, in particular if water is not the most appropriate rinsing fluid; and

25.2.3. recommended for marking of corrosive chemical substances and chemical products used for domestic purposes.

**26. S29 – it is prohibited to pour into drains:**

26.1. shall be used to mark:

26.1.1. extremely flammable or highly flammable liquid chemical substances and chemical products immiscible with water;

26.1.2. very toxic and toxic chemical substances and chemical products; and

26.1.3. chemical substances and chemical products dangerous for the environment;

26.2. criteria for use:

26.2.1. obligatory for marking of such chemical substances and chemical products dangerous for the environment which are labelled with the symbol of danger N if they are intended to be used for domestic purposes; and

26.2.2. recommended for marking of other chemical substances and chemical products referred to in Sub-paragraph 26.1.1 of this Annex if they are intended to be used for domestic purposes.

**27. S30 – it is strictly prohibited to add water to this product:**

27.1. shall be used to mark such chemical substances and chemical products that react violently with water;

27.2. criterion for use – normally used in special cases, for example, marking of sulphuric acid, as well as may be used in order to supplement the characterisation of the effect of the chemical product R14 or instead of it.

**28. S33 – take precautionary measures against static discharges:**

28.1. shall be used to mark extremely flammable or highly flammable chemical substances and chemical products;

28.2. criterion for use – recommended for marking of such chemical substances and chemical products which are used in industry and which do not absorb moisture. Shall not be used for marking of chemical substances and chemical products intended to be used for domestic purposes.

**29. S35 – this material and its container must be disposed of in a safe way:**

29.1. shall be used to mark all dangerous chemical substances and chemical products;

29.2. criterion for use – recommended for marking of such chemical substances and chemical products for which the most appropriate type of disposal needs to be indicated.

**30. S36 – wear suitable protective clothing:**

30.1. shall be used to mark organic peroxides;

- 30.2. shall be used to mark very toxic, toxic and harmful chemical substances and chemical products;
- 30.3. shall be used to mark corrosive chemical substances and chemical products;
- 30.4. criteria for use:
- 30.4.1. obligatory for marking of very toxic and corrosive chemical substances and chemical products;
  - 30.4.2. obligatory for marking of such chemical substances and chemical products whose characterisation of the effect of the chemical substance is R21 or R24;
  - 30.4.3. obligatory for marking of carcinogenic, mutagenic chemical substances and chemical products and chemical substances and chemical products toxic for reproduction of category 3 if the harmful effect occurs solely by inhalation of the relevant substance or product;
  - 30.4.4. obligatory for marking of organic peroxides;
  - 30.4.5. recommended for marking of such toxic chemical substances and chemical products for which the LD<sub>50</sub> dermal value is unknown but it is possible that their toxic effects occur in contact with skin; and
  - 30.4.6. recommended for marking of such chemical substances and chemical products used in industry that may cause damage to health after prolonged contact.

**31. S37 – wear protective gloves:**

- 31.1. shall be used to mark very toxic, toxic, harmful and corrosive chemical substances and chemical products;
- 31.2. shall be used to mark organic peroxides;
- 31.3. shall be used to mark such chemical substances and chemical products that have irritating effect on the skin;
- 31.4. criteria for use:
- 31.4.1. obligatory for marking of very toxic and corrosive chemical substances and chemical products;
  - 31.4.2. obligatory for marking of such chemical substances and chemical products whose characterisation of the effect of the chemical substance is R21, R24 or R43;
  - 31.4.3. obligatory for marking of carcinogenic, mutagenic chemical substances and chemical products and chemical substances and chemical products toxic for reproduction of category 3 if the harmful effect occurs by inhalation of the substance or product;
  - 31.4.4. obligatory for marking of organic peroxides;
  - 31.4.5. recommended for marking of such toxic chemical substances and chemical products for which the LD<sub>50</sub> dermal value is unknown but it is possible that their toxic effects occur in contact with skin; and
  - 31.4.6. recommended for marking of such chemical substances and chemical products that irritate the skin.

**32. S38 – in case of insufficient ventilation, wear suitable respiratory equipment:**

- 32.1. shall be used to mark very toxic and toxic chemical substances and chemical products;
- 32.2. criterion for use – normally used in special cases in industry or agriculture if very toxic or toxic chemical substances and chemical products are used.

**33. S39 – wear eye or face protection:**

33.1. shall be used to mark very toxic and toxic chemical substances and chemical products;

33.2. shall be used to mark organic peroxides;

33.3. shall be used to mark such corrosive (including irritant) chemical substances and chemical products which cause risk of serious damage to eyes;

33.4. criteria for use:

33.4.1. obligatory for marking of such chemical substances and chemical products whose characterisation of the effect of the chemical substances is R34, R35 or R41;

33.4.2. obligatory for marking of organic peroxides;

33.4.3. recommended when it is necessary to draw particular attention of the user to risks which may be caused by contact of the relevant chemical substance with eyes if it is not specified in the characterisation of the effect of the relevant substance; and

33.4.4. normally shall be used in exceptional cases for marking of very toxic and toxic chemical substances and chemical products if there is a risk of splashing and the skin may easily absorb them.

**34. S40 – to clean the floor and all contaminated objects use ...** (to be specified by the manufacturer):

34.1. shall be used to mark all dangerous chemical substances and chemical products;

34.2. criterion for use – normally shall be used for marking of such dangerous chemical substances and chemical products for collection of which water cannot be used (for example, when a substance has to be collected by powdered sorbent or by using appropriate solvent), as well as if it is important to use such designation from the point of view of health protection or safety.

**35. S41 – in case of fire and/or explosion do not breathe fumes:**

35.1. shall be used to mark such dangerous chemical substances and chemical products that on combustion give off very toxic or toxic gases;

35.2. criterion for use – special cases.

**36. S42 – during spraying wear the following suitable respiratory equipment** (appropriate wording to be specified by the manufacturer):

36.1. shall be used to mark such chemical substances and chemical products intended for spraying which may endanger the human health and safety if no appropriate safety measures are taken;

36.2. criterion for use – special cases.

**37. S43 – in case of fire use ...** (indicate in the space the precise type of fire-fighting equipment. If water increases the risk add: "**Aizliegts izmantot ūdeni**" [**It is prohibited to use water**]):

37.1. shall be used to mark extremely flammable, highly flammable and flammable chemical substances and chemical products;

37.2. criteria for use:

37.2.1. obligatory for marking of such chemical substances and chemical products which in contact with water or damp air evolve extremely flammable gases; and



37.2.2. recommended for marking of extremely flammable, highly flammable and flammable chemical substances and chemical products, particularly when they are immiscible with water.

38. **S45 – in case of accident or if you feel unwell seek medical advice immediately** (show the label where possible):

38.1. shall be used to mark very toxic chemical substances and chemical products;

38.2. shall be used to mark toxic and corrosive chemical substances and chemical products;

38.3. shall be used to mark such chemical substances and chemical products that cause sensitisation by inhalation;

38.4. criterion for use – obligatory for marking of chemical substances and chemical products referred to in Sub-paragraphs 38.1, 38.2 and 38.3 of this Annex.

39. **S46 – if swallowed, seek medical advice immediately and show this container or label:**

39.1. shall be used to mark all dangerous chemical substances and chemical products if they are not very toxic, toxic, corrosive or dangerous for the environment;

39.2. criterion for use – obligatory for marking of all dangerous chemical substances and chemical products which are not very toxic, toxic, corrosive or dangerous for the environment and which are used for domestic purposes, except for the case when swallowing thereof is not dangerous (particularly by children).

40. **S47 – keep at temperature not exceeding ... °C** (to be specified by the manufacturer):

40.1. shall be used to mark such chemical substances and chemical products that become unstable at a certain temperature;

40.2. criterion for use – normally shall be used in special cases, for example, marking of certain organic peroxides.

41. **S48 – keep wetted with ...** (appropriate material to be specified by the manufacturer):

41.1. shall be used to mark such chemical substances and chemical products which when dried out become very sensitive to sparks, impact and friction;

41.2. criterion for use – normally shall be used in special cases, for example, marking of nitrocelluloses.

42. **S49 – keep only in the original container:**

42.1. shall be used to mark such chemical substances and chemical products that are sensitive to catalytic decomposition;

42.2. criterion for use – shall be used for marking of such chemical substances and chemical products, which are sensitive to catalytic decomposition, for example, for marking of certain organic peroxides.

43. **S50 – do not mix with ...** (to be specified by the manufacturer):

43.1. shall be used to mark such chemical substances and chemical products which may react with the product specified by the manufacturer evolving very toxic or toxic gases;

43.2. shall be used to mark organic peroxides;

43.3. criteria for use:

43.3.1. recommended for marking of chemical substances and chemical products referred to in Sub-paragraphs 43.1 and 43.2 of this Annex if they are widely used for domestic purposes and the above designation is a better alternative to the characterisation of the effect of the chemical substance R31 or R32;

43.3.2. obligatory for marking of such peroxides which may react violently with a accelerator or promoter.

**44. S51 – use only in well-ventilated areas:**

44.1. shall be used to mark such chemical substances and chemical products which may produce dust, vapours, aerosols or mists, increasing the inhalation risk, as well as fire or explosion risk;

44.2. criterion for use – recommended to be used when the designation of safety requirements S38 is not appropriate, particularly when the relevant chemical substance or chemical product is widely used for domestic purposes.

**45. S52 – not recommended for interior use on large surface areas:**

45.1. shall be used to mark such volatile, very toxic, toxic and harmful chemical substances and chemical products that contain the relevant substances;

45.2. criterion for use – recommended to be used if the harmful effect on health of chemical substances and chemical products referred to in Sub-paragraph 45.1 of this Annex may be caused by prolonged contact when they evaporate from large treated surfaces in apartments or other closed premises where persons congregate.

**46. S53 – avoid exposure – obtain special instructions before use:**

46.1. shall be used to mark carcinogenic, mutagenic chemical substances and chemical products and chemical substances and chemical products toxic for reproduction;

46.2. criterion for use – obligatory for marking of such chemical substances and chemical products referred to in Sub-paragraph 46.1 of this Annex whose characterisation of the effect of the chemical substance is R45, R46, R49, R60 or R61.

**47. S56 – dispose of this material and the container thereof to hazardous or special waste collection point:**

47.1. shall be used to mark dangerous chemical substances and chemical products;

47.2. criterion for use – recommended for marking of such dangerous chemical substances and chemical products which may be used for domestic purposes and which require special type of disposal.

**48. S57 – use appropriate container to avoid environmental contamination:**

48.1. shall be used to mark chemical substances and chemical products marked with the symbol of danger N;

48.2. criterion for use – normally shall be used for marking of such chemical substances and chemical products that are not used for domestic purposes.

**49. S59 – refer to manufacturer or supplier for information on recovery/recycling:**

49.1. shall be used to mark all dangerous chemical substances and chemical products;

49.2. criteria for use:

49.2.1. obligatory for marking of chemical substances and chemical products dangerous for the ozone layer;

49.2.2. recommended for marking of such dangerous chemical substances and chemical products for which recycling or recovery is recommended.

**50. S60 – this material and its container must be disposed of as hazardous waste:**

50.1. shall be used to mark all dangerous chemical substances and chemical products;

50.2. criterion for use – recommended for marking of such chemical substances and chemical products which do not have the designation of safety requirements S35 and which are not used for domestic purposes.

**51. S61 – avoid release to the environment. Refer to special instructions or utilise safety data sheet:**

51.1. shall be used to mark chemical substances and chemical products dangerous for the environment;

51.2. criteria for use:

51.2.1. normally shall be used to mark such chemical substances and chemical products that have the symbol of danger N;

51.2.2. recommended for marking of all chemical substances and chemical products dangerous for the environment, even if they do not have the symbol of danger N.

**52. S62 – if swallowed, do not induce vomiting: seek medical advice immediately and show this container or label:**

52.1. shall be used to mark liquid chemical substances or chemical products containing aliphatic, alicyclic and/or aromatic hydrocarbons in a total concentration which reaches or exceeds 10 % if their kinematic viscosity which has been determined by the rotational viscometry method is less than  $7 \times 10^{-6} \text{ m}^2/\text{s}$  at 40 °C temperature;

52.2. shall not be used to mark such chemical substances and chemical products that are placed on the market as aerosols;

52.3. criteria for use:

52.3.1. obligatory for marking of chemical substances and chemical products referred to in Sub-paragraph 52.1 of this Annex if they are placed on the market or they may be used for domestic purposes, except for such chemical substances and chemical products for which the designation of safety requirements S45 or S46 is obligatory; and

52.3.2. recommended for marking of such chemical substances and chemical products referred to in Sub-paragraph 52.1 of this Annex which are intended to be used in industry, except for such chemical substances and chemical products for which the designation of safety requirements S45 or S46 is obligatory.

**53. S63 – in case of accident by inhalation: remove casualty to fresh air and keep at rest:**

53.1. shall be used to mark:

53.1.1. very toxic and toxic chemical substances and chemical products, for example, gases, vapours, particulates, volatile liquids; and

53.1.2. chemical substances and chemical products which irritate the respiratory system;

53.2. criterion for use – obligatory to be used for chemical substances and chemical products whose characterisation of the effect of the chemical substance is R26, R23 or R42 and which may be used for domestic purposes and inhaled.

**54. S64 – if swallowed, rinse mouth with water (only if the person is conscious):**

54.1. shall be used to mark corrosive and irritant chemical substances and chemical products;

54.2. criterion for use – recommended to be used for chemical substances and chemical products referred to in Sub-paragraph 54.1 of this Annex which are suitable to be used for domestic purposes.

Minister for Environmental Protection and Regional Development

V. Makarovs

### Class of Danger of Chemical Substances and Chemical Products, Designation and Labelling thereof

No.	Class of danger	Designation of danger by a letter (letters)	Labelling	
			symbol of danger (picture)	explanation of danger
1	2	3	4	5
1.	Corrosive chemical substances and chemical products	C	symbol of corrosion	corrosive
2.	Irritant chemical substances and chemical products	Xi	St. Andrew's Cross	irritant
3. 3.1. 3.2.	Sensitising chemical substances and chemical products: with the effect characterisation of the substance R42 with the effect characterisation of the substance R43	Xn Xi	St. Andrew's Cross St. Andrew's Cross	harmful irritant
4. 4.1. 4.2.	Carcinogenic chemical substances and chemical products: category 1 and 2 category 3	T Xn	skull and crossbones St. Andrew's Cross	toxic harmful
5. 5.1. 5.2.	Mutagenic chemical substances and chemical products: category 1 and 2 category 3	T Xn	skull and crossbones St. Andrew's Cross	toxic harmful
6. 6.1. 6.2.	Chemical substances and chemical products toxic for reproduction: category 1 and 2 category 3	T Xn	skull and crossbones St. Andrew's Cross	toxic harmful

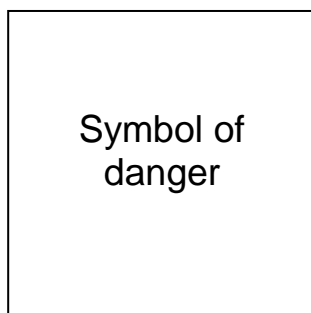
7.	Chemical substances and chemical products dangerous for the environment:	N	environmental symbol of danger	dangerous for the environment
7.1.	with the effect characterisation of the substance R50, R54, R55, R56, R57, R58 or R59 or the combined characterisation of the effect of the substance R50/R53 or R51/R53			
7.2.	with the effect characterisation of the substance R52, R53 or R59 or the combined characterisation of the effect of the substance R52/R53	-	-	dangerous for the environment
8.	Explosive chemical substances and chemical products	E	symbol of explosion	explosive
9.	Chemical substances and chemical products – strong oxidisers	O	a flame over a circle	oxidising
10.	Extremely flammable chemical substances or chemical products	F+	a flame	extremely flammable
11.	Highly flammable chemical substances or chemical products	F	a flame	highly flammable
12.	Flammable chemical substances and chemical products	-	-	flammable
13.	Very toxic chemical substances and chemical products	T+	skull and crossbones	very toxic
14.	Toxic chemical substances and chemical products	T	skull and crossbones	toxic
15.	Harmful chemical substances and chemical products	Xn	St. Andrew's Cross	harmful

Minister for Environmental Protection and Regional Development

V. Makarovs

## Class of Danger Labelling for Chemical Substances and Chemical Products

1. The class of danger labelling of chemical substances and chemical products shall contain the symbol of danger (a picture) and the indication of danger. The designation of danger by a letter (letters) shall not be a part of the labelling. The symbol of danger and the indication of danger in the labelling shall be arranged as follows:

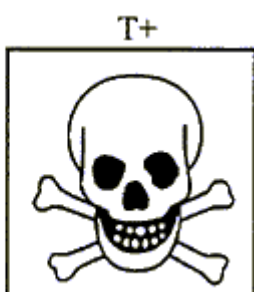


Explanation of danger

2. The symbol of danger shall be depicted in black on an orange background.

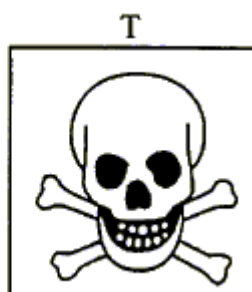
3. Symbols of danger used in the class of danger labelling (on the label) of chemical substances and chemical products shall be as follows:

3.1.



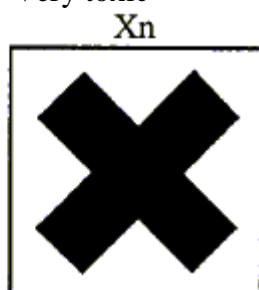
Very toxic

3.2.



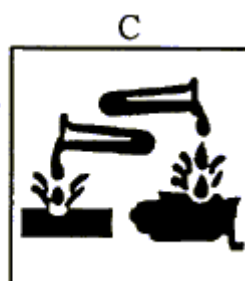
Toxic

3.3.



Harmful

3.4.



Corrosive

3.5.

Xi

3.6.



Irritant

Explosive

3.7.

F+

3.8.



Extremely flammable

Highly flammable

3.9.

O

3.10.



Oxidising

Dangerous for the environment

Minister for Environmental Protection and Regional Development

V. Makarovs



## Families of Chemical Substances

1. Chemical substances shall be divided into the following families:

1.1. inorganic or organic chemical substances whose main properties are determined by a common chemical element in the molecules thereof. Family name shall be derived from the name of the relevant chemical element; and

1.2. organic chemical substances whose main properties are determined by a common functional group.

2. Family names of chemical substances shall be derived from the functional group names. In certain cases chemical substances with common specific properties shall be brought together in sub-families.

3. The generic name of the families of chemical substances shall be formed as follows:

3.1. functional groups and chemical elements present in the molecule of the substance shall be identified; and

3.2. it shall be determined which of the most important functional groups or chemical elements shall be taken into account to form the name.

4. Families and sub-families of chemical substances are the following:

Family number	Family sub-family
1	2
001	Hydrogen compounds Hydrides
002	Helium compounds
003	Lithium compounds
004	Beryllium compounds
005	Boron compounds Boranes Borates
006	Carbon compounds Carbamates Inorganic carbon compounds Salts of hydrogen cyanide Urea and derivatives

007	Nitrogen compounds Quaternary ammonium compounds Acid nitrogen compounds Nitrates Nitrites
008	Oxygen compounds
009	Fluorine compounds
010	Neon compounds
011	Sodium compounds
012	Magnesium compounds Organometallic magnesium derivatives
013	Aluminium compounds Organometallic aluminium derivatives
014	Silicon compounds Silicones Silicates
015	Phosphorus compounds Acid phosphorus compounds Phosphonium compounds Phosphoric esters Phosphates Phosphites Phosphoramides and their derivatives
016	Sulphur compounds Acid sulphur compounds Mercaptans Sulphates Sulphites
017	Chlorine compounds Chlorates Perchlorates
018	Argon compounds
019	Potassium compounds
020	Calcium compounds
021	Scandium compounds
022	Titanium compounds
023	Vanadium compounds
024	Chromium compounds Chromium (VI) compounds
025	Manganese compounds
026	Iron compounds
027	Cobalt compounds

028	Nickel compounds
029	Copper compounds
030	Zinc compounds Organometallic zinc derivatives
031	Gallium compounds
032	Germanium compounds
033	Arsenic compounds
034	Selenium compounds
035	Bromine compounds
036	Krypton compounds
037	Rubidium compounds
038	Strontium compounds
039	Yttrium compounds
040	Zirconium compounds
041	Niobium compounds
042	Molybdenum compounds
043	Technetium compounds
044	Ruthenium compounds
045	Rhodium compounds
046	Palladium compounds
047	Silver compounds
048	Cadmium compounds
049	Indium compounds
050	Tin compounds Organometallic tin derivatives
051	Antimony compounds
052	Tellurium compounds
053	Iodine compounds
054	Xenon compounds
055	Caesium compounds
056	Barium compounds
057	Lanthanum compounds
058	Cerium compounds
059	Praseodymium compounds
060	Neodymium compounds
061	Promethium compounds
062	Samarium compounds
063	Europium compounds
064	Gadolinium compounds
065	Terbium compounds

066	Dysprosium compounds
067	Holmium compounds
068	Erbium compounds
069	Thulium compounds
070	Ytterbium compounds
071	Lutetium compounds
072	Hafnium compounds
073	Tantalum compounds
074	Tungsten compounds
075	Rhenium compounds
076	Osmium compounds
077	Iridium compounds
078	Platinum compounds
079	Gold compounds
080	Mercury compounds Organometallic mercury derivatives
081	Thallium compounds
082	Lead compounds Organometallic lead derivatives
083	Bismuth compounds
084	Polonium compounds
085	Astate compounds
086	Radon compounds
087	Francium compounds
088	Radium compounds
089	Actinium compounds
090	Thorium compounds
091	Protactinium compounds
092	Uranium compounds
093	Neptunium compounds
094	Plutonium compounds
095	Americium compounds
096	Curium compounds
097	Berkelium compounds
098	Californium compounds
099	Einsteinium compounds
100	Fermium compounds
101	Mendelevium compounds
102	Nobelium compounds
103	Lawrencium compounds

601	Hydrocarbons Aliphatic hydrocarbons Aromatic hydrocarbons Alicyclic hydrocarbons Polycyclic aromatic hydrocarbons
602	Halogenated hydrocarbons* Halogenated aliphatic hydrocarbons* Halogenated aromatic hydrocarbons* Halogenated alicyclic hydrocarbons*  *Shall be specified according to the family corresponding to the relevant halogen.
603	Alcohols and their derivatives Aliphatic alcohols Aromatic alcohols Alicyclic alcohols Alcanolamines Epoxy derivatives Ethers Glycolethers Glycols and polyols
604	Phenols and their derivatives Halogenated phenol derivatives*  *Shall be specified according to the family corresponding to the relevant halogen.
605	Aldehydes and their derivatives Aliphatic aldehydes Aromatic aldehydes Alicyclic aldehydes Aliphatic acetals Aromatic acetals Alicyclic acetals
606	Ketones and their derivatives Aliphatic ketones Aromatic ketones* Alicyclic ketones  *Quinones included.

607	Organic acids and their derivatives Aliphatic acids Halogenated aliphatic acids* Aromatic acids Halogenated aromatic acids* Alicyclic acids Halogenated alicyclic acids* Aliphatic acid anhydrides Halogenated aliphatic acid anhydrides* Aromatic acid anhydrides Halogenated aromatic acid anhydrides* Alicyclic acid anhydrides Halogenated alicyclic acid anhydrides* Salts of aliphatic acid Salts of halogenated aliphatic acid* Salts of aromatic acid Salts of halogenated aromatic acid* Salts of alicyclic acid Salts of halogenated alicyclic acid* Esters of aliphatic acid Esters of halogenated aliphatic acid* Esters of aromatic acid Esters of halogenated aromatic acid* Esters of alicyclic acid Esters of halogenated alicyclic acid* Esters of glycol ether Acrylates Metacrylates Lactones Acyl halogenides  *Shall be specified according to the family corresponding to the relevant halogen.
608	Nitriles and their derivatives
609	Nitro compounds
610	Chlornitrated compounds
611	Azoxy and azo compounds
612	Amine compounds Aliphatic amines and their derivatives Aromatic amines and their derivatives Alicyclic amines and their derivatives Aniline and the derivatives thereof Benzidine and the derivatives thereof

613	Heterocyclic compounds and their derivatives Benzimidazole and the derivatives thereof Imidazole and the derivatives thereof Pyrethrinoids Quinoline and the derivatives thereof Triazine and the derivatives thereof Triazole and the derivatives thereof
614	Glycosides and alkaloids Glycosides and their derivatives Alkaloids and their derivatives
615	Cyanates and isocyanates Cyanates Isocyanates
616	Amides and their derivatives Acetamide and derivatives thereof Anilides
617	Organic peroxides
647	Enzymes
648	Complex coal processing products Acid extract Alkaline extract Anthracene oil Anthracene oil extract residue Anthracene oil fraction Carbolic oil Carbolic oil extract residue Coal liquids, liquid solvent extraction Coal liquids, liquid solvent extraction solvents Coal oil, synthetic liquid fuel from coal Coal tar Coal tar extract Coal tar solid residues Coke (coal tar), obtained at a low temperature; pitch obtained at a high temperature Coke (coal tar), pitch coke obtained at a high temperature Coke (coal tar), pitch and pitch coke Crude benzole Crude phenols Crude tar bases Distillate bases Distillate phenols Distillates
	Coal distillates, liquid solvent extraction, primary Coal distillates, solvent extraction, hydrocracked Coal distillates, solvent extraction, hydrocracked and hydrogenated

	Coal middle distillates, solvent extraction, hydrocracked
	Alkaline residues of coal tar extraction
	Fresh oil
	Fuels, diesel, coal solvent extraction, hydrocracked, hydrogenated
	Fuels, jet aircraft fuel, coal solvent extraction, hydrocracked, hydrogenated
	Gasoline, coal solvent extraction, hydrocracked, hydrogenated
	Heat treatment products
	Heavy anthracene oil
	Heavy anthracene oil redistillate
	Light oil
	Light oil extract residues with high boiling temperature
	Light oil extract residues with intermediate boiling temperature
	Light oil extract residues with low boiling temperature
	Light oil redistillate with high boiling temperature
	Light oil redistillate with intermediate boiling temperature
	Light oil redistillate with low boiling temperature
	Methylnaphthalene oil
	Methylnaphthalene oil extract residue
	Naphtha (coal), solvent extraction, hydrocracked
	Naphthalene oil
	Naphthalene oil extract residue
	Naphthalene oil redistillate
	Pitch
	Pitch redistillate
	Pitch residue
	Pitch residue, heat treated
	Pitch residue, oxidised
	Pyrolysis products
	Redistillates
	Residues (coal), after solvent extraction
	Brown coal tar
	Brown coal tar with low boiling temperature
	Brown coal tar with high boiling temperature
	Brown coal tar with intermediate boiling temperature
	Wash oil
	Wash oil extract residues
	Wash oil redistillate



649	<p>Complex composition coal processing products</p> <p>Crude oil</p> <p>Petroleum gas</p> <p>Naphtha with a low boiling temperature</p> <p>Naphtha with a low boiling temperature, modified</p> <p>Naphtha with a low boiling temperature, obtained in catalytic cracking process</p> <p>Naphtha with a low boiling temperature, obtained in catalytic reforming process</p> <p>Naphtha with a low boiling temperature, obtained in thermal cracking process</p> <p>Naphtha with a low boiling temperature, obtained in hydrogenation process</p> <p>Naphtha with a low boiling temperature, unspecified</p> <p>Kerosene, straight-run</p> <p>Kerosene, unspecified</p> <p>Cracked gas oil</p> <p>Gas oil, unspecified</p> <p>Heavy fuel oil</p> <p>Lubricating grease</p> <p>Unrefined or mildly refined base oil</p> <p>Base oil, unspecified</p> <p>Distillate aromatic fraction</p> <p>Distillate aromatic fraction (treated)</p> <p>Foots oil</p> <p>Paraffin residues</p> <p>Petrolatum (untreated petroleum jelly)</p>
650	<p>Various substances</p> <p>It is not recommended to use this family. Normally the families and sub-families mentioned above are used.</p>