PART 2

CLASSIFICATION

CHAPTER 2.0

INTRODUCTION

2.0.0 Responsibilities

The classification of a product considered to be hazardous to transport should be Manufacturer or consignor, guided by the manufacturer, or Where applicable, on the basis of the physico-chemical characteristics of the Product, by allocating it to one of the classes or subclasses described in chapters 2.1 to 2.9 of this Regulation.

2.0.1 Classes, Subclasses, Packing Groups

2.0.1.1 Definitions

Substances (including mixtures and solutions) and articles subject to this Regulation are allocated to one of the nine classes according to the risk or the most serious of the Risks presented by them. Some of these classes are subdivided into subclasses. These Classes and subclasses are:

Class 1: Explosives:

- Subclass 1.1: Explosive substances and articles in large scale;
- Subclass 1.2: Substances and articles with risk of projection, But without the risk of mass explosion;
- Subclass 1.3: Substances and articles with risk of fire and With a small risk of explosion or Projection, or both, but without risk of Mass explosion;
- Subclass 1.4: Substances and articles which do not contain Significant risk;
- Subclass 1.5: Very insensitive substances, with risk of

Mass explosion;

- Subclass 1.6: extremely insensitive, risk-free articles Of mass explosion.

Class 2: Gases:

- Subclass 2.1: Flammable gases;

- Subclass 2.2: Non-flammable, non-toxic gases;

- Subclass 2.3: Toxic gases.

Class 3: Flammable liquids

Class 4: Flammable solids, substances subject to spontaneous combustion;
And substances which, in contact with water, emit gases
Flammable:

- Subclass 4.1: Flammable solids, substances
Self-reactive substances and explosives
Desensitized;

- Subclass 4.2: Substances subject to spontaneous combustion;

- Subclass 4.3: Substances which, in contact with water,
Emit flammable gases.

Class 5: Oxidizing substances and organic peroxides:

- Subclass 5.1: Oxidizing substances;

- Subclass 5.2: Organic peroxides.

Class 6: Toxic substances and infectious substances:

- Subclass 6.1: Toxic substances;

- Subclass 6.2: Infectious substances.

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Class 7: Radioactive material

Class 8: Corrosive substances

Class 9: Miscellaneous dangerous substances and articles, including substances
Pose a risk to the environment

The numerical order of the classes and subclasses does not correspond to the degree of risk.

2.0.1.2 Many of the substances allocated to Classes 1 to 9 are considered hazardous
For the environment, even if no additional labeling is required.

2.0.1.2.1 Wastes shall be transported in accordance with the requirements applicable to the
Appropriate class, considering its risks and the criteria in the present Regulation.

Wastes that do not meet the criteria set out here, but which are covered by the Basel Convention (1), they can be transported as belonging to

Class 9.

2.0.1.3 For the purpose of packaging, substances not belonging to Classes 1, 2 or 7 and Subclasses 5.2 and 6.2 and are not self-reactive substances of Subclass 4.1 shall be Be allocated to one of the three Pack Groups, according to the level of risk Present:

- Packing Group I - Substances presenting a high risk.

- Packing Group II - Substances presenting medium risk.

- Packing Group III - Substances presenting a low risk.

The packing group assigned to a substance is indicated in the Column 6 of the List of Hazardous Products in Chapter 3.2.

Articles are not allocated to packing groups. For packaging purposes, Any specific performance level requirement is set forth in the Instruction for Applicable packaging.

(1) Basel Convention on the Transboundary Movements of Hazardous Wastes and Control Its Adequate Disposition (1989).

2.0.1.4 The risks posed by the dangerous products are determined as a Or more than one, among those represented by Classes 1 to 9 and Subclasses, and, if applicable, With the risk level based on the requirements of Chapters 2.1 to 2.9.

2.0.1.5. Hazardous products presenting a risk corresponding to a single class Or subclass are allocated to the respective Class or Subclass and have their level of risk (Group Determined), if applicable. When an article or substance is Specifically listed by name in the Hazardous Products Class or sub-class, its subsidiary risk (s) and, where applicable, its risk group (s) (S) are obtained in that Relation.

2.0.1.6 Hazardous products that fall under the definition criteria of more than A class or subclass of risk, and which are not listed by name in the Relation of Products, are allocated to a Subsidiary risk class (s) Basis of risk precedence, in accordance with item 2.0.3.

2.0.2 UN numbers and appropriate shipping names

2.0.2.1 Hazardous products are assigned to UN numbers and appropriate names for

Shipment according to their risk classification and composition.

2.0.2.2 Hazardous products commonly transported are listed in Hazardous Products in Chapter 3.2. When an article or substance is specifically Nominated, must be identified in the transportation by the appropriate name for shipment, that is, That listed in the Hazardous Products Such substances may contain Impurities (eg impurities derived from the production process) or additives for Stabilization or for other purposes, as long as they do not affect its classification. Yet, A substance listed by name containing impurities or additives, for stabilization or for Other purposes that affect its classification, should be considered as a mixture or Solution (see 2.0.2.5). For hazardous products not specifically listed by name, The terms "generic" or "not otherwise specified - (NE)" are given (see Item 2.0.2.7) to identify the article or substance in the transport.

Each entry in the List of Hazardous Products is characterized by a UN number This List also contains information relevant to each entry, such as Subsidiary risk (s) (if any), Packing group (when allocated), Requirements for packaging and tanks, etc.

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Hazardous Product List entries are of four types, Exemplified below:

a) only entries for substances and well - defined **articles;**

Ex .: 1090 ACETONE

1194 NITRITE OF ETILA, SOLUTION

(B) generic or specific entries for well-defined groups of Substances or articles;

Ex .: 1133 ADHESIVES

1266 PERFUMARIA, PRODUCTS

2757 PESTICIDES BASED ON CARBAMATES, SOLID, TOXIC

3101 ORGANIC PEROXIDE, TYPE B, LIQUID

(C) specific entries n and covering a group of substances or articles Of a particular chemical or technical nature; and

Ex .: 1477 INORGANIC NITRATES, NE

1987 ALCOHOL, NE

(D) general entries n and covering a group of substances or articles which They meet the criteria of one or more classes or **subclasses.**

Eg 1325 FLAMMABLE SOLID, ORGANIC, NE

1993 FLAMMABLE LIQUID, NE

2.0.2.3 All self-reactive substances in Subclass 4.1 are allocated to a

Of the twenty generic entries, according to the classification principles and the flowchart Described in item 2.4.2.3.3 and Figure 2.4.1.

2.0.2.4 All organic peroxides in Subclass 5.2 are allocated to one of the twenty Generic entries, in accordance with the classification principles and the flowchart described in Item 2.5.3.3 and Figure 2.5.1.

2.0.2.5 A solution or mixture meeting the criteria for classification of this Regulation, which contains a single predominant substance identified by its name on the List of Hazardous Products and one or more substances not subject to this Regulation Or traces of one or more substances identified by name in the Product List

Dangerous, must be given the UN number and appropriate shipping name of the substance Dangerous substance, unless:

A) the mixture or solution is identified in the Product List Dangerous;

B) the name and description of the substance in the List of Hazardous Products Indicate that it applies only to the pure substance;

(C) the risk class or subclass, subsidiary risk, packaging group or The physical state of the solution or mixture is different from that of the substance Identified in the Hazardous Products List; or

(D) the risk characteristics and properties of the mixture or solution Need emergency care measures other than those Required by the substance identified by the name in the Product List Dangerous.

In such cases, except as described in (a), the mixture or solution must be treated As a hazardous substance not specifically listed by name in Product List Dangerous.

2.0.2.6 For a solution or mixture whose Risk Class, physical state or Group of Packaging are different from those of the listed substance, the "NE" Including packaging and labeling provisions.

2.0.2.7 A solution or mixture containing one or more substances identified by the In this Regulation or classified under an "NE" entry, shall not be subject to this Regulation if the risk characteristics of the mixture or solution are such that they do not Criteria (human experience criteria inclusive) of any Class.

2.0.2.8 Substances or articles that are not specifically listed by name on the List of Hazardous Products shall be classified and allocated to a "generic" Or "not otherwise specified" (NE). The substance or articles are classified as Accordance with the definitions of Class and test criteria of this Part, and these shall be Classified and allocated to the "NE" or "generic" entry of the Hazardous Products describes the substance or article more appropriately (2). This means that a substance

Must be allocated to an entry of type c), defined in item 2.0.2.2, if it can not be included

(2) *Also refer to the "Generic or NE Proper Shipping Name Appendix A.*

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In an input of type b), and to an input of type d), if it can not be allocated to an input Of type b) or c).

2.0.2.9 A solution or mixture meeting the classification criteria of this That is not identified by name in the Hazardous Materials Composed of two or more dangerous products shall be allocated to the entry bearing the name Appropriate for shipment, description, risk class or subclass, subsidiary risk and group More accurately describes the solution or mixture.

2.0.2.10 Waste, for the purpose of transport, are substances, solutions, mixtures or Containing or contaminated by one or more products Of this Regulation, for which no direct use is Transported for the purpose of disposal, incineration or any other disposal process end.

2.0.2.10.1 A waste containing a single component considered as a dangerous product, Or two or more components that fall within the same class or subclass, shall be Classified according to the criteria applicable to the Class or Sub-class corresponding to the Component or components. If there are components belonging to two or more Classes or subclasses, the classification of the waste must take into account the order of precedence Applicable to hazardous substances with multiple risks, established in item 2.0.3, below.

2.0.3 Precedence of risk characteristics

2.0.3.1 The following table should be used to determine the class of a substance, Mixture or solution that presents more than one risk, if not listed in the Hazardous Products in Chapter 3.2. For products with multiple risks that are not Listed in the Hazardous Products List, the Restrictive, among those indicated for the respective risks, takes precedence over the other Packaging groups, regardless of the risk precedence presented in this chapter. The precedence of the risk characteristics of the following Classes was not included in the Table of Precedence of Risks in item 2.0.3.3, since these primary characteristics Have always preferred:

(A) substances and articles of Class 1;

(B) Class 2 gases;

(C) Class 3 liquid desensitized explosives;

(D) self-reactive substances and solid explosives desensitized to Subclass 4.1;

(E) Subclass 4.2 pyrophoric substances;

(F) Subclass 5.2 substances;

(G) substances of Subclass 6.1, of Packing Group I, which present inhalation toxicity (3);

(H) Subclass 6.2 substances;

(I) Class 7 material.

2.0.3.2 Except radioactive materials in exceptional volumes (in which case the other Hazardous properties take precedence), radioactive materials that have other Hazardous properties must always be classified in Class 7 and have Identified subsidiaries. For radioactive materials in exceptional volumes, except for UN number 3507, applies to Special Provision 290, described in Chapter 3.3.

(3) *Except substances and preparations that meet the criteria of Class 8, showing toxicity the inhalation of dusts and mists (LC50) in the range of packing group I and a toxicity Oral intake or dermal contact is situated in the range of Packing Group III, or below this Which must be allocated in Class 8.*

2.0.3.3 ***Precedence of Risks***

Class or Subclass of Risk	4.2	4.3	5.1	6.1	Referring to Fig.

Group in Packing				I	II	III	I (Skin)	I (Oral)	II	III	I (Liquid)	I (Solid)	II (Liquid)	II (Solid)	II (Liqu
3	I [the]		4.3				3	3	3	3	3	-	3	-	3
3	II		4.3				3	3	3	3	Referring to Fig.		3	-	3
3	III		4.3				6.1	6.1	6.1	3 [b]	Referring to Fig.		Referring to Fig.		3
4.1	II	4.2	4.3	5.1	4.1	4.1	6.1	6.1	4.1	4.1	-	Referring to Fig.		4.1	-
4.1	III	4.2	4.3	5.1	4.1	4.1	6.1	6.1	6.1	4.1	-	Referring to Fig.		Referring to Fig.	
4.2	II		4.3	5.1	4.2	4.2	6.1	6.1	4.2	4.2	Referring to Fig.	Referring to Fig.		4.2	4.2
4.2	III		4.3	5.1	5.1	4.2	6.1	6.1	6.1	4.2	Referring to Fig.	Referring to Fig.	Referring to Fig.	Referring to Fig.	4.2
4.3	I			5.1	4.3	4.3	6.1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4.3	II			5.1	4.3	4.3	6.1	4.3	4.3	4.3	Referring to Fig.	Referring to Fig.		4.3	4.3
4.3	III			5.1	5.1	4.3	6.1	6.1	6.1	4.3	Referring to Fig.	Referring to Fig.	Referring to Fig.	Referring to Fig.	4.3
5.1	I						5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
5.1	II						6.1	5.1	5.1	5.1	Referring to Fig.	Referring to Fig.		5.1	5.1
5.1	III						6.1	6.1	6.1	5.1	Referring to Fig.	Referring to Fig.	Referring to Fig.	Referring to Fig.	5.1
6.1	I (Skin)										Referring to Fig.		6.1	6.1	6.1
6.1	I (Oral)										Referring to Fig.		6.1	6.1	6.1

6.1	II (Inhalation)										Referring to Fig.		6.1	6.1	6.1
6.1	II (Skin)										Referring to Fig.		Referring to Fig.		6.1
6.1	II (Oral)										Referring to Fig.	Referring to Fig.		Referring to Fig.	6.1
6.1	III										Referring to Fig.	Referring to Fig.	Referring to Fig.	Referring to Fig.	6.1

The B *Substances of Subclass 4.1 which are not self-reactive, nor are stenciling solid explosives, and Class 3 substances other than liquid desensitized explosives.*

6.1 for pesticides

- indicates an impossible combination.

For risks not indicated in this Table, see item 2.0.3.

2.0.4 Transport of samples

2.0.4.1 When there is uncertainty as to the Risk Class of a substance, and it Is being carried for additional testing, it must be assigned to a Risk Class, An appropriate name for shipment and an UN number, based on the Manufacturer or consignor, guided by the manufacturer, on the substance as well as on the application:

A) the classification criteria of this Regulation; and

B) of the risk precedence provided in item 2.0.3.

The Packing Group with the most restrictive level of risk should be used Possible to the appropriate shipping name chosen.

When this provision is used, the appropriate shipping name shall be Be supplemented with the word "SAMPLE" (eg FLAMMABLE LIQUID, NE, SAMPLE). In certain cases, when there is an appropriate name for shipment to the Sample that meets certain classification criteria (for example, GAS FLAMMABLE, NON-PRESSURIZED, NE, SAMPLE, UN No. 3167), such name Appropriate for boarding must be employed. When an NE input is used in the Transportation of a sample, it is not necessary to supplement the appropriate name for Shipment with the technical name required by Special Provision 274.

2.0.4.2 Samples of a substance shall be transported in accordance with the Requirements applicable to the appropriate name for shipment adopted, provided that:

(A) the substance is not considered to be a prohibited substance for the As specified in item 1.1.1.8;

(B) the substance does not meet the Class 1 criteria, nor is it considered Infective substance or radioactive material;

C) the substance is in accordance with item 2.4.2.3.2.4 b) or item 2.5.3.2.5.1, if it is self-reactive substance or organic peroxide, respectively;

(D) the sample is transported in a combined package with mass Up to 2,5 kg per volume; and

(E) the sample is not packed together with other products.

CHAPTER 2.1

CLASS 1 - EXPLOSIVES

Introductory Notes

Note 1: *Class 1 is a restrictive class, ie only substances and articles Explosives listed in the Dangerous Goods List in Chapter 3.2 may be accepted For transportation. However,* the *Ministry of Defense - Army Command has the right to Approve the transport of special purpose explosive substances and articles under conditions Special conditions. Thus, in order to allow the transportation of these products, they were included in the Hazardous Products: Generic "Explosive Substances, NE" and Explosives, NE ". However, such entries should only be used if there is no other way Possible identification.*

Note 2: *General inputs, such as "Demolition Explosives, Type A", are adopted for Transport of new substances. In preparing these requirements, explosives and Military munitions were taken into account because they could be transported by Commercial conveyors.*

Note 3: *Some substances and articles of Class 1 are described in Appendix B. Descriptions are made because a term may not be well known or have different connotations For regulatory purposes.*

Note 4: *Class 1 is unique because the type of packaging often has a The risk and hence the determination of the subclass of the product. THE Subclass is determined by applying the procedures described in this Chapter.*

2.1.1 Definitions and general provisions

2.1.1.1 Class 1 comprises:

(A) explosive substances (a substance which is not itself an explosive, But capable of generating an explosive atmosphere of gas, vapor or dust, do not Class 1), except those that are too dangerous to be Transported and those whose dominant risk indicates that it is more Include them in another Class;

(B) explosive articles, except devices containing substances Explosive in such a quantity or of such a kind that a possible ignition or Accidental or involuntary initiation during transport does not No external effects in the form of projection, fire, smoke, heat or noise Strong (see item 2.1.3.6); and

(C) substances and articles not mentioned in items (a) and (b) which are manufactured

Explosive or pyrotechnic effect.

2.1.1.2 The carriage of overly sensitive explosive

So reactive that they are subject to spontaneous reaction.

2.1.1.3 Definitions

For the purposes of this Regulation, the following definitions shall apply:

The) *Explosive substance* is a solid or liquid substance (or mixture of
By itself capable of producing gas, by chemical reaction, the
Temperature, pressure and speed such as to cause damage to your back.
This definition includes pyrotechnic substances, even if they do not
Give off gases;

b) *pyrotechnic substance* is a substance or mixture of substances,
Designed to produce heat, light, sound, gas or smoke, or
Combination of these as a result of exothermic chemical reactions
Self-sustaining and non-detonating;

c) *explosive article* is an article that contains one or more substances
Explosive;

d) *numb* means that a substance (phlegmatizer) was
Added to an explosive to increase safety during
Handling and transportation. The numbing makes the explosive
Numb, or less sensitive, to heat, shock, impact, friction.
Common desensitizing agents are, among others: wax, paper, water,
Polymers (such as chlorofluoropolymers), alcohol and oils (such as petrolatum and
paraffin).

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2.1.1.4 Subclasses

Class 1 is divided into six subclasses, listed below:

The) Subclass 1.1 *Substances and articles with risk of mass explosion*
(A mass explosion is one that affects virtually every
The charge almost instantaneously);

B) Subclass 1.2 *Substances and articles which* have *a projection hazard but not*
Risk of mass explosion;

w) Subclass 1.3 *Substances and articles with risk of fire and small*
Risk of explosion or projection, or both, but without
Risk of mass explosion.

This subclass covers substances and articles which:

(I) produce large amounts of radiant heat; or

(Ii) burn in succession, producing small explosion effects

Or projection, or both.

(D) Division 1.4 *Substances and articles which present no risk Significant.*

This subclass covers substances and articles which have a small In the event of ignition or initiation during transport. The Effects are confined predominantly to the packaging, being The projection of fragments of appreciable size or Great distance. An external fire should not cause an explosion. Virtually the entire contents of the package.

Note: *Lie framed in Compatibility Group S the Substances and articles of this subclass, whether or not Such that the dangerous effects of Limited to the packaging, unless the packaging has been damaged. Fire, in which case the explosion or projection effects will be In such a way that they do not impede fire-fighting or other Emergency measures in the vicinity of the packaging.*

e) Subclass 1.5 *Very insensitive, potentially explosive substances in large scale.*

This subclass covers substances with a risk of mass explosion, But are so insensitive, that the probability of initiation or From the transition from burning to detonation is very small under Transport.

F) Subclass 1.6 *Extremely insensitive articles without risk of explosion by mass.*

This Subclass covers articles containing only substances Extremely insensitive ones that present a negligible risk of initiation Or accidental propagation.

Note: *The risk for the articles in this Subclass 1.6 is limited to the Explosion of a single article.*

2.1.1.5 Any substance or article that has, or is suspected to have, Explosive characteristics shall first be considered for classification in Class 1, in accordance Accordance with the procedures described in item 2.1.3. Class 1 products are not classified When:

(A) the carriage of an explosive substance is prohibited by reason of its

Excessive sensitivity unless specifically authorized;

(B) the substance or article is included among such explosive substances or Those explosive articles that are specifically excluded from Class 1

By the very definition of this Class; or

(C) the substance or article does not exhibit explosive properties.

2.1.2 Compatibility groups

2.1.2.1 Class 1 products are allocated to one of six subclasses described in Item 2.1.1.4, depending on the type of risk they present, and one of the thirteen risk Identification of the types of explosive substances and articles which are Considered compatible. The tables presented in items 2.1.2.1.1 and 2.1.2.1.2 show the Classification scheme in compatibility groups, the possible subclasses of risk Associated with each group and the corresponding classification codes.

2.1.2.1.1 Classification codes

Description of the substance or article to be classified	**Group in Compatible Gility**	**Code in Classifi- The**
Primary Explosive Substance	THE	1.1A
Article containing a primary explosive substance and not containing two or more		1.1B
More effective protection devices. Included here are some articles such as	B	1.2B
Demolition detonators, detonator assemblies assembled for demolition and		1.4B
Initiators, capsule type, whether or not containing primary explosives		
Explosive propellant or other explosive substance, or		1.1C
Article containing such explosive substance	W	1.2C
		1.3C
		1.4C
Secondary detonating explosive substance, or black powder, or article		1.1D
Explosive secondary detonating substance, in any case without	D	1.2D
Means of initiation and without propellant load, or article containing		1.4D
Primary explosive substance and contains two or more protective devices		1.5D
Effective		
Article containing explosive secondary detonating substance, without means of		1.1E
(Unless it contains flammable liquid or gel or	AND	1.2E
Hypergolic liquid)		1.4E
Article containing explosive secondary detonating substance with its		1.1F
Initiating means, with a propellant charge (unless it contains	F	1.2F
Or flammable gel or hypergolic liquid), or with no propellant charge		1.3F

		1.4F
Pyrotechnic substance, or article containing a pyrotechnic substance, or article		1.1G
Which contains both explosive substance and illuminating substance,	G	1.2G
Flammable, tear-proof, or fumigating (except for water-soluble		1.3G
Those containing white phosphorus, phosphides, pyrophoric substance, liquid		1.4G
Or flammable gel, or hypergolic liquids)		
Article containing explosive substance and white phosphorus	H	1.2H
		1.3H

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Article containing an explosive substance and a flammable liquid or gel		1.1J
	J	1.2J
		1.3J
Article containing an explosive substance and a toxic chemical	K	1.2K
		1.3K
Explosive substance, or article containing an explosive substance, which	L	1.1L
Particular risk (eg resulting from water activation,		1.2L
Presence of hypergolic liquids, phosphides or pyrophoric substances) which requires		1.3L
Isolation for each type of product (see item 7.1.3.1.5)		
Article containing only extremely insensitive detonating substances	N	1.6N
Substance or article packaged or designed in such a way that any effects		1.4S
From accidental operation are confined	s	
Packaging, unless it has been damaged by fire (in which case the		
Effects of explosion or projection shall be limited so as not to prevent		
Or significantly impairs fire-fighting or other fire-fighting measures.		
Containment in the immediate vicinity of the packaging)		

Note 1: *Articles of* C *OMPATIBILITY D and E groups can be placed or Packaged together with their own means of initiation, provided that such means Least two effective protection devices designed to prevent Occurrence of an accidental operation of the initiation means. Such articles and volumes They should be allocated to Group* C *OMPATIBILITY D and E.*

Note 2: *Articles* C *OMPATIBILITY D Groups and E may be packed together with Their own means of initiation, which do not have two efficient protection devices Where, according to the competent authority of the country of origin, the accidental Initiation means do not cause the article to explode under normal conditions of carriage. Such volumes should be allocated to* C *groups OMPATIBILITY D or E.*

2.1.2.1.2 Explosives classification scheme, risk subclass combination

With the compatibility group:

	Compatibility Group													
Subclass Of Risk	THE	B	W	D	AND	F	G	H	J	K	L	N	s	AT Σ
1.1	1.1A	1.1B	1.1C	1.1D	1.1E	1.1E	1.1F	1.1G			1.1J		1.1L	Referring to Fig.
1.2		1.2B	1.2C	1.2D	1.2E	1.2F	1.2F	1.2G	1.2H	1.2J	1.2K	1.2L		10
1.3			1.3C				1.3F	1.3G	1.3H	1.3J	1.3K	1.3L		7
1.4		1.4B	1.4C	1.4D	1.4E	1.4F	1.4G						1.4S	7
1.5				1.5D										1
1.6												1.6N		1
1.1 - 1.6 Σ	1	3	4	4	3	4	4	2	3	2	3	1	1	35

2.1.2.2 The definitions of the compatibility groups, in section 2.1.2.1.1, are Mutually exclusive, except for substance or article that Compatibility Group S. As the Compatibility Group S criterion is empirical, the The allocation of a product to this group is necessarily linked to the inclusion tests In subclass 1.4.

2.1.3 Classification procedures

2.1.3.1 General provisions

2.1.3.1.1 Any substance or article which has, or is suspected to have, Explosive characteristics shall first be considered for classification in Class 1. Substances and articles classified in Class 1 shall be allocated to the subclass and the group of Compatibility.

2.1.3.1.2 Except in the case of a substance listed by its proper shipping name In the Hazardous Substance List in Chapter 3.2, no product shall be offered to As a Class 1 product, until it has been

Prescribed in this section. In addition, before a new product is offered to Transport, the classification procedure must be carried out. In this context, a new product is Who, in the judgment of the competent authority, falls under one of the following hypotheses:

(A) a new explosive substance (or combination or mixture of Explosive) considered significantly different from other Combinations or mixtures already classified;

B) new draft article or article containing new explosive substance Or a new combination or mixture of explosive substances;

(C) a new packaging design for an explosive substance or article, including New type of inner packaging;

Note: *The importance of this factor may be disregarded unless It is understood that a relatively small change in a Internal or external packaging can be critical and can transform a Risk of a mass explosion.*

2.1.3.1.3 The manufacturer, or whoever requests the classification of a product, shall Information on the name and characteristics of all Existing explosives in the product and shall provide the results of all relevant tests performed. It is assumed that all explosive substances in a new article have been Properly tested and then approved.

2.1.3.1.4 A report on the test series shall be prepared in accordance with the Requirements of the competent authority. The report shall contain, in particular, information about:

(A) the composition of the substance or structure of the article;

(B) the quantity of substance or the number of articles per test;

(C) the type and construction of the packaging;

(D) the assembly of the test, including, in particular, the nature, Quantity and arrangement of the initiation or ignition means used;

(E) the development of the test, including, in particular, the time Elapsed until the first reaction worthy of mention was made. Substance or article, the duration and characteristics of the reaction and a Estimate of its term;

(F) the effect of the reaction in the vicinity (up to 25 m from the test site);

G) the effect of the reaction in the furthest distances (more than 25 m from the Of the test); and

H) atmospheric conditions during the test.

2.1.3.1.5 During the classification tests, if the substance or article, or its packaging are damaged, and the damage can affect product behavior in testing, classification must be verified.

2.1.3.2 Procedure

2.1.3.2.1 Figure 2.1.1 indicates the general scheme of classification substance or article considered for inclusion in Class 1. The assessment is done in two stages. First, the explosive potential of the substance or article should be investigated and it is shown that its stability and sensitivity, both chemical and physical, are acceptable. To facilitate standardization of assessments by competent authorities, it is recommended that the data test are systematically analyzed as to the appropriate test criteria, using the flowchart in Figure 10.2 constant in Part I, *Manual of Tests and Criteria* . If the substance or article is acceptable for Class 1, it is necessary to second stage, to allocate the correct risk subclass, the flowchart of Figure 10.3 that Manual.

2.1.3.2.2 Acceptability tests and subsequent tests to determine the correct subclass of Class 1 are conveniently grouped into seven series, listed in Part I of *Tests and Criteria Manual* . The numbering of these series refers to more Following evaluation of the results than the order in which the tests are conducted.

2.1.3.2.3 Scheme substance or article classification procedure

Note 1: *The competent authority which prescribes the definitive test method corresponding to each of the Test Types should specify the test criteria appropriate. When there is international agreement on test criteria, the details are provided the manual mentioned above, describing the seven series of tests.*

Note 2: *The evaluation scheme is only the classification of substances and packaged goods and individual articles without packaging. The transport containers, road vehicles and wagons may require special tests which take into account the amount*

(Autoconfinamento) and the type of substance and the substance container. Those tests may be specified by the competent authority.

Note 3: *As there are limits in any case testing scheme, there must be higher authority to take the final decision. This decision can not be accepted international and then will be valid only in the country where it was taken. The Committee of Experts on Transport UN Dangerous Goods provides a forum for discussion borderline cases. When seeking international recognition for a classification, Ministry of Defence - Command of the Army should, in accordance with procedures to be defined, refer to the National Land Transportation Agency - ANTT, report to subjected to such a forum, containing full details of all tests made, including nature of any changes introduced.*

Figure 2.1.1

OUTLINE OF PROCEDURE FOR CLASSIFICATION OF ARTICLE OR SUBSTANCE

2.1.3.3 Acceptability Procedure

2.1.3.3.1 The results of preliminary tests and in Test Series 1 to 4

They are used to determine whether the product is acceptable or not in Class 1. If the substance is manufactured in order to produce in practice, explosive or pyrotechnic effect (see item 2.1.1.1 (c)), it is not necessary to make the Test Series 1 and 2. If a particular article, Article packaged or packaged substance are disapproved in Test Series 3 or 4, can be If redesigning the product or packaging, to make them acceptable.

Notice: *Some devices may function accidentally during transportation. They must be presented theoretical analysis, test data or other safety evidence to demonstrate that such an occurrence is very unlikely that its consequences are not significant. The assessment should take account of vibration related to the modalities of transport proposals, static electricity, electromagnetic radiation at all frequencies relevant (maximum intensity 100 Wm $^{-2}$), adverse weather conditions and compatibility of explosive substances with glues, paints and packaging materials with which may come into contact. They must be evaluated for the risk and consequences accidental operation during transport, all articles containing substances primary explosive. It should be evaluated the reliability of fuses considering the number Independent protection devices. You have to be verified that all articles and packaged substances were designed with expertise (for example, there is no formation of empty or explosive substance film, or allow spray or explosive impingement between hard surfaces).*

2.1.3.4 Allocation to risk subclass

2.1.3.4.1 The determination of the subclass of risk is generally made based on test results. The substance or article should be allocated to the corresponding subclass the results of tests that were submitted as ready for transport. Can be taken into account, also, other test results and information collected in accidents.

2.1.3.4.2 The Test Series 5, 6 and 7 are used to determine the subclass of risk. The Test Series 5 is used to determine whether the substance can be allocated to Subclass 1.5. The Test Series 6 is used for the allocation of substances and articles to Subclasses 1.1, 1.2, 1.3 and 1.4. The Test Series 7 is used for allocation of articles to Subclass 1.6.

2.1.3.4.3 In the case of Compatibility Group S, the tests may be waived by the competent authority, if possible classification by analogy, using Results comparable test article.

2.1.3.5 Allocation of fireworks to risk subclasses

2.1.3.5.1 The fireworks will normally be allocated to subclasses 1.1, 1.2, 1.3, and 1.4, based on data obtained in Test Series 6. However, as there is a wide range of these items and the availability of test facilities may be limited, allocation to the risk of subclasses can also be made according to the procedure presented in item 2.1.3.5.2.

2.1.3.5.2 The allocation of fireworks to UN numbers 0333, 0334, 0335 or 0336 It may be made by analogy with the types of fireworks already classified and listed in Table in item 2.1.3.5.5, without the need to resort to Test Series 6. The allocation will be made in accordance with the competent authority. Items that are not specified in the table shall be classified on the basis of data obtained from Series Tests 6.

Notice: *The introduction of other types of fireworks in column 1 of Table presented in section 2.1.3.5.5 shall only be made based on complete data obtained in trials submitted to the Expert Subcommittee on Transportation Product UN dangerous.*

2.1.3.5.3 When fireworks belonging to different risk subclasses are packaged in the same volume, they should be classified in the subclass more dangerous unless the data obtained from Test Series 6 indicate another result.

2.1.3.5.4 The classification presented in Table item 2.1.3.5.5 applies only to articles packed in cardboard boxes (4G).

2.1.3.5.5 Table default fireworks classification [1]

Note 1 : *Unless otherwise indicated, the percentages specified in the table refer to the weight of the total pyrotechnic composition (eg rocket propellant projection load, opening load and load effect).*

Note 2 : *In this table, the term "cargo opening of composition" refers to substances pyrotechnic powder or pyrotechnic units, such as those contained in fireworks that are*

1 This table contains a list of classification fireworks that can be used in the absence of data test of Test Series 6 (see item 2.1.3.5.2)

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used to produce a sound effect or which are used as fillers or opening projection / propelling at least the time required for the pressure increase is greater than 6 ms to 0.5 g of pyrotechnic substance in the test composition Load opening in Appendix 7 of the Manual of Tests and Criteria.

Note 3 : *Dimensions in mm (millimeters) refer:*

- The ball diameter of the spherical air pumps and air pumps double (Type peanuts);

- The length of the cylindrical air pumps;

- The inner diameter of the tube comprising or containing the fireworks, mortar, Roman candela, shooting rocket or source vessel type;

- The inner diameter of the mortar intended to contain the Source type vessel to source type vessel in bag or cylindrical format.

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Kind	Includes: / Synonym	Definition	Specification	Cla
bomb air (Spherical or cylindrical)	pumps in Inches, *Shell, Shell-in-mortar* , mines	Projection device with or without load, with pyrotechnic initiator and load opening, or pyrotechnical units free pyrotechnic composition designed to It is designed in a mortar .	All pumps crash of Air (Tyre) Air pump color effect: ≥ 180 mm Air pump color effect: <180 mm with> 25% of charge composition opening, as loose powder and / or effects bang (shot) Air pump color effect: <180 mm with ≤ 25% composition cargo opening, as loose powder and / or effects of crack (Shot) Air pump color effect: ≤ 50 mm, or ≤ 60 g pyrotechnic composition with ≤ 2% opening cargo composition as Gunpowder loose and / or effects of crack (Tyre)	
	double pump	Set of two or more spherical bombs air in the same enclosure, propelled by the same projection load with external pyrotechnic delay and independent.	The most dangerous spherical Air Pump determines the classification	
	Mortar	Set composed of a spherical bomb cylindrical or inside a mortar, the from which the pump is designed to be launched.	All pumps crash of Air (Tyre) Air pump color effect: ≥ 180 mm Air pump color effect:> 25% composition cargo opening, as powder Loose and / or effects of crack (Tyre) Air pump color effect:> 50 mm and <	

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			180 mm Air pump color effect: ≤ 50 mm, or ≤ 60 g pyrotechnic composition with ≤ 25% opening cargo composition as Gunpowder loose and / or effects of crack (Tyre)	
bomb air, spherical or cylindrical (Cont.)	bomb repetitions in (Spherical) (Percentages indicated if refer to weight gross of devices pyrotechnics)	Device without projection load, pyrotechnic initiator and opening charge, containing bombs shot and inert materials, designed to be launched from a mortar.	> 120 mm	
		Device without projection load, pyrotechnic initiator and opening charge, containing bombs shot ≤ 25g composition per unit opening load shooting, with ≤ 33% charge composition opening and ≥ 60% of inert materials, designed to be launched from a mortar.	≤ 120 mm	

		Device without projection load, pyrotechnic initiator and opening charge, containing color effect pumps and / or pyrotechnic units and designed to be launched from a mortar.	> 300 mm

		Device without projection load, pyrotechnic initiator and opening charge, containing pumps colorful effect ≤ 70mm and / or pyrotechnical units, with ≤ 25% composition cargo opening and ≤ 60% of pyrotechnic composition and designed to be launched from a mortar.	> 200 mm and ≤ 300 mm
		Device with projection load, pyrotechnic initiator and opening charge, containing pumps colorful effect ≤ 70 mm and / or pyrotechnical units, with ≤ 25% composition cargo opening and ≤ 60% of pyrotechnic composition designed to be launched from a mortar.	≤ 200 mm
Set of multiple tubes	Pies, Girândolas, *Cakes* , signs, *Set Pieces, Kits* , Base Missile, rocket battery	Set of various pyrotechnical artifacts same or different, corresponding to a type of fires devices shown in the table, with one or two points of initiation.	Classification is determined by the type of fireworks more dangerous
Candela	See her Roman, "Roman Candle" Gun.	Tube containing a number of units Pyrotechnic constituted by alternating of pyrotechnic compositions load projection and trigger transmission.	≥ 50 mm internal diameter, containing composition cargo opening, or <50 mm with> 25% charge composition opening

			≥ 50mm internal diameter without composition opening load
			<50 mm internal diameter and ≤ 25% composition opening load
			≤ 30 mm internal diameter, each pyrotechnic unit ≤ 25 g and ≤ 5%

			composition opening load
Rocket	3 shots, tail Peacock, bouquet tears, crakling, creptante pump 12x1	Tube with a pyrotechnic unit, comprising pyrotechnic composition and Projection load, with or without a fuse streaming.	≤ 30 mm internal diameter and unit Pyrotechnics> 25 g, or> 5% and ≤ 25% composition opening load ≤ 30 mm internal diameter, unit pyrotechnical ≤ 25 g and ≤ 5% composition opening charge
squib	Rocket, comet, cometinha, comet whistle, with firecracker stick, rocket type missile	Tube containing a pyrotechnic composition and / or pyrotechnical units equipped with one or more rods or other means of flight stabilization, and designed to be released in the air.	Only composition effects load opening opening cargo composition> 25% of pyrotechnic composition > 20g pyrotechnic composition, and opening cargo composition ≤ 25% ≤ 20 g pyrotechnic composition, load opening the black powder base and ≤ 0.13 g of cargo opening of composition the effect of shooting and ≤ 1 g in total
source type Vase	*Pot a feu* , vase colors	Tube containing a projection load and pyrotechnic units, designed to be placed on the ground or be fixed on the ground. The main effect is the projection of all pyrotechnical units in one shot	> 25% composition cargo opening, as loose powder and / or shooting effects ≥ 180mm and ≤ 25% charge composition opening, as loose powder and / or

		producing the air visual effects and / or widely dispersed sound; or bag or cylinder cloth or paper, having a charge and pyrotechnic units, designed to be placed in a mortar and function as a source.	effects shot <180 mm and ≤ 25% charge composition opening, as loose powder and / or effects shot ≤ 150g pyrotechnic composition, with ≤ 5% composition cargo opening, as loose powder and / or effects shot. Each pyrotechnic unit ≤ 25 g, each effect shot <2g; each whistle (if any), ≤ 3g
Source	Volcano, *Sputnik* , Christmas tree, *fountain*	nonmetallic enclosure containing a compressed pyrotechnic composition or compressed intended to produce sparks and flames.	≥ 1 kg of pyrotechnic composition <1 kg pyrotechnic composition
spark Stick	Star, little star, magnesian candle, velinha magnesian	partially coated rigid wires (in one end) with a slow burning pyrotechnic composition, with or without pyrotechnic initiator.	Stick to spark the perchlorate base: > 5 g per item or> 10 items per package Stick to spark the perchlorate base: ≤ 5 g per item and ≤ 10 items per pack; Rod spark the basis of nitrate: ≤ 30 g per item
spark Non Stick metal	stick coated	not partially coated metal bat (At one end) with slow burning pyrotechnic composition, designed to be handled by hand.	Items perchlorate base:> 5 g per item or> 10 items per pack Items perchlorate base: ≤ 5 g per item and ≤ 10 items per package; Items to base nitrate ≤ 30 g per item
Fires in Fireworks low risk news	Popping Hall, snaps, balls creptantes launches confetti, fedorzinho,	device designed to produce effects visual and / or hearing very limited, containing small amounts of pyrotechnic and / or explosive composition.	Crackle Hall and snaps may contain up to 1.6 mg of silver fulminate; snaps and throws confetti can contain up to 16mg of mixture of potassium chlorate / phosphorus red; other articles may contain up

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	snakes		5g pyrotechnic composition, but not may contain cargo composition opening
rotary air or swiveling Ground	Little bee, helicopter, drive flying, peãozinho, giroloco	Non-metallic pipe or tube (s) containing a pyrotechnic composition producing gases or sparks, with or without composition producing noise and or without fins.	pyrotechnic composition per item> 20 g, containing ≤ 3% Composition load opening as sound effects, or composition to produce whistle ≤ 5g Pyrotechnic composition per item ≤ 20 g, containing ≤ 3% Composition load opening as shooting effects, or composition to produce whistle ≤ 5g
swiveling soil type Wheel	Wheel swivel, rosette	Set that includes devices thrusters containing pyrotechnic composition, endowed means to be fixed to a support You can rotate.	≥ 1 kg of the total pyrotechnic composition, without shooting effect, each whistle (if any) ≤ 25g and 50g ≤ composition to produce whistle per wheel <1 kg total pyrotechnic composition, without shooting effect, each whistle (if any) ≤ 5 g and ≤ 10 g composition to produce whistle per wheel
rotary air type Wheel	UFO, crown flyer	Tubes and propelling charges pyrotechnic compositions that produce sparks and flames and / or noise, with the tubes fixed in a holder in the form of ring.	> 200 g total pyrotechnic composition or > 60g pyrotechnic composition Device propellant, ≤ 3% composition opening shot load end, each whistle (if any) ≤ 25 g and ≤ 50 g composition to produce whistle per wheel ≤ 200 g total pyrotechnic composition and ≤ 60g of pyrotechnic composition Device propellant ≤ 3% Composition effect opening load shot, each whistle (if any) ≤ 5 g and ≤ 10 g composition to produce whistle per wheel

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Packing with selections fireworks artifice	Assorted package exposure box sortie for exposure box sortie for environments closed, assorted	Set of pyrotechnic more of a kind, each of which corresponds one of the types listed in this table.	Classification is determined by the type of fireworks more dangerous
Drums (Set of pumps Ground)	twine in firecrackers, *firecraker* , Battery 06 shots, 12 Battery shots	Set of ground stations (paper or cardboard) joined by a fuze Pyrotechnic, each soil pump intended to produce a shooting effect.	Each tube ≤ 140mg composition Load opening or ≤ 1 g black powder
pump Ground	Firecracker, popping scratching, bomb numbered, banger, pump flagon	Pipe nonmetallic containing an composition designed to produce effect shot.	> 2g opening charge composition item ≤ 2g opening charge composition item and ≤ 10 g per inner packaging ≤ 1g opening cargo composition item ≤ 10 g per inner packaging or ≤ 10 g

black powder per item

2.1.3.6 Class 1 Exclusion

2.1.3.6.1 The Ministry of Defense - Army Command may request deletion of article or substance of Class 1, based on the results of the tests and the definition of Class 1.

2.1.3.6.2 When a substance provisionally accepted into Class 1 is excluded from this Class for the implementation of Test Series 6 by volume of specific type and dimensions, this substance if fits the classification criteria or definition for another class or Risk subclass, should be included in the Dangerous Goods (Chapter 3.2) that Class or Sub-Class Risk, accompanied by a special provision that restricting the type and dimensions of the test volume.

2.1.3.6.3 When a substance allocated to Class 1 is diluted so that allows its exclusion of that Class by Test Series 6, such a substance (hereinafter referred Numb as explosive) should be included in the Dangerous Goods List of Chapter 3.2, accompanied by an indication of the maximum concentration at which it can be excluded from Class 1 (see items 2.3.1.4 and 2.4.2.4.1) and, if applicable, the concentration below of which it is considered not subject to these Regulations. New solid explosives Numb subject to this Regulation should be included in Division 4.1 and new desensitized explosive liquids in Class 3. When the desensitized explosive meet the criteria or definition for another class or subclass, should be assigned the risk corresponding subsidiary.

2.1.3.6.4 An article may be excluded from Class 1 when three unpackaged articles, each individually activated by its own means of initiation or ignition or by means external to work according to the designed model, comply with the following criteria:

a) No external surface shall have temperature above 65 ° C. IT IS acceptable a momentary increase in temperature to a maximum of 200 ° C;

b) there is no breakage or fragmentation of the outer wrapper or displacement of the article or parts thereof as well as any 1m direction;

Notice: *When the product integrity may be affected in the case of external fire, these criteria should be examined by a test*

exposure to fire, according to the ISO 12097-3 standard described;

c) does not occur any sound effect that exceeds 135 decibels at a distance 1 m;

d) does not occur spark or flame capable of igniting materials, such as a paper of 80 ± 10 g / m 2 in contact with the article; and

e) does not occur production of smoke, fumes or dust in such quantities the visibilities in a chamber 1 m 3 equipped with anti panels Explosion appropriate dimensions to withstand a possible overpressure is reduced by more than 50%, according to a measurement performed with a light meter or a calibrated radiometer and located at 1 m distance from the source of constant light, placed in the middle of the wall point opposite. the general approach can be used on the Test Optical density of the ISO 5659-1 standard, and general guidance on the Photometric System described in Section 7.5 of the ISO 5659-2 standard, or other optical density measurement methods designed to fulfill this same goal. adequate coverage should be used to cover the back and sides of the light meter to minimize the effects of dispersion or light leakage is not emitted directly from the source.

Note 1: *If, during testing to assess compliance with the criteria (a), (b) (C) and (d), is observed little or no smoke, it is not necessary to perform the test described in (e).*

Note 2: *The Ministry of Defense - Army Command may require that the articles are submit to tests already packed if it is determined that, as packaged for transport, the article may present a greater risk.*

CHAPTER 2.2

CLASS 2 - GASES

2.2.1 Definitions and general provisions

2.2.1.1 Gas is a substance that:

a) at 50 ° C has a vapor pressure greater than 300 kPa; or

b) is completely gaseous at the temperature of 20 ° C and standard pressure 101.3 kPa.

2.2.1.2 The a gas transport conditions are described according to their status physical, such as:

a) Gas *compressed:* a gas which when packaged under pressure to transport is completely gaseous at a temperature of – 50 ° C; in this category includes all gases with a critical temperature below or equal to – 50 ° C;

B) Gas *liquid:* gas when packaged under pressure to transport is partially liquid at temperatures above – 50 ° C. It is made a distinction between:

G *Ace liquefied high pressure:* a gas with a critical temperature between - 50 ° C and + 65 ° C, and

G *Ace liquefied at low pressure:* a gas with a critical temperature more than + 65 ° C;

w) G *Ace refrigerated liquefied* : gas which when packaged for transport, it becomes partially liquid due to the low temperature;

(D) L *Dissolved* : gas when packaged under pressure to carriage, is dissolved in the liquid phase solvent;

e) L *ace adsorbed:* gas which when packaged for transport, is adsorbed onto a porous solid material generating an internal pressure smaller container than 101.3 kPa at 20 ° C and less than 300 kPa to 50 ° C.

2.2.1.3 This class includes compressed gases, liquefied gases, gases dissolved, refrigerated liquefied gases, mixtures of one or more gases with one or more vapors of substances of other classes, articles loaded gas and aerosols.

2.2.2 subclasses

2.2.2.1 The products of class 2 are divided into three subclasses, based on main risk that present during transport:

Notice: *For AEROSOLS (ONU 1950 number), consider the criteria of provision Special No. 63 and, for SMALL CONTAINERS CONTAINING GAS (GAS CARTRIDGES) (UN number 2037), see also Special Provision No. 303.*

a) Division 2.1 - *Flammable gases*

Gases which at 20 ° C and at standard pressure of 101.3 kPa:

(I) when achieve ignition in a mixture of 13% or less by volume with air; or

(Ii) exhibit flammability range with air of at least 12%, regardless of the lower flammable limit. THE Flammability shall be determined by tests or by calculations to conform to the methods adopted by ISO 10156: 2010. When the available data are insufficient to use of such methods may be adopted for testing methods comparable, internationally recognized, or authority competent national.

b) Division 2.2 - *Non-Flammable gases, non-toxic*

Gases which:

(I) are asphyxiating: gases which dilute or replace oxygen normally in the atmosphere; or

(Ii) are oxidizing: gases, generally by providing oxygen, cause, or contribute to, rather than air for the combustion of other material; or

Notice: *By "gases which cause or contribute to the combustion*

other material more than air "means pure gases or mixtures of gases, with higher oxidation power than 23.5%, determined by method specified in ISO 10156: 2010.

(Iii) do not fit in another subclass.

c) Subclass 2.3 - *Toxic gases*

Gases which:

(I) are known to be so toxic or corrosive to people constitute a health risk; or

(Ii) are supposed to be toxic or corrosive to people, present value CL_{50} (as defined in item 2.6.2.1) equal to or

less than 5,000 ml / m 3 (ppm).

Note : *Gases that meet these criteria for its corrosivity are to be classified as toxic with a subsidiary risk corrosive.*

2.2.2.2 gases and gas mixtures that pose risks associated with more than one subclass, obey the following precedence rule:

a) Sub-2.3 takes precedence over other subclasses;

b) Division 2.1 takes precedence over Division 2.2.

2.2.2.3 The gases of Class 2.2, except liquefied or chilled gas, not They are subject to these Regulations when transported under a pressure less than 280 kPa at a temperature of 20 ° C.

2.2.2.4 The gases of Division 2.2 are not subject to this Regulation when contained in:

a) foods, including carbonated beverages (except UN number 1950);

b) balls intended for sporting use;

c) tires; or

d) lamps for illumination, provided they are packaged so that Projection effects of any breakage of the lamp stay contained within the volume.

2.2.3 Mixtures of gases

Mixtures of gases (including vapors of substances of other classes) are classified into one of three subclasses, applying the following procedures:

a) Flammability shall be determined by tests or calculations performed in accordance with methods adopted by ISO 10156: 2010. When the available information is insufficient to apply such methods, It can be used comparable test method, known internationally or by the competent national authority;

b) the level of toxicity may be determined by measuring assays *CL 50* (as defined in item 2.6.2.1.3), or calculation method which use the following formula:

$$CL_{50}\ \text{Toxic (mixture)} = \frac{1}{\sum_{i=1}^{N} \frac{f_i}{T_i}}$$

on what:

f_i = mole fraction of the i- *th* substance that makes up the mixture;

T_i = i- toxicity index *th* substance which comprises mixing ($T_i = CL_{50}$, if CL_{50} is known).

When values CL_{50} are unknown, the toxicity index is determined using the lowest value CL_{50} substances with physiological effects and similar chemicals or by testing if not there is an alternative;

c) the gas mixture subsidiary risk of corrosivity when known by human experience, it produces destructive effects on skin, eyes or mucous membranes or when the value of CL_{50} of corrosive components in the mixture be equal to or less 5,000 ml / m³ (ppm), when it said the value of LC_{50} is calculated by following formula:

$$CL_{50}\ \text{Corrosive (mixture)} = \frac{1}{\sum_{i=1}^{N} \frac{F_{ci}}{T_{ci}}}$$

on what:

fci = mole fraction of the i- *th* corrosive substance that makes up the mixture;

Tci = Toxicity index of the i- *th* corrosive substance that makes up the mixture (Tci = CL_{50}, if CL_{50} is known);

d) oxidizing capacity may be determined by testing or calculated, according to the methods adopted by ISO (see ***Note*** in section 2.2.2.1 (b) and ISO 10156: 2010).

CHAPTER 2.3

CLASS 3 - FLAMMABLE LIQUIDS

Introductory notes

Note 1: *For purposes of this Regulation, the word 'flammability' has the same meaning of the word 'flammable'.*

Note 2 : The *flash point of a flammable liquid may be altered by the presence of impurities. The substances listed in the Dangerous Goods (Chapter 3.2) classified as Class 3 are generally regarded as chemically pure. As commercial products may contain other substances or impurities, the point glow may vary and influence the classification or determination of the packing group of products. In case of doubt regarding the classification or packing group of a substance, the flash point should be determined experimentally.*

2.3.1 Definition and general provisions

2.3.1.1 Class 3 includes the following substances:

a) flammable liquids (see items 2.3.1.2 and 2.3.1.3);

b) desensitized liquid explosives (see item 2.3.1.4).

2.3.1.2 *Flammable liquids* are liquids, liquid mixtures or liquids containing solids in solution or suspension (e.g., paints, varnishes, lacquers, etc. excluding substances which have been classified differently, depending on their hazardous characteristics) that produce flammable vapor at temperatures up to 60 ° C in Pot test closed, or up to 65.6 ° C, open cup test, usually referred as flash point. This class also includes:

a) Liquids offered for transport at or above temperatures its flash point; and

b) substances transported or offered for transport at temperatures high in liquid, which peel off flammable vapors

temperature at or below the maximum transport temperature.

Note : The *s results of closed - cup tests and open vessel testing a same substance can have different values, and even the individual results of a same substance in the same type of test usually vary frequently. That is why, to take account of such discrepancies, regulations that present variations in relation the above values fall within the scope of this definition.*

2.3.1.3 For the purposes of this Regulation, liquids that meet the definition of item 2.3.1.2, with flash point greater than 35 ° C and do not sustain combustion, not flammable liquids must be considered. For the purposes of this Regulation, it is considered that liquids are not able to support combustion (ie not sustain combustion under defined test conditions) if:

a) have been approved under suitable combustibility test (see Combustibility TESTING SUSTAINED prescribed in Part III, Sub-section 32.5.2 of the Manual of Tests and Criteria);

b) its flash point according to ISO 2592: 2000, is above 100 ° C; or

c) solutions in water are miscible, with water content of more than 90% by pasta.

2.3.1.4 desensitized liquid explosives are explosive substances, dissolved or suspended in water or other liquids to form a homogeneous liquid mixture to suppress their explosive properties (see Section 2.1.3.6.3). The explosive entries Numb liquid contained in the Dangerous Goods List correspond to UN numbers: 1204, 2059, 3064, 3343, 3357 and 3379.

2.3.2 Allocation to packing groups

2.3.2.1 The criteria contained in section 2.3.2.6 are used to determine the group of risk of a liquid that presents risk of flammability.

2.3.2.1.1 For liquids whose only risk is flammability, the packing group of substance is equivalent to the level of risk indicated in item 2.3.2.6.

2.3.2.1.2 For liquids with risk (s) extra (s) should consider the level of risk determined based on the item 2.3.2.6 and the risk level based on severity (s) of Risk (s) additional (s); the classification and packing group shall be determined in accordance with

the provisions of Chapter 2.0.

2.3.2.2 viscous substances, such as paints, enamels, lacquers, varnishes, adhesives and polishes with a flash point below 23 ° C, can be framed in the Group Packaging III in accordance with the procedures described in subsection 32.3, Part III, of *Tests and Criteria Manual* , provided that:

a) the viscosity expressed by the flow time in seconds, and flash point are in accordance with the table below:

Flow time t in the 2nd	Jet diameter (mm)	Flash Point, cup test closed (C)
20 <T ≤ 60	4	Greater than 17
60 <T ≤ 100	4	Greater than 10
20 <t ≤ 32	6	Greater than 5
32 <T ≤ 44	6	Less than -1
44 <T ≤ 100	6	Less than -5
100 <T	6	Unlimited

b) less than 3% of the clear solvent layer separates the test solvent separation;

c) the mixture or any separated solvent does not meet the criteria of Class 6.1 or Class 8 .;

d) the substance is packaged in containers up to 450 liters capacity.

2.3.2.3 *Reserved.*

2.3.2.4 Substances classified as flammable liquids to be transported, or offered for transport at elevated temperatures are included in Packing Group III.

2.3.2.5 viscous liquids:

- have a flash point less than 23 ° C and 60 ° C or less;
- non-toxic, corrosive or hazardous to the environment;

- containing up to 20% nitrocellulose, nitrocellulose since no contains more than 12.6% nitrogen by dry mass; and
- They are packaged in containers of up to 450 L;

They are not subject to these Regulations if:

a) in the solvent separation test (see subsection 32.5.1, Part III of *Tests and Criteria Manual*), the height of the separated layer of solvent is less than 3% of the total height; and

b) the flow of time in the viscosity test (see subclause 32.4.3, Part III of *Tests and Criteria Manual*), with a jet 6 mm diameter is equal to or greater than:

(I) 60 seconds; or

(Ii) 40 seconds if the viscous substance contains no more than 60% of Class 3 substances.

2.3.2.6 risk group in terms of flammability:

Packing group	Flash Point (Closed cup)	Boiling point initial
I	-	≤ 35 ° C
II	< 23ºC	> 35 ° C
III	≥ 23 ° C ≤ 60 ° C	> 35 ° C

2.3.3 flash point determination

The following methods for determining the flash point of liquids flammable may be used:

International Standards:

ISO 1516

ISO 1523

ISO 2719

ISO 13736

ISO 3679

ISO 3680

Other regulations:

American Society for Testing Materials International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, USA 19428-2959:

D3828-07a ASTM, Standard Test Methods for Flash Point by Small Scale Closed Cup Tester

ASTM D56-05, Standard Test Methods for Flash Point by Tag Closed Cup Tester

ASTM D3278-96 (2004) e1, Standard Test Methods for Flash Point of Liquids by Small Scale Closed-Cup aparatus

ASTM D93-08, Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester

Association Française de Normalisation, AFNOR, 11, rue de Pressensé, 93571 La Plaine Saint-Denis Cedex:

French standard NF F 07-019

French Standards NF F 07-011 / NF T 30-050 / NF T 66-009

French standard NF F 07-036

Deistsches Institut für Normung, Burggrafenstr. 6 D-10787 Berlin:

DIN 51755 (flash points below 65 ° C)

State Committee of the Council of Ministers for Standardization, 113813, GSP, Moscow, M-49 Leninsky Prospect, 9

GOST 12.1.044-84.

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Standard of the Brazilian Association of Technical Standards - ABNT

2.3.4 Determination of initial boiling point

The following methods for determining the initial boiling point of flammable liquids can be used:

International Standards:

ISO 3924

ISO 4626

ISO 3405

Other regulations:

American Society for Testing Materials International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, USA 19428-2959:

D87-07A ASTM, Standard Test Method for Distillation of Petroleum Products at atmospheric Pressure

ASTM D1078-05, Standard Test Method for Distillation Range of Volatile

Organic Liquids

Other methods acceptable

A.2 method described in Part A of the Annex to Regulation (EC) No 440/2008 2

2 Regulation (EC) No 440/2008 of 30 May 2008 laying down test methods , according to the Regulation (EC) No 1907/2006 of the European Parliament and of the Council on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (Official Journal of the European Union No L 142 of 31.05.2008, pages 1-739 and No. L 143 of 03.06.2008, page 55)

CHAPTER 2.4

CLASS 4 - SOLID FLAMMABLE; SUBSTANCES SUBJECT TO BURNING SPONTANEOUS AND SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT GASES FLAMMABLE

Introductory notes

Note 1: *When the expression "that reacts with water" is used in this Regulation, it It refers to substances which, in contact with water, emit flammable gases.*

Note 2: *Due to the diversity of properties presented by products belonging to the subclasses 4.1 and 4.2, it is impracticable to establish sole criterion for classification these subclasses. Tests and allocation criteria to the three subclasses of class 4 They are in this chapter (and in Section 33, Part III of the Manual of Tests and Criteria).*

Note 3 *: Since organometallic substances can be classified in the Subclasses 4.2 or 4.3 with additional subsidiary risks, depending on their properties, there is provided a specific classification flowchart for these substances in Section 2.4.5.*

2.4.1 Definitions and general provisions

2.4.1.1 Class 4 is divided into three subclasses described below:

a) Class 4.1 - *Flammable solids*

Solids which, in transport condition, are readily combustible, or by friction can cause fire or contribute to such; substances autorreagentes that can suffer strongly exothermic reaction; solid desensitized explosives which may explode if not sufficiently diluted;

b) Class 4.2 - *Substances subject to spontaneous combustion*

Substances subject to spontaneous heating under normal conditions transport, or heating in contact with air and can ignite;

c) Subclass 4.3 - *Substances which, in contact with water, emit gases flammable*

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Substances which, by interaction with water can become spontaneously flammable or release flammable gases in dangerous quantities.

2.4.1.2 As stated in this chapter, the *Manual of Tests and Criteria* presents methods and testing criteria accompanied by recommendations on its application for classification of the following types of substances Class 4:

a) flammable solids (Division 4.1);

b) autorreagentes substances (Class 4.1);

c) pyrophoric solids (Division 4.2);

d) pyrophoric liquids (class 4.2);

e) substances subject to self-heating (class 4.2); and

f) substances which, in contact with water, emit flammable gases (Subclass 4.3).

Test methods and criteria for autorreagentes substances are in Part II of *Tests and Criteria Manual* ; and test methods and criteria of other Class 4 substances are in Section 33, Part III of *Tests and Criteria Manual* .

2.4.2 Class 4.1 - Flammable solids, substances and autorreagentes solid desensitized explosives

2.4.2.1 General

The Class 4.1 includes the following substances:

a) flammable solids (see Section 2.4.2.2);

b) autorreagentes substances (see section 2.4.2.3); and

c) solid desensitized explosives (see item 2.4.2.4).

2.4.2.2 Class 4.1 - Flammable solids

2.4.2.2.1 Definitions and properties

2.4.2.2.1.1 *Flammable solids* are those readily combustible solids and those that

by friction, can cause fire.

2.4.2.2.1.2 *Readily combustible solids* are substances in powder form, granular or paste that are dangerous if they can be easily ignited by brief contact an ignition source (eg burning match) and the flame spreads rapidly. O danger can come not only from the fire, but also toxic products of combustion. dusts metal are especially dangerous because of the difficulty of extinguishing the fire, as the extinguishing agents normally used (carbon dioxide and water) can increase risk.

2.4.2.2.2 Classification of flammable solids

2.4.2.2.2.1 Powders, paste or granular, shall be classified as readily combustible solids of Class 4.1 when the burning time observed in one or more tests - carried out according to the test method described in Subsection 33.2.1 Part III of *Tests and Criteria Manual* - is less than 45 seconds, or the rate of burning is greater than 2.2 mm / s. Metal powders and powder metal alloys are classified in Class 4.1 when they can be ignited and the reaction spreads over the whole length of sample, within 10 minutes or less.

2.4.2.2.2.2 Solids which can, by friction, cause fire, are classified in class 4.1 By analogy with existing (e.g., phosphors) to establish that definitive criteria.

2.4.2.2.3 Allocation to packing groups

2.4.2.2.3.1 The allocation of a packing group is based on methods test specified in item 2.4.2.2.2.1. Solid fuels easily (except metal powders) should be allocated to Packing Group II, the burning time is less than 45 seconds and the flame passes the wetted section. Packing group II is assigned the powder metals or metal alloys, the reaction zone extend over the whole sample five minutes or less.

2.4.2.2.3.2 The allocation of a packing group is based on methods test specified in item 2.4.2.2.2.1. Solid fuels easily (except metal powders) They should be allocated to Packing Group III if the burning time is less than 45 seconds and the wet section stop the spread of the flame for at least four minutes. The Packing Group III is assigned to metal powders if the reaction span all sample time greater than five minutes, but up to ten minutes.

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2.4.2.2.3.3 The Group of solid packaging which may cause fire through friction is determined by analogy to existing entries, or according to special provision applicable.

2.4.2.3 Class 4.1 - autorreagentes Substances

2.4.2.3.1 Definitions and properties

2.4.2.3.1.1 settings

For the purposes of this Regulation:

autorreagentes those substances are thermally unstable, subject to suffer decomposition strongly exothermic, even without participation of oxygen (air). autorreagentes substances of Class 4.1 the following are not considered:

a) explosive substances according to the criteria of Class 1;

b) oxidizing substances according to the classification procedure Class 5.1 (see Section 2.5.2.1.1), except mixtures of substances oxidizing containing 5.0% or more of organic substances fuels, which should be submitted to procedure classification defined in Note 3;

c) organic peroxides according to the criteria of Class 5.2;

d) substances whose heat of decomposition is less than 300 J / g; or

e) substances temperature autoacelerável decomposition (SADT) (See section 2.4.2.3.4) is greater than 75 ° C in a volume of 50 kg.

Note 1 *: The heat of decomposition can be determined by any method recognized internationally as differential scanning calorimetry and calorimetry adiabatic.*

Note 2 *: Any substance which has the substance properties autorreagente should be classified as such even if they give positive results in trials made in accordance with item 2.4.3.2 for inclusion in subclass 4.2.*

Note 3: *Mixtures of oxidizing substances that meet the criteria Subclass 5.1, containing 5.0% or more of combustible organic substances and which do not meet the criteria mentioned above under a), c), d) and e) are subject to the procedure*

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autorreagentes classification of substances.

Every mixture having the properties of a substance autorreagente,

types B to F, shall be classified as a autorreagente substance of Class 4.1.

Every mixture having the properties of a substance autorreagente G type, in accordance with the principles of the item 2.4.2.3.3.2 g), it is considered for classification as a substance of Class 5.1 (see Section 2.5.2.1.1).

2.4.2.3.1.2 properties

The decomposition autorreagentes substances can be initiated by heat, friction, impact or contact with catalytic impurities (e.g. acids, bases, compounds heavy metals). The rate of decomposition increases with temperature and varies with the substance. Decomposition may result in release of toxic gases or vapors, especially when no ignition. Certain substances require autorreagentes control temperature. Some autorreagentes substances can undergo explosive decomposition, especially if confined. This characteristic can be changed by the addition of diluents or by the use of appropriate packaging. Certain substances burn autorreagentes vigorously. autorreagentes substances are, for example, some compounds of the types:

a) aliphatic azo compounds (-CN = NC-);

b) organic azides (CN_3);

c) diazonium salts ($-CN_2 + Z -$);

d) N-nitroso compounds (-NN = O); and

e) aromatic hydrazides sulfo ($-SO_2-NH - NH_2$).

This relationship is not exhaustive and substances with other reactive groups and some mixtures of substances may have similar properties.

2.4.2.3.2 Classification autorreagentes substances

2.4.2.3.2.1 The autorreagentes substances are classified into seven types according to the degree of danger they present. The types of these substances are of type A - which can not be accepted for carriage in the packaging in which it was tested - type G - that is not subject to the requirements applicable to autorreagentes substances of Class 4.1. THE classification in types B to F is directly related to the maximum amount allowed by packing.

2.4.2.3.2.2 The autorreagentes substances allowed to be transported in containers, They are listed in item 2.4.2.3.2.3. Those allowed to be transported in IBCs are listed in IBC 520 packing instruction; and those allowed to be transported in tanks Portable are listed on the portable tanks T23 instruction. For each listed substance allowed, is assigned an appropriate generic entry in the Relationship Dangerous Goods (UN numbers 3221-3240), which also indicate the risks subsidiary and other useful observations for transport. The generic entries specify:

a) the type of autorreagente substance (B to F);

b) the physical state (liquid or solid); and

c) temperature control, when required (see section 2.4.2.3.4).

2.4.2.3.2.3 ratio of autorreagentes substances packaged currently classified

In the "Packaging Method" column, the codes "OP1" to "OP8" refer to packing methods in packing instruction P520. The autorreagentes substances be transported must fulfill the classification and control temperatures and emergency (derived from the SADT) as listed. For substances transported in IBCs are authorized, see IBC520 packing instruction, and for those whose Transport in tanks is authorized, see portable tank instruction T23.

Note : *The classification presented in this table is based on the substance Technically pure (unless otherwise specified concentration of less than 100%). In others concentrations, the substances may be classified differently, according to procedures described in items 2.4.2.3.3 and 2.4.2.3.4.*

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autorreagente substance	concen-traction (%)	Method packing	Temperature of control ° C	Temperature in emergency ° C	UN number (input generic)	(
Acetone-pyrogallol COPOLYMER 2-diazo-1-naphthol-5 SULPHONATE	100	OP8			3228.	
Azodicarbonamide, FORMULATION TYPE B, TEMPERATURE CONTROLLED	< 100	OP5			3232	
Azodicarbonamide, FORMULATION TYPE C	< 100	OP6			3224	
Azodicarbonamide, FORMULATION TYPE C, TEMPERATURE CONTROLLED	< 100	OP6			3234	
Azodicarbonamide, FORMULATION TYPE D	< 100	OP7			3226	
Azodicarbonamide, FORMULATION TYPE D, TEMPERATURE CONTROLLED	< 100	OP7			3236	
2,2' -AZODI (2,4-dimethyl-4 -METOXIVALERONITRILA)	100	OP7	- 5	+ 5	3236	

2,2' -AZODI (2,4-DIMETHYL-VALERONITRILA)	100	OP7	+ 10	+ 15	3236
2,2' -AZODI (ETHYL-2-methylpropionate)	100	OP7	+ 20	+ 25	3235
1.1 - azodi (HEXA-HIDROBENZONITRILA)	100	OP7			3226
2,2' -AZODI (ISOBUTIRONITRILA)	100	OP6	+ 40	+ 45	3234
2,2' -AZODI (ISOBUTIRONITRILA) as water based slurry	≤ 50	OP6			3224
2,2' -AZODI (2-METILBUTIRONITRILA)	100	OP7	+ 35	+ 40	3236

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autorreagente substance	concen-traction (%)	Method packing	Temperature of control ° C	Temperature in emergency ° C	UN number (input generic)	C
Benzene-1,3-disulfo hydrazide, paste	52	OP7			3226	
BENZENE SULFONYL hydrazide	100	OP7			3226	
4- (benzyl (ethyl) amino) -3-ethoxybenzene-diazonium and ZINC	100	OP7			3226	
4- (benzyl (methyl) amino) -3-ethoxybenzene-diazonium and ZINC	100	OP7	+ 40	+ 45	3236	
CHLORIDE 3-chloro-4-DIETILAMINOBENZENODIAZÔNIO and ZINC	100	OP7			3226	
CHLORIDE 2,5-diethoxy-4- (phenylsulfonyl) -BENZENODIAZÔNIO and ZINC	67	OP7	+ 40	+ 45	3236	
CHLORIDE 2,5-diethoxy-4-morpholino benzenediazonium, and ZINC	67-100	OP7	+ 35	+ 40	3236	
CHLORIDE 2,5-diethoxy-4-morpholino-benzenediazonium and ZINC	66	OP7	+ 40	+ 45	3236	
CHLORIDE 4-dimethylamino-6- (2-dimethylaminoethoxy) -TOLUENO-And zinc 2-diazo	100	OP7	+ 40	+ 45	3236	
CHLORIDE 2,5-dimethoxy-4- (4-METILFENILSULFONILA) - Benzenediazonium and ZINC	79	OP7	+ 40	+ 45	3236	
CHLORIDE 4-DIPROPILAMINOBENZENODIAZÔNIO and ZINC	100	OP7			3226	
2- (N, N-ETOXICARBONILFENILAMINA) -3-methoxy-4- (N-Methyl-N-cyclohexylamine) and zinc benzenediazonium	63-92	OP7	+ 40	+ 45	3236	

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autorreagente substance	concen-traction (%)	Method packing	Temperature of control ° C	Temperature in emergency ° C	UN number (input generic)	C
2- (N, N-ETOXICARBONILFENILAMINO) -3-methoxy-4- (N-Methyl-N-cyclohexylamine) and zinc benzenediazonium	62	OP7	+ 35	+ 40	3236	

2- (2-hydroxyethoxy) -1- (pyrrolidin-1-yl) benzene-4 Diazonium and ZINC	100	OP7	+ 45	+ 50	3236
3- (2-hydroxyethoxy) -4- (pyrrolidin-1-yl) Benzenediazonium and ZINC	100	OP7	+ 40	+ 45	3236
2-diazo-1-naphthol-4-sulfochloride	100	OP5			3222
2-diazo-1-naphthol-5-sulfochloride	100	OP5			3222
2-diazo-1-naphthol-4-sulfonate	100	OP7			3226
2-diazo-1-naphthol-5-sulfonate	100	OP7			3226
2,5-dibutoxy-4- (4-morpholinyl) benzenediazonium TETRACLOROZINCATO (2: 1)	100	OP8			3228.
Diethylene A (allyl carbonate) + peroxydicarbonate DIISOPROPILA	≥ 88 ≤ + 12	OP8	- 10	0	3237
Diphenyloxide-4,4'-disulfo hydrazide	100	OP7			3226
4- (Dimethylamino) -BENZENODIAZONIO TRICLOROZINCATO (-1)	100	OP8			3228.
N, N'-dinitroso-N, N'-DIMETHYL terephthalamide, paste	72	OP6			3224
N, N'-tetra DINITROSOPENTAMETILENO	82	OP6			3224

autorreagente substance	concen-traction (%)	Method packing	Temperature of control ° C	Temperature in emergency ° C	UN number (input generic)	C
ESTER-2-diazo-1-naphthol sulfonic ACID MIXING TYPE D	< 100	OP7			3226	
N-formyl-2- (nitromethylene) -1,3-per-HIDROTIAZINA	100	OP7	+ 45	+ 50	3236	
Hydrogensulfate 2- (N, N-METILAMINOETILCARBONILA) -4- (3,4-DIMETHYL-FENILSUFONILA) benzenediazonium	96	OP7	+ 45	+ 50	3236	
NET AUTORREAGENTE, SAMPLE		OP2			3223	
NET AUTORREAGENTE, SAMPLE, TEMPERATURE CONTROLLED		OP2			3233	
4-methylbenzenesulfonyl hydrazide	100	OP7			3226	
Palladium dinitrate (II) tetramine	100	OP6	+ 30	+ 35	3234	
4-NITROSOFENOL	100	OP7	+ 35	+ 40	3236	
AUTORREAGENTE SOLID, SAMPLE		OP2			3224	
AUTORREAGENTE SOLID, SAMPLE, TEMPERATURE CONTROLLED		OP2			3234	
SULPHATE 2,5-diethoxy-4- (4MORFOLINIL) benzenediazonium	100	OP7			3226	
Tetrafluoroborate 2,5-diethoxy-4-morpholino benzenediazonium	100	OP7	+ 30	+ 35	3236	
Tetrafluoroborate 3-methyl-4- (pyrrolidin-1-yl) - benzenediazonium	95	OP6	+ 45	+ 50	3234	

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Comments

1) Azodicarbonamide formulations that meet the criteria specified in item 2.4.2.3.3.2 b). The control temperatures and emergency shall be determined in accordance with the procedure set out in item 7.1.5.3 to 7.1.5.3.1.4.

2) It is required subsidiary risk label on "EXPLOSIVE" (Model No. 1, see Section 5.2.2.2.2).

3) Azodicarbonamide formulations that meet the criteria specified in item 2.4.2.3.3.2 c).

4) Azodicarbonamide formulations that meet the criteria specified in item 2.4.2.3.3.2 c). The control temperatures and emergency shall be determined in accordance with the procedure laid down in items 7.1.5.3 to 7.1.5.3.1.4.

5) Azodicarbonamide formulations that meet the criteria specified in item 2.4.2.3.3.2 d).

6) Azodicarbonamide formulations that meet the criteria specified in item 2.4.2.3.3.2 d). The temperature control and emergency must be determined in accordance with the procedure laid down in items 7.1.5.3 to 7.1.5.3.1.4.

7) With a compatible diluent boiling point not less than 150C.

8) See paragraph 2.4.2.3.2.4 b).

9) This entry applies to mixtures of esters of 2-diazo-1-naphthol-4-sulphonic acid and 2-diazo-1-naphthol-5-sulfonic that meet the criteria specified in item 2.4.2.3.3.2 d).

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2.4.2.3.2.4 The classification of autorreagentes substances not listed in item 2.4.2.3.2.3, Instruction for IBC520 packaging or instruction for T23 Portable Tanks and allocating a specific or generic entry must be performed by the manufacturer of product based on a report relevant classification tests. the principles for the classification of these substances are found in item 2.4.2.3.3. The classification procedures, test methods and criteria, as well as a appropriate Test Report example, contained in Part II of the *Manual of Tests and Criteria* .

a) activators (e.g., zinc compounds) can be added to autorreagentes some substances to modify them reactivity. Depending on the type and concentration of the activator, this procedure may cause reduction of thermal stability and change of explosive properties. If any of these properties is altered, the

new formulation shall be assessed in accordance with this procedure classification;

b) samples autorreagentes substances or such formulations non-related substances in section 2.4.2.3.2.3, for which no available a complete set of tests which must be transported for evaluation or testing can be allocated to an appropriate designations of substances autorreagentes, type C provided the following conditions are met:

(I) the available data indicate that the sample is not hazardous a autorreagente substance, type B;

(Ii) the sample is packaged according to the packaging method OP2 (see applicable packing instruction) and the quantity per vehicle or transport equipment is limited to 10 kg; and

(Iii) the available data indicate that the temperature control if any, is sufficiently low to avoid decomposition dangerous and sufficiently high to prevent any separation dangerous phases.

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2.4.2.3.3 Principles for classification of substances autorreagentes

Note : *This section refers only to those properties of substances autorreagentes decisive for classification. Figure 2.4.1 shows a flowchart of classification principles in the form of questions and answers regarding the properties decisive. These properties shall be determined experimentally, using the methods and constant test criteria in Part II of the Manual of Tests and Criteria.*

2.4.2.3.3.1 It is considered that a substance has properties autorreagente explosive when in laboratory testing the formulation is liable to detonate, ignite quickly or have violent reaction when heated under confinement.

2.4.2.3.3.2 The following principles apply to substances classification autorreagentes not listed in item 2.4.2.3.2.3:

a) any substance, packaged as required for transport, which can detonate or deflagrate rapidly, it is forbidden to be transported back packaging under the provisions relating to autorreagentes substances Class 4.1 (substances autorreagente defined as type A, block The output in Figure 2.4.1);

b) any substance that has explosive properties, packed as required for transport, neither detonates nor deflagrates rapidly, but is liable to undergo a thermal explosion in that package must display

also subsidiary risk label on "EXPLOSIVE" (Model No. 1, see Section 5.2.2.2.2). This substance may be packed in bulk up to 25 kg unless the maximum quantity has to be reduced to prevent detonation or rapid deflagration in the package (defined as autorreagente substance, type B, output block B in Figure 2.4.1);

c) Any substance possessing explosive properties may be transported without subsidiary risk label on "EXPLOSIVE" when substance, packaged as required for transport (maximum 50 kg) can not detonate or deflagrate rapidly or undergo explosion Thermal (defined as autorreagente substance, type C, output block C, Figure 2.4.1);

d) Any substance which in laboratory testing:

(I) detonates partially, does not deflagrate rapidly and does not include violent effect when heated under confinement; or

(Ii) does not detonate at all, deflagrates slowly and shows no violent effect when heated under confinement; or

(Iii) does not detonate, does not deflagrate and present effect of average proportions when heated under confinement;

It may be accepted for transport in packages of up to 50 kg mass net (defined as autorreagente substance type D, exit block D, Figure 2.4.1);

e) any substance which, in laboratory testing, neither detonates nor deflagrates and show little or no effect when heated under confinement may be accepted for transport in packages of up to 400 kg / 450 L (defined as autorreagente substance type E, exit block And Figure 2.4.1);

f) any substance which, in laboratory testing, neither detonates in State cavitation or deflagrate and show little or no effect when heated under confinement as well as low or no power explosive, can be accepted for transport in IBCs or tanks (defined autorreagente as substance type F, exit block F in Figure 2.4.1; for additional requirements, see items 4.1.7.2.2 and 4.2.1.13);

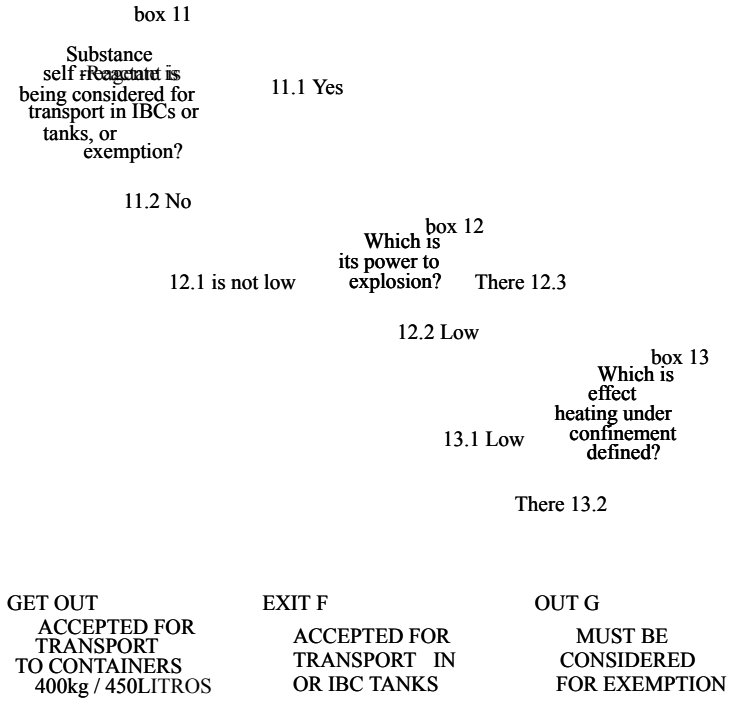
g) any substance which, in laboratory testing, neither detonates in cavitated state nor deflagrates and show no effect when heated under confinement nor explosive power, it is exempt from classification as autorreagente substance of Class 4.1, provided that the formulation is thermally stable (decomposition temperature

autoacelerável between 60 ° C and 75 ° C for packaging 50 kg), and any diluent meets the requirements of item 2.4.2.3.5 (defined as autorreagente substance, type G, output block G, in Figure 2.4.1). If the formulation is not thermally stable or for desensitizes it, is used compatible diluent with a boiling point below 150 ° C, It should be defined as liquid or solid AUTORREAGENTE TYPE F.

Figure 2.4.1 - Flowchart for classification of substances autorreagentes

Next to box 11

Figure 2.4.1 - Flowchart for classification of substances autorreagentes (cont.)



2.4.2.3.4 Temperature control requirements

The autorreagentes substances are subject to temperature control, during transport, if your temperature autoacelerável decomposition (SADT) is equal or below 55 ° C. determination of the SADT test methods are presented in Section 28, Part II of *Tests and Criteria Manual* . The selected test shall be conducted in way that is representative of the volume to be transported, both in terms of dimensions like materials.

2.4.2.3.5 Deadening autorreagentes substances

2.4.2.3.5.1 To ensure safety during transport, the autorreagentes substances They can be desensitized using diluents. When employed diluents, the autorreagente substance shall be tested with the diluent present in the concentration and form presented for transport.

2.4.2.3.5.2 One should not use diluents which in case of leaks, allowing concentrations in dangerous proportions autorreagente substance.

2.4.2.3.5.3 The diluent must be compatible with the autorreagente substance. Are considered compatible diluents those solids or liquids which do not affect harmful on thermal stability and on the type of risk autorreagente substance.

2.4.2.3.5.4 Liquid diluents in liquid formulations requiring temperature control should have boiling point of greater than or equal to 60 ° C and higher flash point than or equal to 5 ° C. O boiling point must be at least 50 ° C above the control temperature autorreagente substance (see Section 7.1.5.3.1).

2.4.2.4 Class 4.1 - Solid desensitized explosives

2.4.2.4.1 Definition

desensitized solid explosives are explosive substances which are moistened with water or alcohols, or diluted with other substances to form a mixture homogeneous solid, to suppress their explosive properties (see section 2.1.3.6.3). The desensitized solid explosives included in the Dangerous Goods List are the UN numbers: 1310, 1320, 1321, 1322, 1336, 1337, 1344, 1347, 1348, 1349, 1354, 1355, 1356, 1357, 1517, 1571, 2555, 2556, 2557, 2852, 2907, 3317, 3319, 3344, 3364, 3365, 3366, 3367, 3368, 3369, 3370, 3376, 3380 and 3474.

2.4.2.4.2 Substances:

a) have been provisionally included in the Class 1 Series Tests 1 and 2, but this class exempted by Test Series 6;

b) are not autorreagentes substances of Class 4.1;

c) are not substances of Class 5;

They are also allocated to Class 4.1. Though not desensitized explosives, the designations under UN numbers: 2956, 3241, 3242 and 3251 are allocated to Class 4.1.

2.4.3 Class 4.2 - Substances subject to spontaneous combustion

2.4.3.1 Definitions and properties

2.4.3.1.1 The Class 4.2 covers:

a) *pyrophoric substances* - substances, including mixtures and solutions (Liquid or solid) which, even in small quantities ignite

within five minutes after contact with air. These are the substances Subclass 4.2 more prone to spontaneous combustion; and

B) *substances subject to self - heating* - are substances (except pyrophoric) that can, in contact with air, without providing energy if autoaquecer. These substances only ignite when in large quantities (kilograms) and after long periods (hours or days).

2.4.3.1.2 The self-heating substances is a gradual process in which the reaction of substance with oxygen (air) generates heat. When the heat generation rate exceeds the Heat loss rate occur increasing the temperature of the substance which, after a time induction can lead to autoignition and combustion.

2.4.3.2 Classification in class 4.2

2.4.3.2.1 Are considered pyrophoric solids - should be classified in Class 4.2, for testing according to the test method Subsection 33.3.1.4, Part III of *Tests and Criteria Manual* - those whose sample ignite in a the tests.

2.4.3.2.2 They are considered pyrophoric liquids - which should be classified in Class 4.2, for testing according to the test method Subsection 33.3.1.5, Part III of *Tests and Criteria Manual* - those who ignited the first part of the test, or if there ignition or charring of the filter paper.

2.4.3.2.3 Substances subject to self-heating

2.4.3.2.3.1 It should be classified as a substance subject to self-heating of 4.2 subclass that, in tests conducted according to the test method of Subsection 33.3.1.6, Part III of *Tests and Criteria Manual* :

a) shows a positive result in the test with the sample in 25 cube mm at 140 ° C;

b) shows a positive result in the test sample with the 100 mm cube, at 140 ° C, with negative results in the test sample in a 100 mm cube, at 120, and the substance is transported in amounts above 3 m^3 (3,000 U);

c) shows a positive result in the test sample with the 100 mm cube, at 140 ° C, with negative results in the test sample in a 100 mm cube, at 100C, and the substance is transported in volumes up to 450 l;

d) shows a positive result in the test sample with the 100 mm cube, at 140, and the positive result with a sample of 100 mm cube, at 100 ° C.

Notice: *autorreagentes substances, except for type G, presenting results positive with this test method should not be classified in Division 4.2 but in*

Class 4.1 (see section 2.4.2.3.1.1).

2.4.3.2.3.2 A substance should not be classified in Division 4.2 if:

a) the negative results in the test with the sample in 100 cube mm at 140 ° C;

b) shows a positive result in the test with the sample in 100 cube mm, at 140 ° C and a negative result in the test with the sample in the cube 25 mm, at 140, with the negative sample at 100 mm cube, the 120 ° C, and the substance is transported in volumes of up to 3 m^3 (3,000 U);

c) shows a positive result in the test with the sample in 100 cube mm, at 140, and negative results with the sample in a 25 mm hub, 140 ° C, with the negative sample at 100 mm cube, at 100 ° C, and the substance is transported in volumes of up to 450 L.

2.4.3.3 Allocation to packing groups

2.4.3.3.1 The Group I Packing must be assigned to all liquids and solids pyrophoric.

2.4.3.3.2 The Group II Packaging should be assigned to substances subject to self-heating presenting positive result in the test with the sample in 25 cube mm at 140 ° C.

2.4.3.3.3 The Packing Group III must be assigned to substances subject to self-heating, is:

a) present a positive result in a test sample with the cube 100 mm, at 140, and negative results in an assay sample with the hub 25 mm, at 140, and the substance is transported in amounts above 3 m^3 (3000 L);

b) have a positive result in a test sample with the cube 100 mm, at 140, and negative results in an assay sample with the hub 25 mm at 140 ° C, presented positive results in a test with sample in 100 mm cube, at 120, and the substance is transported in volume up to 450 L;

c) have a positive result in a test sample with the cube 100 mm, at 140, and negative results in an assay sample with the hub 25 mm at 140 ° C, and present in a positive assay sample in 100 mm cube, at 100 ° C.

2.4.4 Subclass 4.3 - Substances that emit flammable gases in

contact with water

2.4.4.1 Definitions and properties

2.4.4.1.1 Some substances when in contact with water, give off gases flammable that can form explosive mixtures with air. Such mixtures are easily Inflamed by any common source of ignition (eg, naked lights or spark hand tools, electric lamps without protection). The blast wave and flames resulting can bring risks to people and the environment. The method, referred to in section 2.4.4.2, and used to determine whether the reaction of a substance in contact with water leads to the formation of dangerous amount of flammable gases. This method test should not be applied to pyrophoric substances.

2.4.4.2 Classification in class 4.3

Substances which, in contact with water, emit flammable gases shall be is classified in subclass 4.3, in tests performed in accordance with the test method of *Tests and Criteria Manual* , Part III, sub - section 3.3.4.1:

a) spontaneous ignition occurs at any stage of the procedure test; or

b) there is flammable gas release at a rate greater than 1 L per kg of the substance per hour.

2.4.4.3 Allocation to packing groups

2.4.4.3.1 The Group I Packing should be assigned to any substance which reacts vigorously with water at ambient temperatures, and gas detach showing tendency to ignite spontaneously, or which reacts readily with water ambient temperatures, and whose flammable gas release rate is equal to or exceeding 10 U per kg of material in any period of one minute.

2.4.4.3.2 The Group II Packaging should be assigned to any substance which reacts readily with water at ambient temperatures with gas release rate Flammable equal to or greater than 20 U per kg of the substance per hour, and are not fit the criteria for packing group I.

2.4.4.3.3 The Packing Group III should be assigned to any substance which reacts slowly with water at ambient temperatures, maximum gas release rate Flammable less than 1 L per kilogram of the substance per hour, and are not fit the criteria for packing groups I or II.

2.4.5 Classification of organometallic substances

Depending on their properties, organometallic substances may be classified as belonging to the subclasses 4.2 or 4.3, as appropriate, in accordance with the flowchart shown in Figure 2.4.2

Figure 2.4.2

Flowchart for classification of organometallic substances [3]

3 The N.1 to N.5 test methods are provided in Section 33 of Part III of the Manual of Tests and Criteria.
a If applicable and these tests are relevant, taking into account the reactive properties should be considering the properties of the classes 6.1 and 8, according to Table Risk Precedence arranged in item 2.0.3.3.

CHAPTER 2.5

CLASS 5 - OXIDIZING SUBSTANCES AND ORGANIC PEROXIDES

Introductory note

***Note** : Due to the variety of product properties subclasses 5.1 and 5.2, is impracticable to establish single classification criterion. This Chapter deals with testing and classification criteria in the two subclasses of class 5.*

2.5.1 Definitions and general provisions

Class 5 is divided into two subclasses, as follows:

a) Class 5.1 - *oxidizing substances*

Substances which, though not necessarily fuel, may, generally by release of oxygen, causing the combustion of other materials, or contribute to it. Such substances may be contained in an article;

b) Division 5.2 - *Organic peroxides*

Organic substances which contain the bivalent structure – O – O – and can be considered derivatives of hydrogen peroxide, wherein one or both hydrogen atoms have been replaced by organic radicals. Organic peroxides are thermally unstable substances which may autoacelerável undergo exothermic decomposition. Furthermore, they can has one or more of the following properties:

(I) be subject to explosive decomposition;

(Ii) burn rapidly;

(Iii) be sensitive to impact or friction;

(Iv) dangerously reacting with other substances;

(V) cause damage to the eyes.

2.5.2 Class 5.1 - oxidizing substances

2.5.2.1 Classification in Class 5.1

2.5.2.1.1 oxidizing substances are classified in Class 5.1 in accordance with the test methods, procedures and criteria described in items 2.5.2.2, 2.5.2.3 and Section 34, Part III of *Tests and Criteria Manual* . If a discrepancy between the results of testing and classification based on experience, this takes precedence over the results the tests.

***Note** : Substances of this subclass included in the Dangerous Goods, Chapter 3.2, should be reclassified according to these criteria when necessary to ensure safety.*

2.5.2.1.2 Substances having other risks such as toxicity or corrosiveness, must meet the requirements of Chapter 2.0.

2.5.2.2 oxidising solid

2.5.2.2.1 Classification criteria in Class 5.1

2.5.2.2.1.1 Assays are performed to measure the potential of the solid substance increase the burning rate or burning intensity of a combustible substance, when the two are thoroughly mixed. The procedure is presented in Subsection 34.4.1 of Part III of *Tests and Criteria Manual* (O.1 test) or alternatively in Subsection 34.4.3 (O.3 test). The tests are performed with the substance to be measured, mixed with dry fibrous cellulose in the ratio of 1: 1 and 4: 1 by weight cellulose sample. The burning characteristics of the mixtures are compared:

a) in O.1 test: With the standard mixture of potassium bromate and cellulose, the ratio of 3: 7 by weight. If the burning time is equal to or lower than the standard mixture, the burning times should be compared to standards Reference for packing groups I and II, respectively, to reason 3: 2 to 2: 3, by mass, of potassium bromate and cellulose; or

b) testing O.3: with the standard cellulose calcium peroxide mixture at ratio of 3: 7 by weight. If the burning time is equal to or lower than the standard mixture, the burning times should be compared to standards Reference for packing groups I and II, respectively, to reason 3: 1 and 1: 1, by weight of cellulose calcium peroxide.

2.5.2.2.1.2 The results of classification tests are evaluated based on:

a) comparing the average burning time (for O.1 test) or rate firing (for O.3 test) with the reference mixtures; and

b) the occurrence of ignition and burning of the mixture of substance and

cellulose.

2.5.2.2.1.3 A solid substance is classified in Class 5.1 if the mixed sample cellulose at a ratio of 4: 1 or 1: 1, by mass, of:

a) in O.1 test: an average of less than or equal to the average burning time firing a mixture at a ratio of 3: 7, by weight of bromate potassium and cellulose; or

b) O.3 test: an average rate equal to burning or higher than the average rate of burning a mixture ratio of 1: 2 by weight calcium peroxide and cellulose.

2.5.2.2.2 Allocation to packing groups

Solid oxidizing substances are allocated to a packing group of According to the test procedure of Subsection 34.4.1, Part III of the *Manual of Tests and Criteria* (O.1 test) or, alternatively, in Subsection 34.4.3 (O.3 test) in accordance with the following criteria:

a) O.1 test:

(I) Packing group I: any substance which, in mixtures tested sample and cellulose at a ratio of 4: 1 or 1: 1 by weight present median time to lower the average burning time burning the mixture of potassium bromate and cellulose ratio 3: 2, in large scale;

(Ii) Packing Group II: any substance which, in mixtures tested sample and cellulose at a ratio of 4: 1 or 1: 1 by weight Average present time or less the average burning time burning the mixture of potassium bromate and cellulose at a rate 2: 3 by weight and does not meet the criteria of Group Packaging I;

(Iii) Packing Group III: any substance which, in mixtures tested sample and cellulose at a ratio of 4: 1 or 1: 1 by weight Average present time or less the average burning time burning the mixture of potassium bromate and cellulose at a rate 3: 7 by weight, and does not meet the criteria for groups Packaging I and II.

(Iv) does not fit in class 5.1: any substance which, in two mixtures tested sample and cellulose at a ratio of 4: 1 and 1: 1 by weight, not ignite and burn or to present times higher burning average of the bromate mixture of potassium and cellulose at a ratio of 3: 7 by weight.

b) O.3 test:

(I) Packing group I: any substance which, in mixtures
tested sample and cellulose at a ratio of 4: 1 or 1: 1 by weight
present average rate higher than the average burn rate of burning
of calcium peroxide and pulp mixture at 3: 1 ratio by weight;

(Ii) Packing Group II: any substance which, in mixtures
tested sample and cellulose at a ratio of 4: 1 or 1: 1 by weight
present average rate equal burning or higher than the average rate of
burning the mixture of calcium peroxide and pulp ratio 1: 1,
mass, and does not meet the Packing Group I criteria;

(Iii) Packing Group III: any substance which, in mixtures
tested sample and cellulose at a ratio of 4: 1 or 1: 1 by weight
present average rate equal burning or higher than the average rate of
burning the mixture of calcium peroxide and pulp ratio 1: 2,
mass, and does not meet the criteria for packing groups I
and II.

(Iv) does not fit in class 5.1: any substance which, in
two mixtures tested sample and cellulose at a ratio of 4: 1 and
1: 1 by weight, not ignite and burn or to submit rate
average lower burning the average rate of the mixture burning
cellulose calcium peroxide at a ratio of 1: 2 by weight.

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2.5.2.3 oxidising liquids

2.5.2.3.1 Classification criteria in Class 5.1

2.5.2.3.1.1 Test should be performed to determine the potential of a substance
net increase in the burning rate or burning intensity of a substance
fuel, or spontaneous ignition occurs **,** when both are completely mixed.
The procedure is in the sub - section 34.4.2 of Part III of the *Manual of Tests and Criteria* . This test measures the time for the pressure rise during combustion. THE classification of a liquid as an oxidizing substance of Division 5.1 and, in this case a allocation to packing group I, II or III, is taken on the basis of test results (see, Also, Risk Precedence in item 2.0.3).

2.5.2.3.1.2 The classification test results are evaluated based on:

a) the occurrence of spontaneous ignition of the mixture of substance and cellulose;

b) comparing the average time to raise the pressure
gauge, from 690 kPa to 2070 kPa, with the substances
reference.

2.5.2.3.1.3 A liquid substance is classified in Class 5.1 if the tested mixture

cellulose substance and the ratio of 1: 1 by weight, average display time increase pressure equal to or less than the average time of pressure rise a mixture ratio of the 1: 1 by weight aqueous nitric acid and 65% cellulose.

2.5.2.3.2 Allocation to packing groups

Liquid oxidiser substances are allocated to a packing group of According to the test procedure described in Subsection 34.4.2, Part III of the *Manual Tests and Criteria* according to the following criteria:

a) Packing group I: any substance which, in the mixture tested with cellulose ratio 1: 1 by weight to ignite spontaneously; or present an average of lower pressure rises to a mixture of perchloric acid and 50% cellulose at a ratio of 1: 1 by weight;

b) Packing Group II: any substance which, in the tested mixture with cellulose ratio 1: 1 by weight present median time to lift pressure equal to or less than the average time pressure lifting a mixture of sodium chlorate in aqueous solution at 40% pulp and the ratio

1: 1 by weight; and does not meet the classification criteria of Packing Group I;

c) Packing Group III: any substance which, in the tested mixture with cellulose ratio 1: 1 by weight present median time to lift pressure equal to or less than the average time pressure lifting a mixture of nitric acid, in aqueous solution at 65% pulp and the ratio 1: 1 by weight; and does not meet the classification criteria of the Groups Packaging I and II.

Notice: *It does not fit in any Class 5.1 substance in the mixture cellulose assayed at 1: 1 by weight, provide increased gauge pressure less than 2070 kPa; or shows average time of higher pressure elevation to appear for a mixture of nitric acid, in aqueous solution at 65%, and cellulose at a ratio of 1: 1 by weight.*

2.5.3 Division 5.2 - Organic peroxides

2.5.3.1 properties

2.5.3.1.1 Organic peroxides are liable to exothermic decomposition temperature normal or elevated temperatures. Decomposition can be initiated by heat, contact impurities (e.g. acids, heavy metal compounds, amines), friction or impact. THE decomposition rate increases with temperature and varies with the formulation of the peroxide organic. Decomposition may result in release of harmful gases or vapors or flammable. Certain organic peroxides should be temperature controlled during the transport. Some organic peroxides may decompose explosively,

particularly if confined. This characteristic may be modified by the addition of diluents or by the use of suitable packaging. Many organic peroxides burn vigorously.

2.5.3.1.2 It should be avoided contact of organic peroxides with the eyes. Some organic peroxides cause severe damage to the cornea, even after brief contact, or are corrosive to the skin.

2.5.3.2 Rate of organic peroxides

2.5.3.2.1 Any organic peroxide shall be considered for inclusion in class 5.2 unless its formulation contains:

a) up to 1.0% of available oxygen from the organic peroxides when containing up to 1.0% hydrogen peroxide; or

b) up to 0.5% of available oxygen from the organic peroxides when containing more than 1.0% but not more than 7.0% hydrogen peroxide.

***Note** : The available oxygen content (%) of an organic peroxide formulation It is given by:*

$$16 \times \Sigma \times (mçn \quad I) / I$$

on what:

$n_{\bar{I}}$ *= number of peroxygen groups per molecule of the ith peroxide organic;*

$c_{\bar{I}}$ *= concentration (mass%) of the ith organic peroxide;*

$m_{\bar{I}}$ *= molecular mass of the ith organic peroxide.*

2.5.3.2.2 Organic peroxides are classified into seven types according to the degree risk they present. Organic peroxides will type A, which can not be accepted for carriage in the packaging in which it was tested, to type G, which is not subject to the requirements applicable to organic peroxides of Class 5.2. The classification of types B to F is directly related to the maximum amount allowed per package.

2.5.3.2.3 Organic peroxides allowed to be transported in packages are listed in item 2.5.3.2.4; those allowed to be transported in IBCs are listed in the instruction to IBC520 packaging; and those allowed to be transported in Portable tanks are found in on taques T23 instruction. For each substance listed permitted, assigned to the appropriate generic entry in the Dangerous Goods (ONU 3101 numbers to 3120), which also indicate the subsidiary risks and other useful observations for transport. The generic entries specify:

a) the type of organic peroxide (B to F);

b) the physical state (liquid or solid); and

c) temperature control, when required (see section 2.5.3.4).

2.5.3.2.3.1 Mixtures of the listed formulations can be categorized as of same type of organic peroxide most dangerous component and be transported under the conditions prescribed for this type. However, as two stable components can forming a mixture thermally less stable, the decomposition temperature autoacelerável (SADT) must be determined and, if necessary, to apply control temperature, as required in section 2.5.3.4.

2.5.3.2.4 organic peroxides ratio currently ranked packed

The codes "OP1" to "OP8" found in the "Packing Method" column, refer to packing methods contained in the instruction to P520 packaging. The peroxides to be carried shall fulfill the classification and temperature control and emergency (derived from the SADT) indicated. For substances permitted for transport in IBCs, one should consult the instruction to IBC520 packaging; and for those permitted for transport in tanks, should be consulted on the tanks education T23 Portable.

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organic peroxide	concen-traction (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
3-chloroperbenzoic acid	> 57-86			≥ 14		OP1			3102
3-chloroperbenzoic acid	≤ 57			≥ 3	≥ 40	OP7			3106
3-chloroperbenzoic acid	≤ 77			≥ 6	≥ 17	OP7			3106
Peracetic acid, TYPE D, stabilized	≤ 43					OP7			3105
Peracetic acid, TYPE E, stabilized	≤ 43					OP8			3107
Peracetic acid, TYPE F, stabilized	≤ 43					OP8			3109
PERLÁURICO ACID	≤ 100					OP8	+ 35	+ 40	3118
S-Isopropyl BUTILPERDICARBONATO + PERDICARBONATO OF DI-S-BUTYL + I lost CARBONATE DI-Isopropyl	≤ 32 + ≤ 15 - 1 8 + ≤ 12 – 15	≥ 38				OP7	- 20	- 10	3115
S-Isopropyl BUTILPERDICARBONATO + PERDICARBONATO OF DI-S-BUTYL + I lost CARBONATE DI-Isopropyl	≤ 52 + ≤ 28 + ≤ 22					OP5	- 20	- 10	3111
1- (2-t-butylperoxy-isopropyl) -3-isopropenyl-BENZENE	≤ 77	≥ 23				OP7			3105
1- (2-t-butylperoxy-isopropyl) -3-isopropenyl-BENZENE	≤ 42			≥ 58		OP8			3108
([3R- (3R, 5aS, 6S, 8aS, 9R, 10R, 12S, 12aR **)]- Decahydro-10-methoxy-3,6,9-trimethyl-3,12-epoxy-12H-pyrano [4,3-j] -1,2-benzodioxepin)	≤ 100					OP7			3106
1,1-di- (t-amylperoxy) cyclohexane	≤ 82	≥ 18				OP6			3103

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organic peroxide	concen-traction (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
2,2-di- (t-amylperoxy) butane	≤ 57	≥ 43				OP7			3105
3,3-di- (t-amylperoxy) butyrate Ethyl	≤ 67	≥ 33				OP7			3105
2,2-di- (t-butylperoxy) butane	≤ 52	≥ 48				OP6			3103
3,3-di (t-butylperoxy) ethyl butyrate	> 77 – 100					OP5			3103
3,3-di (t-butylperoxy) ethyl butyrate	≤ 77	≥ 23				OP7			3105
3,3-di (t-butylperoxy) ethyl butyrate	≤ 52			≥ 48		OP7			3106
1,6-di- (BUTILPERCARBONILOXI) HEXANE	≤ 72	≥ 28				OP5			3103
1,1-di- (t-butylperoxy) cyclohexane	> 80 – 100					OP5			3101
1,1-di- (t-butylperoxy) cyclohexane	≤ 72		≥ 28			OP5			3103
1,1-di- (t-butylperoxy) cyclohexane	> 52 – 80	≥ 20				OP5			3103
1,1-di- (t-butylperoxy) cyclohexane	> 42 – 52	≥ 48				OP7			3105

1,1-di- (t-butylperoxy) cyclohexane	≤ 42	≥ 13		≥ 45	OP7	3106
1,1-di- (t-butylperoxy) cyclohexane	≤ 27	≥ 25			OP8	3107
1,1-di- (t-butylperoxy) cyclohexane	≤ 42	≥ 58			OP8	3109
1,1-di- (t-butylperoxy) cyclohexane	≤ 13	≥ 13	≥ 74		OP8	3109
1,1-di- (t-butylperoxy) cyclohexane + t Butylperoxy-2-ethyl hexanoate	≤ 43 + ≤ 16	≥ 41			OP7	3105
2,2-di- (4,4-di (t-butylperoxy) -cyclohexyl) - PROPANE	≤ 42			≥ 58	OP7	3106

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organic peroxide	concen- traction (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
2,2-di- (4,4-di (t-butylperoxy) -cyclohexyl) PROPANE	≤ 22			≥ 78		OP8			3107
Di- (t-butylperoxy-isopropyl) benzene (S)	> 42-100			≤ 57		OP7			3106
Di- (t-butylperoxy-isopropyl) benzene (S)	≤ 42			≥ 58					free
2,2-di- (t-butylperoxy) propane	≤ 52	≥ 48				OP7			3105
2,2-di- (t-butylperoxy) propane	≤ 42	≥ 13		≥ 45		OP7			3106
1,1-di- (t-butylperoxy) -3,3,5-TRIMETILCICLO- HEXANE	> 90 - 100					OP5			3101
1,1-di- (t-butylperoxy) -3,3,5-TRIMETILCICLO- HEXANE	≤ 90		≥ 10			OP5			3103
1,1-di- (t-butylperoxy) -3,3,5-TRIMETILCICLO- HEXANE	> 57 - 90	≥ 10				OP5			3103
1,1-di- (t-butylperoxy) -3,3,5-TRIMETILCICLO- HEXANE	≤ 77	≥ 23				OP5			3103
1,1-di- (t-butylperoxy) -3,3,5-TRIMETILCICLO- HEXANE	≤ 57			≥ 43		OP8			3110
1,1-di- (t-butylperoxy) -3,3,5-TRIMETILCICLO- HEXANE	≤ 57	≥ 43				OP8			3107
1,1-di- (t-butylperoxy) -3,3,5-TRIMETILCICLO- HEXANE	≤ 32	≥ 26	≥ 42			OP8			3107
4,4-di- (t-butylperoxy) valerate, n-BUTYL	> 52 - 100					OP5			3103

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organic peroxide	concen- traction (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
4,4-di- (t-butylperoxy) valerate, n-BUTYL	≤ 52			≥ 48		OP8			3108
DI-DI-hydroperoxide ISOPROBILBENZENO	≤ 82	≥ 5			≥ 5	OP7			3106

2,2-HIDROPERÓXIPROPANO	≤ 27			≥ 73		OP5			3102
1,1-dimethyl-3-hydroxybutyl PEROXINEOHEPTANOATO	≤ 52	≥ 48				OP8	0	10	3117
2,5-dimethyl-2,5-di- (BENZOILPERÓXI) HEXANE	> 82-100					OP5			3102
2,5-dimethyl-2,5-di- (BENZOILPERÓXI) HEXANE	≤ 82			≥ 18		OP7			3106
2,5-dimethyl-2,5-di- (BENZOILPERÓXI) HEXANE	≤ 82				≥ 18	OP5			3104
2,5-dimethyl-2,5-di- (t-butylperoxy) -hexane	> 52 –90					OP7			3105
2,5-dimethyl-2,5-di- (t-butylperoxy) -hexane	≤ 47, paste					OP8			3108
2,5-dimethyl-2,5-di- (t-butylperoxy) -hexane	≤ 52	≥ 48				OP8			3109
2,5-dimethyl-2,5-di- (t-butylperoxy) -hexane	≤ 77				≥ 23	OP8			3108
2,5-dimethyl-2,5-di- (t-butylperoxy) -hexane	> 90-100					OP5			3103
2,5-dimethyl-2,5-di- (t-butylperoxy) hexyne-3	> 52-86	≥ 14				OP5			3103
2,5-dimethyl-2,5-di- (t-butylperoxy) hexyne-3	≤ 52			≥ 48		OP7			3106
2,5-dimethyl-2,5-di- (t-butylperoxy) hexyne-3	> 86 - 100					OP5			3101
2,5-dimethyl-2,5-di- (2-ETHYL-HEXANOILPERÓXI) HEXANE	≤ 100					OP5	+ 20	+ 25	3113
2,5-dimethyl-2,5-di-hydroperoxy-HEXANE	≤ 82			≥ 18		OP6			3104

organic peroxide	concen-tration (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
2,5-dimethyl-2,5-di- (3,5,5-trimethyl-Hexanoyl-Peroxy) -hexane	≤ 77	≥ 23				OP7			3105
Di- (2-NEODECANOILPERÓXI-isopropyl) benzene	≤ 52	≥ 48				OP7	- 10	0	3115
Hydroperoxide t-amyl	≤ 88	≥ 6			≥ 6	OP8			3107
Hydroperoxide t-BUTYL	> 79 - 90				≥ 10	OP5			3103
Hydroperoxide t-BUTYL	≤ 80	≥ 20				OP7			3105
Hydroperoxide t-BUTYL	≤ 79				> 14	OP8			3107
Hydroperoxide t-BUTYL	≤ 72				≥ 28	OP8			3109
Hydroperoxide t-BUTYL + PEROXIDE DI-T-BUTYL	< 82 +> 9				≥ 7	OP5			3103
Hydroperoxide CUMILA	> 90 - 98	≤ 10				OP8			3107
Hydroperoxide CUMILA	≤ 90	≥ 10				OP8			3109
Hydroperoxide ISOPROPILCUMILA	≤ 72	≥ 28				OP8			3109
P-menthyl hydroperoxide	> 72 - 100					OP7			3105
P-menthyl hydroperoxide	≤ 72	≥ 28				OP8			3109
Hydroperoxide PINANILA	> 56 - 100					OP7			3105
Hydroperoxide PINANILA	≤ 56	≥ 44				OP8			3109
Hydroperoxide, 1,1,3,3-TETRAMETILBUTILA	≤ 100					OP7			3105
MONOPERMALEATO OF T-BUTYL	> 52 - 100					OP5			3102

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organic peroxide	concen-tration (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
MONOPERMALEATO OF T-BUTYL	≤ 52	≥ 48				OP6			3103
MONOPERMALEATO OF T-BUTYL	≤ 52			≥ 48		OP8			3108
MONOPERMALEATO OF T-BUTYL	≤ 52, paste					OP8			3108
3,3,5,7,7-pentamethyl-1,2,4-TRIOXIEPANO	≤ 100					OP8			3107
Peracetate t-amyl	≤ 62	≥ 38				OP7			3105
Peracetate t-BUTYL	> 52 - 77	≥ 23				OP5			3101
Peracetate t-BUTYL	> 32 - 52	≥ 48				OP6			3103
PERACETADO OF T-BUTYL	≤ 32		≥ 68			OP8			3109
PERAZELATO di-t-BUTYL	≤ 52	≥ 48				OP7			3105
Perbenzoate, t-amyl	≤ 100					OP5			3103
Perbenzoate, t-BUTYL	> 77 - 100					OP5			3103
Perbenzoate, t-BUTYL	> 52 - 77	≥ 23				OP7			3105
Perbenzoate, t-BUTYL	≤ 52			≥ 48		OP7			3106
PERCROTONATO OF T-BUTYL	≤ 77	≥ 23				OP7			3105
PERDICARBONATO di-n-BUTYL	> 27 - 52		≥ 48			OP7	- 15	- 5	3115
PERDICARBONATO di-n-BUTYL	≤ 27		≥ 73			OP8	- 10	0	3117
PERDICARBONATO di-n-BUTYL	≤ 42, stable dispersion in water (frozen)					OP8	- 15	- 5	3118
PERDICARBONATO OF DI-S-BUTYL	> 52 - 100					OP4	- 20	- 10	3113

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organic peroxide	concen-tration (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
PERDICARBONATO OF DI-S-BUTYL	≤ 52		≥ 48			OP7	- 15	-5	3115
PERDICARBONATO di- (4-t-butylcyclohexyl-hexyl)	≤ 100					OP6	+ 30	+ 35	3114
PERDICARBONATO di- (4-t-butylcyclohexyl-hexyl)	≤ 42, stable dispersion in water					OP8	+ 30	+ 35	3119
PERDICARBONATO OF DICETILA	≤ 100					OP7	+ 30	+ 35	3116
PERDICARBONATO OF DICETILA	≤ 42, stable dispersion in water					OP8	+ 30	+ 35	3119
PERDICARBONATO dicyclohexyl-hexyl	> 91 - 100					OP3	+ 10	+ 15	3112
PERDICARBONATO dicyclohexyl-hexyl	≤ 91				≥ 9	OP5	+ 10	+ 15	3114
PERDICARBONATO OF DICICLOHEXILA	≤ 42, stable dispersion in water					OP8	+ 15	+ 20	3119
PERDICARBONATO di- (2-ethylhexyl)	> 77 - 100					OP5	- 20	- 10	3113

PERDICARBONATO di- (2-ethylhexyl)	≤ 77		≥ 23			OP7	- 15	- 5	3115
PERDICARBONATO di- (2-ethylhexyl)	≤ 62, stable dispersion in water					OP8	- 15	- 5	3119
PERDICARBONATO di- (2-ethylhexyl)	≤ 52, stable dispersion in water (frozen)					OP8	- 15	- 5	3120
PERDICARBONATO di- (2-ETOXIETILA)	≤ 52		≥ 48			OP7	- 10	0	3115
PERDICARBONATO di- (2-FENOXIETILA)	> 85 - 100					OP5			3102
PERDICARBONATO di- (2-FENOXIETILA)	≤ 85				≥ 15	OP7			3106
PERDICARBONATO OF DIISOPROPILA	> 52 - 100					OP2	- 15	- 5	3112
PERDICARBONATO OF DIISOPROPILA	≤ 52		≥ 48			OP7	- 20	- 10	3115
PERDICARBONATO OF DIISOPROPILA	≤ 32	≥ 68				OP7	- 15	- 5	3115

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organic peroxide	concen-tration (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
PERDICARBONATO di- (3-METOXIBUTILA)	≤ 52		≥ 48			OP7	- 5	+ 5	3115
PERDICARBONATO OF DIMIRISTILA	≤ 100					OP7	+ 20	+ 25	3116
PERDICARBONATO OF DIMIRISTILA	≤ 42, stable dispersion in water					OP8	+ 20	+ 25	3119
PERDICARBONATO di-n-propyl	≤ 100					OP3	- 25	- 15	3113
PERDICARBONATO di-n-propyl	≤ 77		≥ 23			OP5	- 20	- 10	3113
PERDIETILACETATO OF T-BUTYL	≤ 100					OP5	+ 20	+ 25	3113
PER-stearyl-CARBONATE t-BUTYL	≤ 100					OP7			3106
PER-2-ethylhexanoate t-amyl	≤ 100					OP7	+ 20	+ 25	3115
PER-2-ethylhexanoate t-BUTYL	> 52 – 100					OP6	+ 20	+ 25	3113
PER-2-ethylhexanoate t-BUTYL	> 32-52		≥ 48			OP8	+ 30	+ 35	3117
PER-2-ethylhexanoate t-BUTYL	≤ 52			≥ 48		OP8	+ 20	+ 25	3118
PER-2-ethylhexanoate t-BUTYL	≤ 32		≥ 68			OP8	+ 40	+ 45	3119
PER-2-ethylhexanoate t-BUTYL + 2,2-di-(T-butylperoxy) butane	≤ 12 + ≤ 14	≥ 14		≥ 60		OP7			3106
PER-2-ethylhexanoate t-BUTYL + 2,2-di-(T-butylperoxy) butane	≤ 31 + ≤ 36		≥ 33			OP7	+ 35	+ 40	3115
PER-2-ethylhexanoate 1,1,3,3-tetramethyl-BUTYL	≤ 100					OP7	+ 15	+ 20	3115
PER-2-ETHYL-HEXILCARBONATO OF t-amyl	≤ 100					OP7			3105

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organic peroxide	concen-tration (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)

PER-2-ETHYL-HEXILCARBONATO OF T-BUTYL	≤ 100				OP7			3105
Perphthalate di-t-BUTYL	> 42 - 52	≥ 48			OP7			3105
Perphthalate di-t-BUTYL	≤ 52, paste				OP7			3106
Perphthalate di-t-BUTYL	≤ 42	≥ 58			OP8			3107
PERISOBUTIRATO OF T-BUTYL	> 52 - 77		≥ 23		OP5	+ 15	+ 20	3111
PERISOBUTIRATO OF T-BUTYL	≤ 52		≥ 48		OP7	+ 15	+ 20	3115
PERISOPROPIL CARBONATE t-amyl	≤ 77	≥ 23			OP5			3103
PER-2-methylbenzoate t-BUTYL	≤ 100				OP5			3103
PERNEODECANOATO OF t-amyl	≤ 77		≥ 23		OP7	0	+ 10	3115
PERNEODECANOATO OF t-amyl	≤ 47	≥ 53			OP8	0	+ 10	3119
PERNEODECANOATO OF T-BUTYL	> 77 - 100				OP7	- 5	+ 5	3115
PERNEODECANOATO OF T-BUTYL	≤ 77		≥ 23		OP7	0	+ 10	3115
PERNEODECANOATO OF T-BUTYL	≤ 52, stable dispersion in water				OP8	0	+ 10	3119
PERNEODECANOATO OF T-BUTYL	≤ 42, stable dispersion in water (frozen)				OP8	0	+ 10	3118
PERNEODECANOATO OF T-BUTYL	≤ 32	≥ 68			OP8	0	+ 10	3119
PERNEODECANOATO OF CUMILA	≤ 87	≥ 13			OP7	- 10	0	3115
PERNEODECANOATO OF CUMILA	≤ 77		≥ 23		OP7	- 10	0	3115
PERNEODECANOATO OF CUMILA	≤ 52, stable dispersion in water				OP8	- 10	0	3119

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organic peroxide	concen-traction (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
PERNEODECANOATO 1,1-DIMETILBUTILA-3-hydroxyl	≤ 77	≥ 23				OP7	- 5	+ 5	3115
PERNEODECANOATO 1,1-DIMETILBUTILA-3-hydroxyl	≤ 52	≥ 48				OP8	- 5	+ 5	3117
PERNEODECANOATO 1,1-DIMETILBUTILA-3-hydroxyl	≤ 52, stable dispersion in water					OP8	- 5	+ 5	3119
PERNEODECANOATO OF t-hexyl	≤ 71	≥ 29				OP7	0	+ 10	3115
PERNEODECANOATO OF 1,1,3,3 -tetrahydro METILBUTILA	≤ 72		≥ 28			OP7	- 5	+ 5	3115
PERNEODECANOATO OF 1.1.3.3 -tetrahydro METILBUTILA	≤ 52, stable dispersion in water					OP8	- 5	+ 5	3119
PERNEOHEPTANOATO OF T-BUTYL	≤ 77	≥ 23				OP7	0	+ 10	3115
PERNEOHEPTANOATO OF T-BUTYL	≤ 42, stable dispersion in water					OP8	0	+ 10	3117
PERNEOHEPTANOATO OF CUMILA	≤ 77	≥ 23				OP7	- 10	0	3115
PERNEOHEPTANOATO OF 1,1-DIMETHYL-3-hydroxy-BUTYL	≤ 52	≥ 48				OP8	0	+ 10	3117
PEROXIBUTIL Fumarate t-BUTYL	≤ 52	≥ 48				OP7			3105
PEROXIBUTIL ISOPROPILCARBONATODE t-BUTYL	≤ 77	≥ 23				OP5			3103
PEROXIDE acetylacetone	≤ 42	≥ 48			≥ 8	OP7			3105
PEROXIDE acetylacetone	≤ 32, paste					OP7			3106

PEROXIDE OF DI-succinic acid	> 72 - 100					OP4			3102

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organic peroxide	concen-tration (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
PEROXIDE OF DI-succinic acid	≤ 72				≥ 28	OP7	+ 10	+ 15	3116
PEROXIDE T-BUTILCUMILA	> 42 - 100					OP8			3107
PEROXIDE T-BUTILCUMILA	≤ 52			≥ 48		OP8			3108
PEROXIDE CYCLE-Hexane-acetyl SULFONYL	≤ 82				≥ 12	OP4	- 10	0	3112
PEROXIDE CYCLE-Hexane-acetyl SULFONYL	≤ 32		≥ 68			OP7	- 10	0	3115
PEROXIDE (S) cyclohexanone	≤ 91				≥ 9	OP6			3104
PEROXIDE (S) cyclohexanone	≤ 72		≥ 28			OP7			3105
PEROXIDE (S) cyclohexanone	≤ 72, paste					OP7			3106
PEROXIDE (S) cyclohexanone	≤ 32			≥ 68					free
PEROXIDE DI-acetyl	≤ 27		≥ 73			OP7	+ 20	+ 25	3115
PEROXIDE (S) diacetone alcohol	≤ 57		≥ 26		≥ 8	OP7	+ 40	+ 45	3115
PEROXIDE di-t-amyl	≤ 100					OP8			3107
PEROXIDE Dibenzoyl	> 51 - 100			≤ 48		OP2			3102
PEROXIDE Dibenzoyl	> 77 - 94				≥ 6	OP4			3102
PEROXIDE Dibenzoyl	≤ 77				≥ 23	OP6			3104
PEROXIDE Dibenzoyl	≤ 62			≥ 28	≥ 10	OP7			3106
PEROXIDE Dibenzoyl	> 52 - 62, paste					OP7			3106
PEROXIDE Dibenzoyl	> 35 - 52			≥ 48		OP7			3106

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organic peroxide	concen-tration (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
PEROXIDE Dibenzoyl	> 36 - 42	≥ 18			≤ 40	OP8			3107
Dibenzoyl Peroxide	≤ 56.5, paste				≥ 15	OP8			3108
PEROXIDE Dibenzoyl	≤ 52, paste					OP8			3108
PEROXIDE Dibenzoyl	≤ 42, stable dispersion in water					OP8			3109
PEROXIDE Dibenzoyl	≤ 35			≥ 65					free
PEROXIDE DI-T-BUTYL	> 52 - 100					OP8			3107
Peroxide, di-t-BUTYL	≤ 52		≥ 48			OP8			3109
PEROXIDE DI-4-CLOROBENZOÍLA	≤ 77				≥ 23	OP5			3102

PEROXIDE DI-4-CLOROBENZOÍLA	≤ 52, paste				OP7			3106
PEROXIDE DI-4-CLOROBENZOÍLA	≤ 32		≥ 68					free
PEROXIDE 2,4-CLOROBENZOÍLA	≤ 77			≥ 23	OP5			3102
PEROXIDE 2,4-CLOROBENZOÍLA	≤ 52, paste				OP8	+ 20	+ 25	3118
PEROXIDE 2,4-CLOROBENZOÍLA	≤ 52, paste with silicone oil				OP7			3106
Dicumylperoxide	> 52 - 100				OP8			3110
Dicumylperoxide	≤ 52		≥ 48					free
PEROXIDE DIDECANOÍLA	≤ 100				OP6	+ 30	+ 35	3114
PEROXIDE di- (1-hydroxy-hexyl)	≤ 100				OP7			3106
PEROXIDE DIISOBUTIRILA	> 32 - 52	≥ 48			OP5	- 20	- 10	3111

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organic peroxide	concen-traction (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
PEROXIDE DIISOBUTIRILA	≤ 32		≥ 68			OP7	- 20	- 10	3115
PEROXIDE DILAUROÍLA	≤ 100					OP7			3106
PEROXIDE DILAUROÍLA	≤ 42, stable dispersion in water					OP8			3109
PEROXIDE di- (2-methylbenzoyl)	≤ 87				≥ 13	OP5	+ 30	+ 35	3112
PEROXIDE di (3-methylbenzoyl) PEROXIDE + (3-methylbenzoyl) benzoyl PEROXIDE + Dibenzoyl	≤ 20 + ≤ 18 + ≤ 4		≥ 58			OP7	+ 35	+ 40	3115
PEROXIDE di (4-methylbenzoyl)	≤ 52, paste with silicone oil					OP7			3106
PEROXIDE di-n-NONANOÍLA	≤ 100					OP7	0	+ 10	3116
PEROXIDE di-n-OCTANOÍLA	≤ 100					OP5	+ 10	+ 15	3114
PEROXIDE DIPROPIONILA	≤ 27		≥ 73			OP8	+ 15	+ 20	3117
PEROXIDE DI-3,5,5-trimethyl-HEXANOÍLA	> 52 - 82	≥ 18				OP7	0	+ 10	3115
PEROXIDE DI-3,5,5-trimethyl-HEXANOÍLA	≤ 52, stable dispersion in water					OP8	+ 10	+ 15	3119
PEROXIDE DI-3,5,5-trimethyl-HEXANOÍLA	≤ 38	≥ 62				OP8	+ 20	+ 25	3119
PEROXIDE DI-3,5,5-trimethyl-HEXANOÍLA	> 38-52	≥ 48				OP8	+ 10	+ 15	3119
PEROXIDE (S) methyl-cyclohexanone	≤ 67		≥ 33			OP7	+ 35	+ 40	3115
PEROXIDE (S) of methylethylketone	see obs. Referring to Fig.			≥ 48		OP5			3101
PEROXIDE (S) of methylethylketone	see obs. Referring to Fig.			≥ 55		OP7			3105
PEROXIDE (S) of methylethylketone	see obs.10	≥ 60				OP8			3107

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	concen-	Diluent	Diluent	Solid	Water	Method	Temperature	Temperature	Number

organic peroxide	traction (%)	Type A (%)	type B (%) (1)	inert (%)	(%)	packing	of control ºC	in emergency ºC	(designatior generic)
PEROXIDE (S) methylisobutyl ketone	≤ 62	≥ 19				OP7			3105
PEROXIDE (S) METILISOPROPIL ketone	see obs.31	≥ 70				OP8			3109
ORGANIC PEROXIDE, LIQUID, SAMPLE						OP2			3103
ORGANIC PEROXIDE, LIQUID, SAMPLE, CONTROLLED TEMPERATURE						OP2			3113
ORGANIC PEROXIDE, SOLID, SAMPLE						OP2			3104
ORGANIC PEROXIDE, SOLID, SAMPLE, CONTROLLED TEMPERATURE						OP2			3114
Perpivalate OF t-amyl	≤ 77		≥ 23			OP5	+ 10	+ 15	3113
Perpivalate OF T-BUTYL	> 67 - 77	≥ 23				OP5	0	+ 10	3113
Perpivalate OF T-BUTYL	> 27 - 67		≥ 33			OP7	0	+ 10	3115
Perpivalate OF T-BUTYL	≤ 27		≥ 73			OP8	+ 30	+ 35	3119
Perpivalate OF CUMILA	≤ 77		≥ 23			OP7	- 5	+ 5	3115
Perpivalate OF t-hexyl	≤ 72		≥ 28			OP7	+ 10	+ 15	3115
Perpivalate of 1- (2-PERETILHEXANOILA) 1,3-DIMETILBUTILA	≤ 52	≥ 45	≥ 10			OP7	- 20	- 10	3115
Perpivalate OF 1,1,3,3 TETRAMETILBUTILA	≤ 77	≥ 23				OP7	0	+ 10	3115
PER-3,5,5-trimethyl hexanoate t-amyl	≤ 100					OP7			3105
PER-3,5,5-trimethyl hexanoate t-BUTYL	> 32 - 100					OP7			3105
PER-3,5,5-trimethyl hexanoate t-BUTYL	≤ 42			≥ 58		OP7			3106

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organic peroxide	concen-traction (%)	Diluent Type A (%)	Diluent type B (%) (1)	Solid inert (%)	Water (%)	Method packing	Temperature of control ºC	Temperature in emergency ºC	Number (designatior generic)
PER-3,5,5-trimethyl hexanoate t-BUTYL	≤ 32	≥ 68				OP8			3109
1,4,7-TRIPEROXONONANO 3,6,9 - triethyl - 3,6,9 -TRIMETILA	≤ 42	≥ 58				OP7			3105
1,4,7-TRIPEROXONONANO 3,6,9 - triethyl - 3,6,9 -TRIMETILA	≤ 17	≥ 18		≥ 65		OP8			3110
POLY-t-polyether BUTILPERCARBONATO	≤ 52		≥ 48			OP8			3107

Comments on the item 2.5.3.2.4:

1. Diluent type B can always be replaced by diluent type A. The boiling point of the diluent type B should be at least 60 ° C above the SADT of the organic peroxide.

2. Oxygen available ≤ 4.7%.

3. Required the use of the subsidiary risk label on "EXPLOSIVE " (Model No. 1, see item 5.2.2.2.2).

4. The diluent may be replaced by peroxide di-t-butyl.

5. Oxygen available ≤ 9%.

6. With ≤ 9% hydrogen peroxide; available oxygen ≤ 10%.

7. Only admitted non-metallic containers.

8. Available Oxygen > 10% and ≤ 10.7%, with or without water.

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9. Available Oxygen ≤ 10%, with or without water.

10. Available Oxygen ≤ 8.2%, with or without water.

11. See paragraph 2.5.3.2.5.1.

12. Up to 2,000 kg per container classified as ORGANIC PEROXIDE TYPE F on the basis of large scale trials.

13. Required the use of the subsidiary risk label on the " Corrosive '(Model No 8, see item 5.2.2.2.2).

14. peracetic acid formulations that meet the item criteria 2.5.3.3.2 d).

15. peracetic acid formulations that meet the item criteria 2.5.3.3.2 e).

16. peracetic acid formulations that meet the item criteria 2.5.3.3.2 f).

17. Addition of water to this organic peroxide reduces its thermal stability.

18. It is not necessary to the subsidiary risk label on "Corrosive " at less than 80%.

19. Mixtures with hydrogen peroxide, water and acid (s).

20. diluent type A, with or without water.

21. With ≥ 25% diluent type A by mass, and in addition ethylbenzene.

22. With ≥ 19% diluent type A by mass, and in addition methyl isobutyl ketone.

23. <6% of di-t-butyl.

24. ≤ 8% 1-isopropyl-hydroperoxy-4-isopropyl-hydroxybenzene.

25. Diluent type B with boiling point> 110 ° C.

26. hydroperoxide content <0.5%.

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27. For concentrations greater than 56% is required subsidiary risk label on "Corrosive '(Model No 8, see item 5.2.2.2.2).

28. Oxygen asset available ≤ 7.6% in diluent type A vaporization point in the range of 200ºC to 260ºC.

29. Not subject to the requirements that this Regulation provides for Division 5.2.

30. Diluent type B with boiling point > 130 ° C.

31. active oxygen ≤ 6.7%.

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2.5.3.2.5 The classification of organic peroxides not listed in item 2.5.3.2.4, in Instruction for IBC520 packaging or instruction for T23 Portable Tanks, as well as assignment to a generic entry must be made by the manufacturer of the product, based in a report of relevant qualifying tests. The principles applicable to the classification such substances are found in section 2.5.3.3. rating procedures, the test methods and criteria, as an example of a test report appropriate, are set out in Part II of the *Manual of Tests and Criteria* and contain conditions relevant transport.

2.5.3.2.5.1 Samples of new organic peroxides or peroxide formulations new Organic not listed in item 2.5.3.2.4, for which is not available test data complete and must be transported for evaluation or testing can receive the appropriate designations for ORGANIC PEROXIDES TYPE C provided the following conditions are met:

a) information indicates that the sample is no more dangerous a ORGANIC PEROXIDE TYPE B;

b) the sample is packaged according to the packaging method OP2 (See instruction for applicable package) and the amount per vehicle, or transport equipment is limited to 10 kg;

c) information indicates that the temperature control if any, is sufficiently low to avoid decomposition hazardous and dangerous high enough to avoid phase separation.

2.5.3.3 Principles for classification of organic peroxides

***Note** : This section refers only to those properties of organic peroxides which They are decisive for their classification. In Figure 2.5.1 is a flowchart with principles of classification organized in the form of questions relating to property*

decisive along with possible responses. These properties should be determined experimentally. appropriate test methods, with the criteria of relevant assessment, are provided in Part II of the Manual of Tests and Criteria.

2.5.3.3.1 An organic peroxide formulation should be considered as having explosive properties when in laboratory testing it is liable to detonate, ignite quickly or have violent effect when heated under confinement.

2.5.3.3.2 The following principles are applied in formulations classification organic peroxides which are not listed in item 2.5.3.2.4:

a) any organic peroxide formulation, packaged for transport, can detonate or deflagrate rapidly shall be refused for transportation in Class 5.2 in said package (defined as PEROXIDE ORGANIC TYPE A, exit box A in Figure 2.5.1);

b) any organic peroxide formulation possessing explosive properties and that packaged for transport, neither detonates nor deflagrates rapidly, but may suffer thermal explosion in that package must display label the subsidiary risk on "EXPLOSIVE " (Model n the 1, see item 5.2.2.2.2). This organic peroxide may be packaged in amounts of up to 25 kg unless the maximum quantity has to be reduced to avoid rapid deflagration or detonation in the package (defined as ORGANIC PEROXIDE TYPE B, output block B in Figure 2.5.1);

c) any organic peroxide formulation possessing explosive properties It can be transported without subsidiary risk label on the "EXPLOSIVE " **,** when the substance packaged for transport (max 50 kg), can not detonate or deflagrate rapidly or suffer thermal explosion (defined as ORGANIC PEROXIDE TYPE C, box C Output in Figure 2.5.1);

d) any organic peroxide formulation which in laboratory testing:

(I) detonates partially, does not deflagrate rapidly and does not include violent effect **,** when heated under confinement; or

(ii) does not detonate at all , deflagrates slowly and show no violent effect **,** when heated under confinement; or

(iii) does not detonate or deflagrate and present effect of average proportions **,** when heated under confinement;

It may be accepted for transport in packages of up to 50 kg mass net (defined as ORGANIC PEROXIDE TYPE D, exit box D, Figure 2.5.1);

e) Any organic peroxide formulation which, on test laboratory, neither detonates nor deflagrates and show little or no effect when heated under confinement may be accepted for transport in packages of up to 400 kg / 450 L (defined as PEROXIDE ORGANIC TYPE E, exit box E in Figure 2.5.1);

f) Any organic peroxide formulation which, on test
laboratory, neither detonates in the cavitated state or deflagrate, and
presents little or no effect , when heated under
confinement as well as low or no explosive power may be
accepted for transport in IBCs or tanks (defined as PEROXIDE
ORGANIC TYPE F, exit box F in Figure 2.5.1); requirements
Additional contained in items 4.1.7 and 4.2.1.13;

g) Any organic peroxide formulation which, on test
laboratory, neither detonates in the cavitated state nor deflagrates or
submit any effect when heated under confinement nor
present explosive power, will be exempt from the requirements of Class
5.2, since it is thermally stable (temperature
autoacelerável decomposition (SADT) is greater than or equal to 60 ° C to
50 kg package), and in liquid formulations to be used
Diluent type A to it desensitizes (defined as PEROXIDE
ORGANIC TYPE G, exit box G in Figure 2.5.1). If the formulation
is not thermally stable or is used other diluent not the type
The desensitizes to it, it must be defined as PEROXIDE
ORGANIC TYPE F.

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2.5.3.4 Temperature control requirements

2.5.3.4.1 They are subject to temperature control during transport, the following Organic peroxides:

a) organic peroxides types B and C with decomposition temperature autoacelerável (SADT) ≤ 50 ° C;

b) Organic peroxides type D showing average effect **,** when heated under confinement * with an SADT ≤ 50 ° C, or show little or no effect **,** when heated under confinement with an SADT ≤ 45 ° C; and

c) Organic peroxides types E and F with an SADT ≤ 45 ° C.

2.5.3.4.2 Test methods for determining the SADT are presented in Section 28, Part II *of the Manual of Tests and Criteria* . The chosen test must be performed manner that is representative, in terms of dimensions and materials, the volume to be transported.

2.5.3.4.3 Test methods for determining the flammability are shown in subsection 32.4, Part III of *Tests and Criteria Manual* . It is recommended that the determination flash point is made with small samples, as described in ISO 3679, for the Organic peroxides may react vigorously when heated.

2.5.3.5 Desensitization of organic peroxides

2.5.3.5.1 To ensure safety during transport, organic peroxides are in many cases desensitized by organic liquids or solids, inorganic solids or water. When there specification proportion of a substance, this refers to percentage by mass, rounded to the nearest whole number. In general, the stunning must be made in such a way that in case of spillage or fire, there is no organic peroxide concentration at dangerous levels.

2.5.3.5.2 Unless otherwise indicated in a particular formulation, apply The following definitions diluents used to desensitize the organic peroxide:

a) *diluents type A* **:** are liquid peroxide compatible with organic Organic and whose boiling point is not lower than 150 ° C. thinners type The can be used to desensitize all organic peroxides;

b) *diluents type B* **:** are liquid peroxide-compatible organic Organic and whose boiling point is below 150 ° C but not less than 60 ° C, and flash point of not less than 5 ° C. Diluents type B can be used to desensitize any organic peroxide as long as the boiling point of at least 60 ° C higher than the temperature autoacelerável decomposition (SADT) in a pack of 50 kg.

** Determined according to number of tests and prescribed in Part II of the Manual of Tests and Criteria.*

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2.5.3.5.3 Diluents different types A and B can be added to formulations organic peroxides listed in item 2.5.3.2.4, provided they are compatible. However, replacing, in whole or in part, of a diluent type A or type B with other diluent different properties requires that the organic peroxide formulation be reassessed in According to the standard classification procedures in Division 5.2.

2.5.3.5.4 Water can be used as phlegmatizer for organic peroxides shown in Table 2.5.3.2.4 or otherwise indicated in the test report referred to in item 2.5.3.2.5 in the form of a stable dispersion in water.

2.5.3.5.5 organic and inorganic solids may be used as insensibilizantes of organic peroxides provided that they are compatible.

2.5.3.5.6 Liquids and solids are compatible those who do not exert harmful influence on thermal stability or about the type of the organic peroxide formulation risk.

CHAPTER 2.6

CLASS 6 - TOXIC AND SUBSTANCES INFECTIVE

Introductory notes

Note 1: *Genetically modified organisms and microorganisms that are not meet the definition of toxic or infectious substances should be considered for classification in Class 9 and allocation to UN 3245 number.*

Note 2: *Toxins of plant, animal or bacterial sources which do not contain infectious substances, and toxins contained in non-infectious substances, should be considered for classification in Division 6.1 and allocation to UN 3172 number.*

2.6.1 settings

Class 6 is divided into the following two subclasses:

a) Division 6.1 - *Toxic substances*

Are substances capable of causing death, serious injury or damage to human health if swallowed or inhaled, or if they come into contact with the skin;

b) Division 6.2 - *Infectious substances*

Are substances that contain pathogens or under reasonable suspicion to contain them. Pathogens are microorganisms (including bacteria, viruses, rickettsiae, parasites, fungi) and other agents such as prions, capable cause disease in humans or animals.

2.6.2 Division 6.1 - Toxic substances

2.6.2.1 settings

For purposes of this Regulation:

2.6.2.1.1 *DL 50 (median lethal dose) for acute oral toxicity* is the only dose, obtained statistically orally administered substance that has the highest probability of causing, for a period of fourteen days to death of half of a young albino rats adults. The value *DL 50* is expressed in terms of mass of the substance by the body mass Animal (mg / kg).

2.6.2.1.2 *DL 50 for acute dermal toxicity* is the substance dose, given by continuous contact with the bare skin of albino rabbits, for twenty-four hours has the highest likely to cause, in a period of fourteen days to death of half of the animals tested. The number of animals tested should be sufficient to provide results statistically significant and comply with good pharmacological practice. The result is expressed in milligrams per kilogram of body weight.

2.6.2.1.3 *LC 50 (median lethal concentration) for acute inhalation toxicity* is the concentration of vapor, mist or dust which, administered by continuous inhalation for one hour, young adult albino rats, males and females, have the highest probability of causing, in a period of fourteen days to death of half of the animals tested. A solid substance should be tested if at least 10% of its total mass has likely to be respirable dust, ie, the aerodynamic diameter of the particulate fraction is 10 microns or less. An liquid substance should be tested if there is probability of haze generation in case of leakage of the transport packaging. Samples of solid or liquid substances prepared for inhalation toxicity test should be more than 90% by weight in the range breathable, as defined above. The result is expressed in milligrams per liter of air for dusts and mists or in milliliters per cubic meter of air (parts per million) for vapors.

2.6.2.2 Allocation to packing groups

2.6.2.2.1 Substances of Class 6.1, including pesticides, are allocated to one of the following three packing groups according to their level of risk during transport:

a) Packing Group I: substances and preparations which present risk very high toxicity;

b) Packing Group II: substances and preparations with severe risk of toxicity;

c) Packing group III: substances and preparations which present risk relatively low toxicity.

2.6.2.2.2 The assignment of a substance to one of the packing groups must be taken into account the human experience in instances of accidental poisoning, as well as any special properties of a substance, such as liquid, high volatility probability of penetration and special biological effects.

2.6.2.2.3 In the absence of human experience, the allocation of a substance from a Packaging groups should be based on data obtained in animal experiments.

Three possible routes of administration of toxic substances must be examined. These pathways are exposure through:

a) oral ingestion;

b) dermal contact; and

c) inhalation of dusts, mists or vapors.

2.6.2.2.3.1 Animal experiments, appropriate for various routes of administration, are described in Section 2.6.2.1. When a substance exhibit different levels of toxicity of two or more of these administration routes, must be assigned the highest level risk indicated by experiments.

2.6.2.2.4 The criteria for allocation of a substance to one of the packing groups of According to the toxicity that appears in each of the routes of administration are described in the following paragraphs.

2.6.2.2.4.1 The criteria for allocation of a substance to one of the packing groups for the oral and dermal routes, and to inhalation of dusts and mists are shown in following table:

Allocation criteria of a substance to one of the packing groups swallowed oral, dermal contact and inhalation of dusts and mists

Group of Packing	oral toxicity LD_{50} (mg / kg)	dermal toxicity LD_{50} (mg / kg)	Inhalation Toxicity for dusts and mists LC_{50} (mg / L)
I	≤ 5	≤ 50	≤ 0.2
II	> 5 and ≤ 50	> 50 and ≤ 200	> 0.2 and ≤ 2
III [a]	> 50 and ≤ 300	> 200 and ≤ 1000	> 2 and ≤ 4

(a) The tear gas should be included in packing group II even if their data Toxicological values correspond to the packing group III.

***Note** : Substances that meet the criteria of Class 8 and having inhalation toxicity of dusts and mists (LC_{50}), corresponding to Packing Group I, only must be accepted for allocation to Division 6.1 if the toxicity oral ingestion or contact Dermal lie at least in the range of packing group I or II. Otherwise, They must be allocated to Class 8, as appropriate (see section 2.8.2.3).*

2.6.2.2.4.2 The criteria for determining the toxicity by inhalation of dusts and mists contained in item 2.6.2.2.4.1, based on data *CL 50* relating to one hour exposure, and such information should be used when available. However, when only data relating to four hours of exposure to dusts and mists are available, such values They can be multiplied by four, replacing the data of the Table the product obtained, or is, *LC 50* (4 hours) x 4 is considered the equivalent of *LC 50* (1 hour).

2.6.2.2.4.3 Liquids detaching toxic vapors shall be allocated in one of the these groups, as search criteria, where "V" is the vapor concentration saturated, in milliliters per cubic meter of air (volatility) at 20 ° C and at atmospheric pressure normal:

a) Packing Group I:	if V ≥ 10 CL 50 and CL 50 ≤ 1,000 ml / m 3 ;
b) Packing Group II:	if V ≥ CL 50 and CL 50 ≤ 3,000 ml / m 3 and not the criteria are met the group Packaging I;
c) Packing Group III (*):	if V ≥ 1/5 CL 50 and CL 50 ≤ 5.000ml / m 3 and not the criteria are met for Groups Packaging I and II.

2.6.2.2.4.4 Figure 2.6.1 shows, in the form of graph, the criteria described in item 2.6.2.2.4.3, to facilitate the allocation. However, due to approximations inherent in the use Graphics, located in substances limits or near the limits of a Packing Group They must be verified by the numerical criteria.

(*) Tear gas should be included in packing group II , even if your data Toxicological values correspond to the packing group III.

2.6.2.2.4.5 The criteria for determining toxicity by inhalation of vapors, constant in item 2.6.2.2.4.3, based on data CL_{50} relating to one hour exposure, and such information should be used when available. However, when only data for four hours of exposure to vapors are available, such values may be multiplied by two, and the product should be replaced on the above criteria, ie LC_{50} (4 hours) x 2 is considered the equivalent of LC_{50} (1 hour).

2.6.2.2.4.6 Mixtures of liquids which are toxic by inhalation should be allocated to a Packing Group according to items 2.6.2.2.4.7 or 2.6.2.2.4.8.

2.6.2.2.4.7 If the data CL_{50} of each toxicant component of a mixture are available, the packing group may be determined as follows:

a) estimate the LC_{50} of the mixture by applying the formula:

$$LC_{50}\ (mixture) = \frac{1}{\sum_{i=1}^{N} \left(\frac{f_i}{CL_{50}} \right)}$$

on what:

f_i = mole fraction of the ith component substance of the mixture;

CL_{50i} = average lethal concentration of the ith component in ml / m^3 ;

b) to estimate the volatility of each component substance of the mixture as applying the formula:

$$V_i = \left(\frac{P_i \times 10^6}{101.3} \right) M \quad M^3 \text{ ml / } m^3$$

on what:

P i = partial pressure of the ith component substance in kPa at 20 ° C and 1 atm;

c) determine the reason volatility / CL_{50} by applying the formula:

$$= R \sum_{I\ 1 =}^{N} \left(\frac{\nabla I}{CL_{50} I} \right);$$

d) with the calculated values of LC_{50} (mixture) and *R* , the packing group the mixture is determined as follows:

(i) *Packing Group I:* $R \geq 10$ and LC_{50} (mixture) ≤ 1000 ml / m^3 ;

(ii) *Packing Group II:* $R \geq 1$ and LC_{50} (mixture) ≤ 3000 ml / m^3 and are not met the Packing Group I criteria;

(iii) *Packing Group III* : $R \geq 1/5$ and LC_{50} (mixture) ≤ 5000 ml / m^3 and are not met the criteria for packing groups I or II.

2.6.2.2.4.8 In the absence of information regarding the data CL_{50} substances toxic components, can be attributed to the mix a packing group based on these simplified tests for determining the toxicity limits. When employees such trials, the most restrictive of certain packing groups should be used for the transport of the mixture.

a) shall be allocated given mixture to packing group I only meet the following two criteria:

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(I) vaporizing a sample of the liquid mixture and dilute with air to create a test atmosphere 1000 ml / m^3 vaporized mixture of air. Exposing Ten albino rats (five male and five female) to test atmosphere for one hour and observed for fourteen days. If five or more animals die during the observation period, it is assumed that the LC_{50} of the mixture is equal to or less than 1.000 ml / m^3 ;

(Ii) diluting a sample of the vapor in equilibrium with the liquid mixture, 20ºC in nine equal volumes of air, forming the atmosphere test. Exposing Ten albino rats (five male and five female) to test atmosphere for one hour and observed for fourteen days. If five or more animals die during the observation period, it is assumed that the mixture has an equal volatility or more than ten times the LC_{50} of mixture;

b) must be allocated a mixture to packing group II only if it meets the following two criteria but does not meet the criteria of the Group Packaging I:

(I) vaporizing a sample of the liquid mixture and dilute with air to create

a test atmosphere 3000 ml / m 3 vaporized mixture of air. Exposing Ten albino rats (five male and five female) to test atmosphere for one hour and observed for fourteen days. If five or more animals die during the observation period, it is assumed that the LC 50 of the mixture is equal to or less than 3.000 ml / m 3 ;

(Ii) A sample of the vapor in equilibrium with the liquid mixture at 20 ° C is used to form a test atmosphere. Exposing ten rats Albinos (five males and five females) to the test atmosphere for an hour and watch them for fourteen days. If five or more animals died during the observation period, it is assumed that the volatility the mixture is equal to or higher than the LC 50 of mixture;

c) should be allocated to a mixture III packing group only if it meets the following two criteria but does not meet the criteria for groups Packaging I and II:

(I) vaporizing a sample of the liquid mixture and dilute with air to create a test atmosphere 5000 ml / m 3 vaporized mixture of

air. Exposing Ten albino rats (five male and five female) to test atmosphere for one hour and observed for fourteen days. If five or more animals die during the observation period, it is assumed that the LC 50 of the mixture is equal to or less 5.000ml / m 3 ;

(Ii) measuring the vapor pressure of the liquid mixture and the concentration of Steam is equal to or greater than 1000 ml / m 3 , it is assumed that the volatility of the mixture is equal to or greater than a fifth of the LC 50 of mixture.

2.6.2.3 Methods for determining the oral and dermal toxicity of mixtures

2.6.2.3.1 In determining the appropriate packing group to mixtures of Class 6.1, according to the criteria of oral and dermal toxicity of item 2.6.2.2, is necessary to determine the *LD 50* acute mixture.

2.6.2.3.2 If a mixture contains only one active substance, and the *DL 50* that component is known, in the absence of reliable data on acute oral toxicity and dermal, the mixture to be transported, the *LD 50* oral or dermal can be obtained by the following method:

$$Value\ given\ DL_{50}\ of\ prepared = \frac{Value\ given\ DL_{50}\ given\ substance\ active\ X\ 100}{\%\ in\ pasta\ ,\ in\ substance\ active}$$

2.6.2.3.3 If a mixture contains more than one active component, there are three ways possible to determine the LD 50 oral or dermal the mixture. The preferred method is to obtain reliable data on acute oral and dermal toxicity of the mixture itself to be

transported. If there is no reliable data, you can use one of two methods:

a) classify the formulation according to the greatest risk component,

as if this component was present in the same concentration

wherein the total concentration of all the active constituents; or

b) apply the formula:

$$\frac{C_A + C_B + \ldots + C_Z}{T_A \quad T_B \quad T_Z} = \frac{100}{T_M}$$

on what:

C = *concentration in% of components A, B, ..., Z in the mixture;*

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T = values LD $_{50}$ oral of components A, B, ..., Z;

T $_M$ = value of the DL $_{50}$ oral mixing.

***Note** : This formula can be used also for dermal toxicities, provided that such information is available regarding the same species for all components. The use of this formula does not take into account any protection or phenomenon potentiation.*

2.6.2.4 Classification of pesticides

2.6.2.4.1 All active pesticide substances and their preparations whose values *DL $_{50}$* and / or *CL $_{50}$* are known and belong to Class 6.1 shall be classified in appropriate packing group according to the criteria described in Section 2.6.2.2. substances and prepared to present subsidiary risks shall be classified according to Risk Precedence table, Chapter 2.0, and allocated to packing groups appropriate.

2.6.2.4.2 If the value of *LD $_{50}$* oral or dermal a pesticidal preparation is not known but is known the value of the *DL $_{50}$* of their substance (s) (s) active (s), the value of *DL $_{50}$* the preparation may be obtained by the procedures set forth in section 2.6.2.3.

***Notice:** Toxicity data DL $_{50}$ of a number of common pesticides can be obtained in the most recent edition of the document "The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification " , available in the program International Chemical Safety, World Health Organization (WHO), 1211 Geneva, 27, Switzerland. Although this document can be used as a data source on the DL $_{50}$ of pesticides, its classification system should not be used in the classification for the purpose of transport or determining Packing Groups for pesticides, it should be done in accordance with what has this Regulation.*

2.6.2.4.3 The proper shipping name to be used in pesticide transport It should be selected based on the active ingredient, the physical state of the pesticide and any subsidiary risk to present.

2.6.3 Division 6.2 - Infectious substances

Notice: *The transport of infectious substances, must be observed, too, health standards established by competent authorities.*

2.6.3.1 settings

For the purposes of this Regulation:

2.6.3.1.1 *Infectious substances* are substances that contain pathogens or are under reasonable suspicion to contain them. Pathogens are microorganisms (including bacteria, viruses, rickettsiae, parasites, fungi) and other agents such as prions, which can cause diseases in humans or animals.

2.6.3.1.2 *Biological products* are those derived from living organisms, manufactured and distributed according to requirements of national authorities, which may require special licensing, and are used for the prevention, treatment, or diagnosis of human or animal diseases, or even for development purposes, trial or investigation. Biological products include, but are not limited to products -finished or finished products, such as vaccines.

2.6.3.1.3 *Cultures* are the result of a process by which pathogens are intentionally proliferated. This definition does not include human specimens for diagnosis or animals as defined in item 2.6.3.1.4.

2.6.3.1.4 *Diagnostic Specimens* or *samples from patients* are materials human or animal origin, directly extracted from human patients or animals, including, but not limited to, excreta, secretions, blood and blood components, tissues and fluids tissues and body parts transported for research, diagnosis, research, study, treatment or prevention of diseases.

2.6.3.1.5 *Medical or clinical wastes* are wastes resulting from medical treatment people or animals, or biological research.

2.6.3.2 Classification of infectious substances

2.6.3.2.1 Infectious substances shall be classified in Division 6.2 and allocated, as appropriate, to UN 2814 numbers, UN 2900, UN 3291 or UN 3373.

2.6.3.2.2 The infectious substances are divided into the following categories:

2.6.3.2.2.1 Category A: infectious substances transported so that, in case of display, is capable of causing permanent disability, endanger the life or be a fatal disease in humans or animals. Table at the end of this

item presents indicative examples of substances that meet these criteria .

Notice: *An exposure occurs when an infectious substance leaks out of your protective packaging, resulting in physical contact with humans or animals.*

a) infectious substances that meet these criteria, and which cause only diseases in humans, animals or human beings and must be allocated to the UN number 2814. The infectious substances cause disease only in animals must be allocated to UN 2900.

b) the allocation to UN numbers 2814 and UN 2900 must be based on the known medical history or the patient's symptoms or animal, the local endemic conditions, or judgment of a expert on the individual condition of the patient or animal.

Note 1: *The proper shipping name associated with the* number *UN 2814 It is "infecting SUBSTANCE, AFFECTING HUMANS" and* Number *UN 2900 "infectious SUBSTANCE, AFFECTING only ANIMALS "* .

Note 2: *The table below is not exhaustive. The infectious substances, including new or emerging pathogens, which do not appear in Table but which meet the same criteria shall be allocated to A. In addition, any substance on which there are doubts about the service or not these criteria should be included in Category A.*

Note 3: *In the following table, the microorganisms written in italics are bacteria, mycoplasma, rickettsia or fungi.*

INDICATIVE EXAMPLES OF SUBSTANCES INFECTIVE INCLUDED IN CATEGORY A IN ANY OF ITS FORMS, UNLESS STATED DIFFERENTLY

(2.6.3.2.2.1 (a))

UN Number and Name suitable for Boarding	**microorganism**

UN 2814	*Bacillus anthracis (cultures only)*
SUBSTANCE Infective THAT AFFECT HUMANS HUMANS	*Brucella abortus (cultures only)*
	Brucella melitensis (cultures only)
	Brucella suis (cultures only)
	Burkholderia mallei - *Pseudomonas mallei* - Glanders *(cultures only)*
	Burkholderia pseudomallei - *Pseudomonas pseudomallei (cultures only)*
	Chlamydia psittaci - avian strains (cultures only)
	Clostridium botulinum (cultures only)
	Coccidioides immitis (cultures only)
	Coxiella burnetii (cultures only)
	Haemorrhagic fever Congo-Crimean
	Dengue virus (cultures only)
	Virus Eastern equine encephalitis (only crops)
	Escherichia coli , verotoxigênico (only crops)
	Ebola virus
	Flexal virus
	Francisella tularensis (cultures only)
	Guaranito virus
	Hantaan virus
	Hantaviruses that cause hemorrhagic fever with renal syndrome
	Hendra virus
	Hepatitis B virus (cultures only)
	Herpes B virus (cultures only)
	Virus, human immunodeficiency (crops only)
	avian influenza virus highly pathogenic (only crops)
	Japanese encephalitis virus (cultures only)
	Junin virus
	Virus Kyasanur forest disease
	Lassa virus
	Machupo virus
	Marburg virus
	Smallpox Virus Simian
	Mycobacterium tuberculosis (cultures only)
	Nipah virus
	Virus Omsk hemorrhagic fever

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	polio virus (cultures only)
	Rabies virus (cultures only)
	Rickettsia prowazekii (only crops)
	Rickettsia rickettsii (cultures only)
	Fever virus Rift Valley (only crops)
	Encephalitis virus Russian spring-summer (only crops)
	Sabia virus
	Shigella dysenteriae type 1 (cultures only)
	Virus tick-borne encephalitis (only crops)
	Smallpox Virus
	Venezuelan equine encephalitis virus (cultures only)
	West Nile virus (cultures only)
	Yellow fever virus (cultures only)

	Yersinia pestis (cultures only)
UN 2900 SUBSTANCE Infective THAT AFFECTS only ANIMALS	African swine fever (only crops)
	Paramyxovirus avian type 1 - Virus velogênica disease Newcastle (only crops)
	Classical swine fever (only crops)
	FMDV (only crops)
	Virus nodular dermatosis (only crops)
	Mycoplasma mycoides - contagious bovine pleuropneumonia (Cultures only)
	Virus plague of small ruminants (only crops)
	Rinderpest virus (cultures only)
	Virus of sheep pox (only crops)
	Virus goat pox (only crops)
	Swine vesicular disease (only crops)
	Vesicular stomatitis virus (cultures only)

2.6.3.2.2.2 Category B infectious substance that does not meet the criteria for inclusion in Category A. Infectious substances in Category B must be allocated the number UN 3373.

Notice: *The proper shipping name associated with the* number *UN 3373 is "BIOLOGICAL SUBSTANCE, CATEGORY B".*

2.6.3.2.3 exemptions

2.6.3.2.3.1 Substances which do not contain infectious substances or who are not probability of causing disease in humans or animals are not subject to this Regulation unless they meet the criteria for inclusion in another class.

2.6.3.2.3.2 Substances containing microorganisms which are not pathogenic in humans or animals are not subject to these Regulations unless they meet the criteria for inclusion in another class.

2.6.3.2.3.3 Substances whose present pathogens have been neutralized or made inactive, so that they present no risk to health, are not subject to this Regulation, unless they meet the criteria for inclusion in another class.

Notice: *Medical equipment which has been cured of all free liquids, order to meet the requirements of this item are not subject to these Regulations.*

2.6.3.2.3.4 Environmental products (including food and water) without risk significant infection are not subject to these Regulations unless they meet the criteria for inclusion in another class.

2.6.3.2.3.5 Dried drops of blood collected on an absorbent material are not

subject to this Regulation.

2.6.3.2.3.6 Samples for detecting occult blood in stool is not subject to this Regulation.

2.6.3.2.3.7 Blood or blood components for transfusion purposes or for the preparation of blood products to be used for transfusion or transplantation and any tissues or organs intended for transplantation, as well as samples for such purposes are not subject to these Regulations.

2.6.3.2.3.8 Specimens for diagnosis or patient samples, which have a minimal risk to contain pathogens are not subject to these Regulations if transported in a packaging designed to prevent any leakage and stating the indication "minimal risk of human specimen" or "minimal risk of animal specimen" as appropriate. The packaging must meet the following conditions:

a) shall consist of three elements:

(I) vessel (s) primer (s) sealingly (s);

(Ii) container (s) Secondary (s) sealingly (s); and

(Iii) an outer package with adequate strength for its capacity, mass and use and at least an outer surface

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with dimensions of 100 mm × 100 mm;

b) for liquids, absorbent material should be placed in quantity sufficient to absorb the entire contents of (S) container (s) primer (s) and the secondary packaging so as to prevent any leakage or leakage that is produced during transport range the outer packaging and compromise the integrity of the material shock;

c) if multiple fragile primary receptacles are placed in a single secondary packaging, the primary receptacle must be individually wrapped or separated so as to avoid contact between them.

Note 1: *The conditions for the exemptions laid out in item 2.6.3.2.3 must be evaluated and declared by a professional. This assessment should be based on the background known doctors, symptoms and individual circumstances of the source, human or animal, and endemic in local conditions. Examples of species that can be carried, According to this item, include the blood or urine to determine cholesterol levels, glucose levels in the blood, the concentration of hormones or specific antigen prostate (PSA) tests performed to prove functioning of organs such as heart, liver or kidney in humans or animals with non-infectious diseases, therapeutic pharmacovigilance, the tests performed on request insurance companies or employers to detect the presence of drugs or alcohol, pregnancy tests, biopsies for the diagnosis of cancer and detection of antibodies in*

*humans or animals with no infection (eg immunity evaluation
By vaccine, diagnostic autoimmune disease, etc.).*

2.6.3.2.3.9 The exception:

a) medical waste (ONU 3291);

b) medical equipment or devices contaminated or containing infectious substances of Category A (ONU 2814 or UN 2900); and

c) medical equipment or devices contaminated with or contain other dangerous goods allocated to another risk class,

equipment or medical devices that may be contaminated with or

contain infectious substances and being transported for disinfection purposes, cleaning, sterilization, repair or evaluation are not subject to these Regulations if packaged in a container designed and constructed so that in normal conditions transport, can not be broken, perforated or have its leaked content. At packages must be designed so that they meet the construction requirements established in items 6.1.4 or 6.6.5.

Such packaging must meet the general requirements for packaging established in items 4.1.1.1 and 4.1.1.2 and are able to retain equipment and medical devices when subjected to fall from a height of 1.2 m.

Packages must bear the "MEDICAL DEVICE USED" indication or "USED MEDICAL EQUIPMENT". When overpacks are used, they should also have the same indication, except when the indication of packaging remain visible.

2.6.3.3 biological products

2.6.3.3.1 For the purposes of these Regulations, biological products are divided in following groups:

a) those manufactured and packaged in accordance with the national and transported competent authorities for final packaging purposes or for distribution and use by health professionals or individuals for sanitary purposes. Substances in this group are not subject to these Regulations;

b) those who do not fit in a) and it is known or suspected to reasonably, containing infectious substances and which meet the criteria for inclusion in Category A or B. Substances in this group shall be allocated to the numbers UN 2814, 2900 or 3373, as appropriate.

Notice: *It is possible that some organic products present biohazard only certain parts of the world. In such cases, the competent authorities may require*

such biological products meet applicable local provisions for infectious substances or impose other restrictions.

2.6.3.4 Microorganisms and genetically modified organisms

2.6.3.4.1 Genetically modified organisms and microorganisms that are not

meet the definition of infectious substance shall be considered for classification according to Chapter 2.9.

2.6.3.5 medical waste or clinical

2.6.3.5.1 The medical waste or clinical containing infectious substances The category should be allocated to UN 2814 or 2900 numbers as appropriate. The medical waste or clinical containing infectious substances in Category B shall be allocated to UN 3291 number.

2.6.3.5.2 The medical waste or clinicians who are under reasonable suspicion of having a low probability of containing infectious substances must be allocated to the number UN 3291.

For allocation purposes can be used as reference catalogs waste of international, regional or national level.

***Note** : The proper shipping name associated with the* number *UN 3291 is "WASTE CLINICAL unspecific, NE" or "WASTE (BIO) MEDICAL, NE" or "MEDICAL WASTE REGULATED, NE".*

2.6.3.5.3 The decontaminated medical or clinical waste, which contained previously infectious substances are not subject to these Regulations unless meet the criteria for inclusion in another class.

2.6.3.6 infected animals

2.6.3.6.1 Unless an infectious substance can not be checked by no other way, no live animals may be used to transport such a substance. A live animal that has been infected deliberately, and which are known or suspected containing an infectious substance shall only be carried in accordance with the terms and conditions approved by the competent authority.

2.6.3.6.2 Animal material contaminated by pathogens of Category A, or would be assigned to that Category A in cultures only, must be allocated to UN numbers 2814 or 2900, as appropriate. human material contaminated by pathogens Category B, other than those allocated to Category A in cultures, should be allocated to UN number 3373.

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CHAPTER 2.7

CLASS 7 - RADIOACTIVE MATERIALS

2.7.1 For classification of radioactive materials and the allocation numbers UN, the provisions must be met in the Standards for Transport established by Commission National Nuclear Energy - CNEN.

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CHAPTER 2.8

CLASS 8 - Corrosive Substances

2.8.1 Definition

Substances of Class 8 (corrosive substances) are substances which, chemical action, cause severe damage when in contact with living tissue or, in case of leakage, damage or destroy other loads or the vehicle itself.

2.8.2 Allocation to packing groups

2.8.2.1 Substances and preparations of Class 8 are allocated to one of three groups Packing described below, according to their risk level for transportation purposes:

a) *Packing Group I:* very dangerous substances and preparations;

b) *Packing Group II:* Substances and preparations which present average risk;

c) *Packing Group III:* Substances and preparations presenting small risk.

2.8.2.2 The allocation of packaging groups of substances of Class 8, including in the Dangerous Goods, Chapter 3.2, was made based on experience, levando- into account additional factors such as inhalation risk (see section 2.8.2.3) and reactivity with water (including the formation of dangerous decomposition products). New substances, including mixtures thereof, may be allocated to packing groups based on time Contact required to cause complete destruction of the entire thickness of human skin, according to the criteria Item 2.8.2.4. Liquid as well as solids, which may be liquefy during transport, judged as not causing complete destruction of full thickness human skin, they should also be considered as a function of potential cause corrosion in certain metal surfaces, according to the criteria Item 2.8.2.5 c) (ii).

2.8.2.3 Substance or preparation that meet the criteria of Class 8 and whose toxicity by inhalation of dusts and mists (CL_{50}) lies on the criteria of Class 6.1 allocation to packing group I and a toxicity by oral ingestion or dermal contact is within the discretion of the allocation to Class 6.1 Packing Group III or below, It should be allocated to Class 8 (see ***Note*** in section 2.6.2.2.4.1).

2.8.2.4 The assignment of a substance to a certain group of packaging, accordance with paragraph 2.8.2.2, should be taken into account information on the effects on humans in cases of accidental exposure. In the absence of information on the effects in humans, the allocation should be made based on experimental data according with Directive 404 [4] or 435 [5] OECD. Any substance which, in accordance with the Guidelines 430 [6] or 431 [7] OECD, classified as non - corrosive and may be considered as non-corrosive to skin for the purposes hereof without requiring Tests additional.

2.8.2.5 Corrosive substances are allocated to packing groups of according to the following criteria:

a) *Packing Group I:* is assigned to substances that cause complete destruction of intact skin tissue, in a period of observation up to 60 minutes, beginning immediately after a exposure period of three minutes;

b) *Packing Group II:* is assigned to substances that cause complete destruction of intact skin tissue, in a period of observation up to 14 days starting after an exposure period more than three minutes, but up to 60 minutes;

c) *Packing Group III:* is attributed to:

(I) substances which cause complete destruction of intact tissue skin in an observation period of up to 14 days, started after a longer period of exposure to 60 minutes, but not greater than four hours; or

(Ii) substances considered not causing complete destruction of intact skin tissue, but having a rate of surface corrosion on steel or aluminum superior to 6.25 mm per year at 55 ° C test temperature when tested both materials. For test purposes, steel grade should be used S235JR + CR (1.0037 respectively St 37-2), S275J2G3 + CR (1.0144 respectively St 44-3), ISO 3574 or " *Unified Numbering*

4 OECD Guidelines for chemical testing No. 404 *"Acute Dermal Irritation / Corrosion"* 2002
5 OECD Guidelines for testing of chemicals No. 435 *"In Vitro Membrane Barrier Test Method for Skin Corrosion "* 2006
6 OECD Guidelines for chemical testing No. 430 *"In Vitro Skin Corrosion: Transcutaneous Electrical ResistanceTest (TER) "* 2004
7 OECD Guidelines for chemical testing No. 431 *"In Vitro Skin Corrosion: Human Skin Model Test"* 2004

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System "(UNS) G10200 or similar type, or SAE 1020, and the trials with aluminum, should be used uncoated types 7075-T6 or AZ5GU-T6. Section 37 of Part III of the *Manual Tests and Criteria,* prescribes an acceptable test.

Notice: *When the initial test, steel or aluminum, indicate that the test substance is corrosive, it is not necessary to perform test with another metal.*

table 2.8.2.5

Summary of the criteria established in section 2.8.2.5

Group of Packing	Period of Exhibition	Period of Note	It is made
I	≤ 3 min	≤ 60 min	complete destruction of tissues intact skin
II	> 3 min ≤ 1 h	≤ 14 d	complete destruction of tissues intact skin

III	> 1 H ≤ 4h	≤ 14 d	complete destruction of tissues intact skin
III	-	-	corrosion rate on surface steel or aluminum exceeds 6.25 mm per year, the temperature test 55 ° C when tested in both materials

CHAPTER 2.9

CLASS 9 - SUBSTANCES AND DANGEROUS GOODS OTHER, INCLUDING SUBSTANCES PRESENTING RISK FOR THE ENVIRONMENT

2.9.1 settings

2.9.1.1 *Substances and articles of Class 9 (Miscellaneous dangerous substances and articles)* are those with during transport, a risk not covered by any of other classes.

2.9.2 Rank in Class 9

Substances and articles of Class 9 are subdivided as follows:

Substances which, when inhaled as a fine powder, can harm health

2212 Asbestos, AFIBÓLICO (amosite, tremolite, anthophyllite actinólito, crocidolite)

2590 Asbestos, CRISOTILIA

Substances which give off flammable vapors

2211 POLYMERS GRANULAR, EXPANDABLE that give off vapors flammable

3314 COMPOSITE PLASTIC MOLDING, in paste form, sheet or extruded rope, which gives off flammable vapor

Lithium batteries

3090 LITHIUM BATTERIES METALLIC (including lithium alloy batteries)

3091 LITHIUM BATTERIES CONTAINED IN EQUIPMENT METALLIC (Including lithium alloy batteries) or

3091 LITHIUM BATTERIES PACKED WITH EQUIPMENT METALLIC (Including lithium alloy batteries)

3480 LITHIUM ION BATTERIES (including battery lithium-ion polymer)

3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT (including batteries lithium ion polymer)

3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including polymer lithium-ion batteries)

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Notice: *see section 2.9.4*

capacitors

3499 CAPACITOR, ELECTRIC DOUBLE LAYER (seating greater energy storage than 0.3 Wh)

3508 CAPACITOR, ASYMMETRIC (with storage capacity energy greater than 0.3 Wh)

Life-saving devices

2990 LIFEBOAT, self-inflating DEVICES

3072 LIFE-SAVING APPLIANCES NOT self-inflating containing products dangerous as equipment

3268 SAFETY DEVICES, electrically driven

Substances and articles which, in the event of fire, may form dioxins

2315 Polychlorinated biphenyls, NET

3432 Polychlorinated biphenyls, SOLID

3151 POLIHALOGENADAS biphenyls, or NET

3151 MONOMETILDIFENILAS-halogenated methane, or NET

3151 Terphenyls POLIHALOGENADAS, NET

3152 Biphenyls POLIHALOGENADAS, SOLID or

3152 MONOMETILDIFENILAS-halogenated methanes, solid or

3152 Terphenyls POLIHALOGENADAS, SOLID or

Examples of these items are: transformers, capacitors and instruments containing such substances.

substances transported or offered for transport at elevated temperatures

The) Liquid

3257 HIGH TEMPERATURE LIQUID, NE, at 100 ° C or more, below the PFG (including molten metals, molten salts, etc.)

B) Solid

3258 SOLID HIGH TEMPERATURE, NE to 240 ° C or more

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hazardous substances to the environment

The) Solid

3077 SUBSTANCE THAT PRESENTS RISK FOR THE ENVIRONMENT, SOLID, NE

B) Liquid

3082 SUBSTANCE THAT PRESENTS RISK FOR THE ENVIRONMENT, LIQUID, NE

These designations should be used for substances and mixtures are hazardous to the aquatic environment and that do not meet the criteria of Another class classification or other substance within Class 9. These designations They can also be used to residues that are not otherwise subject to this Regulation, but which are covered by the Basel Convention *on the Control of Transboundary Movements of Hazardous Wastes and their Disposal Adequate* and defined as hazardous substances to the environment by the competent authority of country of origin.

genetically modified organisms (MOGMs) and genetically modified (GMO)

3245 GENETICALLY MODIFIED MICROORGANISMS or

3245 GENETICALLY MODIFIED ORGANISMS

MOGMS and GMOs which do not meet the definition of toxic substances (see section 2.6.2) or of infectious substances (see section 2.6.3) should be allocated to UN 3245 number.

MOGMs or GMOs are not subject to these Regulations when authorized for use by competent authorities of countries of origin, transit and destination.

Live animals, genetically modified, must be transported in accordance with the conditions established by the competent authority of the source and destination countries.

Other substances or articles that present a hazard during transport, but do not meet the other class settings

1841 Acetaldehyde AMMONIA

1845 CARBON DIOXIDE, SOLID (DRY ICE)

1931 ZINC dithionite (hydrosulfite ZINC)

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1941	DIBROMODIFLUORMETANO
nineteen ninety	benzaldehyde
2071	NITRATE AMMONIUM, FERTILIZERS
2216	FISH MEAL (FISH REMAINS) Stabilized
2807	MAGNETIZED MATERIAL
2969	CASTOR OIL, GRAINS or
2969	CASTOR, or FLOUR
2969	CASTOR, or PASTA
2969	CASTOR, FLAKES
3166	MOVED VEHICLE FLAMMABLE GAS or
3166	VEHICLE MOVED A Flammable liquids or
3166 or	VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED The
3166 FLAMMABLE	VEHICLE, FUEL CELL, MOVED THE NET
3171	BATTERY POWERED or VEHICLE
3171	EQUIPMENT POWERED BATTERY
3316	CASE chemical or
3316	FIRST AID KIT
3334.	REGULATED LIQUID FOR AVIATION, NE
3335	REGULATED SOLID FOR AVIATION, NE
3359	VEHICLE UNDER SPRAYING or UNDER TRANSPORT EQUIPMENT FUMIGATION
3363	DANGEROUS GOODS IN MACHINERY or
3363	DANGEROUS GOODS IN APPARATUS
3509	DISCARDED PACKAGING, EMPTY, NOT CLEAN
3530	ENGINE, INTERNAL COMBUSTION or
3530	MACHINERY, internal combustion

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2.9.3 Substances which present a risk to the environment (ambient aquatic)

2.9.3.1 general settings

2.9.3.1.1 The substances have a risk to the environment comprise among others, the solid or liquid substances that pollute the aquatic environment and solutions and mixtures of such substances, as prepared and waste.

For purposes of this chapter, "substance" means a chemical element and its compounds in the natural state or obtained by any production process, including any additives necessary to preserve the stability of the product and any impurities derived from the process used, excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

2.9.3.1.2 The aquatic environment may be considered in terms of aquatic organisms that live in the water, and the aquatic ecosystem of which they are part [8] . The identification the risk will be based, therefore, on the aquatic toxicity of the substance or mixture, although this can be modified by further information on the behavior of degradation and bioaccumulation.

2.9.3.1.3 Although the following classification procedure intends to apply to all substances and mixtures, it is recognized that, in some cases, such as metals or poorly soluble inorganic compounds, special guidance may be required [9] .

2.9.3.1.4 The following definitions apply for acronyms or terms used in this chapter:

- BCF: Bioconcentration Factor;
- BOD: Biochemical Oxygen Demand;
- COD: Chemical Oxygen Demand;
- GLP: Good Laboratory Practices;
- EC_x : Concentration associated with x% response;
- EC_{50} : effective concentration of substance that causes 50% response maximum;

8 *This does not refer to aquatic pollutants for which you may need to consider other effects beyond the aquatic environment such as the impacts on human health, etc.*

9 *See Annex 10 of the GHS*

- Brain $_{50}$: EC_{50} in terms of reduction of growth;
- Kow: coefficient octanol / water;
- LC_{50} (lethal concentration 50%): concentration of a substance in water, which causes the death of 50% (half) of the group of animals subjected to test;
- C (E) L_{50} : LC_{50} or EC_{50} ;
- NOEC (No Observed Effect Concentration): the test concentration immediately below the lower test concentration which produces

Statistically significant adverse effects. The NOEC has no effect statistically significant adverse compared to the standard.

- Guidelines OECD : Guidelines for testing

2.9.3.2 Required definitions and data

2.9.3.2.1 The basic parameters for the classification of substances that present risk to the environment (aquatic environment) are:

a) acute aquatic toxicity;

b) chronic aquatic toxicity;

c) bioaccumulation, actual or potential; and

d) Degradation (biotic or abiotic) for organic chemicals.

2.9.3.2.2 Although preferred data obtained by test methods internationally harmonized may be considered in practice, the data obtained through national trials, where they are considered equivalent. In general, species of marine and freshwater toxicity data may be considered equivalent and should preferably be derived using the Test Guidelines OECD, or equivalent, in accordance with the principles of Good Laboratory Practice (GLP). When such data are not available, classification shall be based on the best available data.

2.9.3.2.3 *Acute aquatic toxicity* means the intrinsic property of a substance to cause harmful effects on organisms during short-term exposure aquatic environment to that substance.

Acute danger (short term) means for classification purposes, the risk caused by a chemical, due to its acute toxicity to an organism

for short-term exposure in the aquatic environment to that chemical.

The acute aquatic toxicity is determined, typically using CL results $_{50}$ Fish after a 96 hour exposure (Test Guidelines the OECD method 203 or equivalent), the EC $_{50}$ for crustaceans after exposure 48 hours (OECD Test Guidelines, method 202 or equivalent) and / or EC $_{50}$ of algae after an exposure of 72 or 96 hours (Test OECD Guidelines, Method 201 or equivalent). These species are considered representative of all aquatic organisms. May also be considered data on other species such as Lemna the methodology of testing is appropriate.

2.9.3.2.4 *Chronic aquatic toxicity* means the intrinsic property of a substance to cause adverse effects on aquatic organisms during exposures aquatic environment, which are determined depending on the organism's life cycle.

Danger in the long term means, for classification purposes, the risk caused by a chemical, because of its chronic toxicity, long-term exposure this chemical into the aquatic environment.

The chronic toxicity data are less available than data acute toxicity and the test procedures are less standardized. The data generated according to the OECD Test Guidelines, Methods 210 (Early Stages Fish of Life) or 211 (Daphnia Reproduction) and 201 (Growth Inhibition of Algae) are also accepted. They can also be used other validated and accepted internationally. concentrations should be used no observed effect (NOEC) and other C (E) L_x equivalents.

2.9.3.2.5 *Bioaccumulation* means the outcome of uptake, processing and elimination of a substance in an organism, by all routes of exposure (ie, air, water, sediment / soil and food).

The potential to bioaccumulate is determined normally, using it the octanol / water, usually expressed as the $logK_{ow,}$ established According to the OECD Test Guidelines, Methods 107 or 117. While this represents the potential for bioaccumulation, one Bioconcentration Factor (BCF) determined experimentally and gives best results they should be used in Preferably, where available. The FBC should be determined in accordance with the OECD Test Guidelines, Method 305.

2.9.3.2.6 *Degradation* means the decomposition of organic molecules to molecules smaller and eventually into carbon dioxide, water and salts.

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Environmental degradation may be biotic or abiotic (eg hydrolysis) and the criteria used reflect this fact. The rate of biodegradation is more easily defined using the OECD biodegradability tests (Test Guidelines OECD 301A to 301F Methods). A positive result in such tests can be considered as indicative of rapid degradation in most aquatic environments. As the tests mentioned refer to fresh water, should also be included Method 306 results of tests of the OECD Guidelines, which are more suitable to the marine environment. When these data are not available, the DBO quotient (5 days) / COD > 0.5 must be considered as indicative of rapid degradation. The abiotic degradation processes, such as hydrolysis, primary degradation, both biotic as abiotic degradation in non-aquatic environments and rapid degradability in the middle environment may be considered in defining rapid degradability [10] .

Substances are considered rapidly degradable in the middle environment if the following criteria are met:

a) when the 28-day biodegradation studies obtain the following levels of degradation:

(I) tests based on dissolved organic carbon: 70%;

(Ii) assays based on the reduction of oxygen or the formation dioxide carbon: 60% of the theoretical maximum;

These levels of biodegradation must be achieved within 10 days

the start of degradation, which is the time when 10% of the substance It will have been degraded, unless the substance is identified as a complex, multi-component substance constituents structurally similar. In this case, and where there is justification enough, it can be suppressed the condition of 10 days and applied criterion of 28 days [11] ;

b) where only the data of BOD and COD meet available, when the ratio BOD_5 / COD is ≥ 0.5; or

c) as if it has other convincing scientific information show that the substance or mixture can be degraded (biotic and / or Abiotic) in the aquatic environment to a level exceeding 70% in a period of 28 days.

10 *In Chapter 4.1 and Annex 9 of the GHS are given special guidance on the interpretation of the data.*
11 *See Chapter 4.1 and paragraph A9.4.2.2.3 Annex 9 of the GHS*

2.9.3.3 Categories and classification criteria for substances

2.9.3.3.1 Substances should be classified as "substances that present risk for the environment (water environment) "if they meet the criteria for toxicity 1 Acute, Chronic, Chronic 1 or 2, according to Table 2.9.1. These criteria describe detail the classification categories. They are summarized in Table 2.9.2.

Table 2.9.1: Category for substances that pose a risk to the environment water (See ***Note*** 1)

(A) Danger acute (short-term) to the aquatic environment

Acute Category 1: *(see Note 2)*

CL_{50} 96 h (for fish)	≤ 1mg / L and / or
EC_{50} 48 h (for crustacea)	≤ 1mg / L and / or
Cer_{50} 72 or 96 h (for algae or other aquatic plants) *3)*	≤ 1 mg / L (*see Note*

(b) long-term danger to the aquatic environment (see also Figure 2.9.1)

(I) Substances that do not degrade rapidly (see Note 4) for which It has appropriate values of chronic toxicity

Chronic Category 1: *(see Note 2)*

NOEC or EC_x chronic (for fish)	≤ 0.1 mg / l and / or
NOEC or EC_x chronic (for crustaceans)	≤ 0.1 mg / l and / or
NOEC or EC_x chronic (for algae or other aquatic plants)	≤ 0.1 mg / L

Chronic Category 2:

NOEC or EC_x chronic (for fish)	≤ 1mg / L and / or
NOEC or EC_x chronic (for crustaceans)	≤ 1mg / L and / or
NOEC or EC_x chronic (for algae or other aquatic plants)	≤ 1 mg / L

(Ii) Substances which degrade rapidly to values which comprises

adequate chronic toxicity

Chronic Category 1: *(see Note 2)*

NOEC or EC $_x$ chronic (for fish) ≤ 0.01 mg / L and / or

NOEC or EC $_x$ chronic (for crustaceans) ≤ 0.01 mg / L and / or

NOEC or EC $_x$ chronic (for algae or other aquatic plants) ≤ 0.01 mg / L

Chronic Category 2:

NOEC or EC $_x$ chronic (for fish) ≤ 0.1 mg / l and / or

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NOEC or EC $_x$ chronic (for crustaceans) ≤ 0.1 mg / l and / or

NOEC or EC $_x$ chronic (for algae or other aquatic plants) ≤0, 1 mg / L

(Iii) substances for which there are no available adequate toxicity values chronicle

Chronic Category 1: *(see Note 2)*

CL $_{50}$ 96 h (for fish) ≤ 1mg / L and / or

EC $_{50}$ 48 h (for crustacea) ≤ 1mg / L and / or

Cer $_{50}$ 72 or 96 h (for algae or other aquatic plants) ≤ 1 mg / L (*see Note 3)*

and the substance is not rapidly degradable and / or the particular FBC experimentally is ≥ 500 (or, in his absence, the log K $_{ow}$ ≥ 4 (*See Notes 4 and 5)*

Chronic Category 2:

CL $_{50}$ 96 h (for fish) > 1 but ≤ 10 mg / L
and / or

EC $_{50}$ 48 h (for crustacea) > 1 but ≤ 10 mg / L
and / or

EWC $_{50}$ 72 or 96 h (for algae or other aquatic plants) > 1 but ≤ 10mg / L (*See Note 3)*

and the substance is not rapidly degradable and / or the particular FBC experimentally is ≥ 500 (or, in his absence, the log K $_{ow}$ ≥ 4 (*See Notes 4 and 5)*

Note 1: *The bodies subjected to the tests, namely fish, crustaceans and algae are species representing a range of trophic and taxonomic levels. Data and information other bodies may be considered, provided they represent equivalent species and test.*

Note 2: *For substances classified in categories Acute 1 and / or Chronic 1 it is necessary also indicate the appropriate M factor (see item 2.9.3.4.6.4) to apply the summation method.*

Note 3: *When the algae toxicity REC $_{50}$ (= EC $_{50}$ (growth rate)) is more than 100 times lower than the next most sensitive species and result in a classification It based only on those effects to be established whether this toxicity is representative of the toxicity for aquatic plants. When shown that this is not the case, professional judgment should It is used to decide whether the classification should be applied. The classification should be based on Cer $_{50}$ .When the conditions for determining the EC $_{50}$ is not specified and there is no record CER $_{50}$, classification should be based on the EC value $_{50}$ lowest available.*

Note 4: *The absence of rapid degradability is based either in the absence of biodegradabiliadde as for other evidence of the absence of rapid degradation. When not there is useful data on degradability are given experimentally determined or estimated, the substance should be regarded as not rapidly degradable.*

Note 5: *The potential to bioaccumulate, based on a value of BCF* ≥ 500, obtained

experimentally, or, if not available, a $\log K_{ow} \geq 4$, provided $\log K_{ow}$ corresponds to a

appropriate potential for bioaccumulation of the substance. Measured values of $\log K_{ow}$ take precedence on estimated and measured values of FBC take precedence rises values $\log K_{ow}$.

Figure 2.9.1:

Categories for substances that pose a risk to the aquatic environment in the long deadline

2.9.3.3.2 The classification scheme shown below, in Table 2.9.2 summarizes the criteria classification for substances.

table 2.9.2

Scheme for classification of substances that pose a risk to the environment aquatic

Rating Categories			
	Danger in the long term *(See Note 2)*		
danger Acute *(See Note 1)*	**adequate data chronic toxicity available**		**adequate toxicity data not available Chronic** *(See Note 1)*
	not substances quickly degradable *(See Note 3)*	**substances quickly degradable** *(See Note 3)*	
Category acute 1	**Category chronic 1**	**Category chronic 1**	**Chronic Category 1**
L (E) $L_{50} \leq 1.00$	NOEC or $EC_x \leq 0.1$	NOEC or $EC_x \leq 0.1$	L (E) $L_{50} \leq 1,00$ and The absence rapid degradability and / or FBC≥500 or in his absence, $logK_{ow} \geq 4$ in
	Category Chronicle 2	**Category Chronicle 2**	**Chronic Category 2**
	0.1 <NOEC or $EC_x \leq 1$	0.01 <NOEC or $EC_x \leq 0,1$	1.00 <L (E) $L_{50} \leq 10,0$ and the absence of rapid degradability and / or FBC≥500 or in his absence, $logK_{ow} \geq 4$

Note 1: *Acute toxicity range based on values of C (E) L_{50} mg / L for fish, crustaceans and / or algae or other aquatic plants (or, in the absence of experimental data, estimation of Quantitative Structure-Activity Relationship (QSAR)).* [12]

Note 2: *Substances are classified in the various chronic categories unless there adequate data on chronic toxicity available for all three trophic levels above the water solubility or above 1 mg / L. ("Adequate" means data that provide a enough coverage effects of interest. Generally, this would mean data experimentally, however, to avoid unnecessary testing in some cases may be used also estimated data, for example, QSAR or, more obvious cases, belief professional).*

Note 3: *Chronic toxicity band based on NOEC values or values EC_x equivalents in mg / L to fish or crustaceans or other recognized measures Chronic toxicity* **.**

12 In paragraph 4.1.2.13, Chapter 4.1 and Section A9.6 of Annex 9 of the GHS guidelines are presented special.

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2.9.3.4 Categories and mixtures classification criteria

2.9.3.4.1 The mixtures classification system includes the categories used for classify substances which correspond to categories 1 Acute, Chronic 1 and 2. In order to take advantage of all the available data to rank the risks to the aquatic environment of each mixture was used to follow the premise which should be applied where appropriate:

The "relevant components" of a mixture are those that are

present in a concentration less than 0.1% (by weight) to components classified as acute and / or chronic 1 and less than 1% for the components, unless there is the assumption (e.g., in the case of highly toxic components) that a component present under 0.1% can still be relevant for classifying the mixture because of their risks to the aquatic environment.

2.9.3.4.2 The classification of risk to the aquatic environment is done through a stratified and depends on the type of information available on the mixture and its components. The elements of the layered approach include:

a) classification based on mixtures testing;

b) classification based on bridging principles;

c) use of "addition of classified components" and / or a "formula additivity ".

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Figure 2.9.2 outlines the process to be followed.

Figure 2.9.2

stratified approach to classifying mixtures presenting acute risk and long deadline for the aquatic environment

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and
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2.9.3.4.3 Classification of mixtures when toxicity data on the mixture Full are available

2.9.3.4.3.1 When the mixture in its entirety **,** has been tested to determine its aquatic toxicity, this information should be used for classification mixture according to the criteria adopted for substances. The classification is based on usually the data on fish, crustaceans and algae / plants (see 2.9.3.2.3 and items 2.9.3.2.4). When there is no adequate data on toxicity or acute Chronicle mixture as a whole, "bridging principles" or adding methods should be applied (See items 2.9.3.4.4 to 2.9.3.4.6).

2.9.3.4.3.2 The mixture classification based on the long-term risk requires Additional information on degradability and in certain cases bioaccumulation. There is no data on degradability and bioaccumulation of the mixtures as a whole. assays degradability and bioaccumulation are not used for mixtures, since they are usually difficult to interpret, and such tests may be meaningful only for components individual.

2.9.3.4.3.3 Classification for Acute Category 1

a) when appropriate test data for acute toxicity (LC_{50} or EC_{50}) available for the mixture as a whole showing L (E) $L_{50} \leq 1$ mg / l:

Classifying the mixture as Acute 1, according to Table 2.9.1 (a);

b) when the test data for acute toxicity (LC_{50} (s) or EC_{50} (s))

available for the mixture as a whole showing L (E) $L_{50} > 1$ mg / l, or above the water solubility:

need not be classified in acute risk function, according to this Regulation.

2.9.3.4.3.4 Classification for the Chronic Categories 1 and 2

a) when appropriate test data for chronic toxicity (EC_x or NOEC) available for the mixture as a whole showing EC_x or NOEC of the tested mixture ≤ 1 mg / L:

i) classifying the mixture as chronic 1 or 2, according to Table 2.9.1 (B) (ii) (rapidly degradable) if the available information leads to the conclusion that all relevant components of the mixture are rapidly

degradable;

ii) classifying the mixture as chronic 1 or 2 in all other cases, the According to Table 2.9.1 (b) (i) (not readily degradable);

b) where appropriate test data for chronic toxicity (EC_x or NOEC) available for the mixture as a whole showing EC_x or NOEC of the tested mixture > 1 mg / L or above the water solubility:

It is not necessary to classify as long-term risk function, according with this Regulation.

2 .9.3.4.4 Classification of mixtures when toxicity data are not available to the mixture as a whole: Principles Extrapolation

2.9.3.4.4.1 When they have not been carried out tests on the mixture itself in order to determine the risk to the aquatic environment, but there is enough data available about its individual components and on similar mixtures subjected to testing for properly characterize their risks, these data should be used in accordance with the bridging rules described below. In this way, it is ensured using the largest number of available data during the sorting process to characterize the risks of the mixture without the need for additional testing using animals .

2.9.3.4.4.2 Dilution

2.9.3.4.4.2.1 If a new mixture is formed by diluting another classified mixture or of a substance with a diluent which has an equivalent aquatic risk rating or lower than the original component less toxic, and are not expected to have a affect the aquatic risk of the other components, then the mixture is classified as equivalent to the original mixture or substance. Alternatively, the method presented in item 2.9.3.4.5 can be applied.

2.9.3.4.4.2.2 If a mixture is formed by diluting another mixture classified or

a substance with water or other material completely nontoxic, toxicity of the mixture is calculated from the original substance or mixture.

2 .9.3.4.4.3 lots

2.9.3.4.4.3.1 The aquatic hazard classification of a tested production batch of a mixture should be considered equivalent to another batch of the same commercial product and produced by the same manufacturer or under his control, unless there is reason to believe that there was significant variation such that the aquatic risk classification of the batch has

is modified. In the latter case, a new classification is necessary.

2.9.3.4.4.4 Concentration of mixtures classified in the classification categories more severe (Chronic 1 and Acute 1)

2.9.3.4.4.4.1 If a mixture is classified in categories Chronic 1 and / or Acute 1 and there are increased concentration of the components of the mixture ranked in those categories, the more concentrated mixture should be classified in the same category as original mixture without having to perform additional tests.

2.9.3.4.4.5 Interpolation within a toxicity Category

2.9.3.4.4.5.1 For three mixtures (A, B and C) with identical components, wherein Mixtures A and B were tested and classified in the same category of toxicity and the mixture C, not under test, has the same components of toxicologically active Mixtures A and B, but with intermediate concentrations of these ingredients in relation to mixtures A and B, it should be considered that the C mixture belongs to the same category of A and B.

2.9.3.4.4.6 Substantially similar mixtures

2.9.3.4.4.6.1 Given the following:

a) two mixtures:

(i) + B;

(ii) C + B;

b) the concentration of component B is essentially the same in both mixtures thereof;

c) the concentration of component A in mixture (i) is equal to the component C in mixture (ii);

d) data on aquatic hazards for A and C are available and substantially equivalent, that is, they are in the same category of risk and It is not expected to affect the aquatic toxicity of B.

If one of the mixtures i) or ii) is already classified according to data experimental, the other mixture can be classified in the same category of risk.

2.9.3.4.5 Classification of mixtures when toxicity data are

available for all components or only some components of the mixture

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2.9.3.4.5.1 The classification of a mixture shall be based on the sum of concentration of its classified components. The percentage of components classified as "acute" or "chronic" should be introduced directly into the method addition. The details of this method are described in paragraphs 2.9.3.4.6.1 to 2.9.3.4.6.4.1.

2.9.3.4.5.2 The blends can be formed by a combination of both components which are classified (as Acute I and / or Chronic I, II) and components for which Suitable data obtained by tests are available. When data Suitable on toxicity are available for more than one component of the mixture, the combined toxicity of such components should be calculated using the following additivity formulas (a) or (b), depending on the nature of the toxicity data:

a) Based on acute aquatic toxicity:

$$\frac{\Sigma W_I}{LE)C_{50M}} = \Sigma \frac{W_I}{LE)C_{50I}}$$

on what:

Ci = Concentration of component i (mass percentage);

L (E) U_{50i} = LC_{50} and EC_{50} for the component i (mg / L);

N = Number of components, where i varies from 1 to n;

L (E) U_{50m} = C (E) U_{50} of the mixture with part of data obtained in tests.

The calculated toxicity should be used to classify that portion of the mixture to a risk category which will then be used to Application of the method of addition.

b) Based on chronic aquatic toxicity:

$$\frac{\Sigma W_I}{CSEOEq_M} + \Sigma W_j = \Sigma \frac{W_I}{NOEC_I} + \Sigma \frac{W_j}{1.0xCSEO_J}$$

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on what:

Ci = Concentration of component i (mass percentage) for rapidly degradable components;

C_j = Concentration of component j (mass percentage) for components not readily degradable;

$NOEC_i$ = NOEC (or other recognized measures for chronic toxicity) of component i for rapidly degradable components, in mg / L;

$NOEC_j$ = NOEC (or other recognized measures for chronic toxicity) of component j for the components not readily degradable in mg / L;

N = Number of components, i and j varying from 1 to n;

$CSEOEq_m$ = NOEC equivalent fraction of the mixture with data obtained by means assays.

The equivalent toxicity reflects the fact that substances not quickly degradable are classified into a risk category more "severe" than the rapidly degradable substances.

The calculated equivalent toxicity should be used to allocate the fraction of a mixture of long-term risk category according to the criteria established for rapidly degradable substances (Table 2.9.1 b) ii)), which can then be used to implement the method of addition.

2.9.3.4.5.3 If additivity formula to a part of the mixture is applied, it is preferable calculate the toxicity of this part of the mixture is introduced, for each component values Toxicity each relating to the same taxonomic group (fish, crustaceans or algae) and then selecting the highest toxicity (lowest value) obtained (ie is, the more sensitive of the three species). However, when toxicity data for each component are not available to the same taxonomic group, the value of toxicity of each component must be selected in the same way that select toxicity values to classify substances, namely the toxicity should be used

higher (more sensitive organism to be tested). The acute and chronic toxicities calculated should then be used to classify this part of the mixture as Acute 1 and / or Chronic 1 or 2 using the same criteria described for substances.

2.9.3.4.5.4 When a mixture is classified in more than one way, should be the method used to produce the most restrictive result.

2.9.3.4.6 addition method

2.9.3.4.6.1 Classification Procedure

2.9.3.4.6.1.1 In general, more severe classification of mixtures overlaps a less severe classification, eg a classification in Chronic Category 1 prevail over a Chronic 2. Classification As a result, the procedure classification shall be considered as already completed when the results of classification is Chronic 1. A more severe classification that that is not possible, so it will not be necessary to continue with the classification procedure.

2.9.3.4.6.2 Classification in Acute Category 1

2.9.3.4.6.2.1 First, all components classified as Acute Category 1 They should be considered. If the sum of the concentration of the components (in%) is greater than or equal to 25% the whole mixture shall be classified in Category Acute 1. If the result of calculation are a classification of the mixture as Category Acute 1, the classification process is complete.

2.9.3.4.6.2.2 The classification of mixtures for acute hazards, based on the addition of classified components, is summarized below in Table 2.9.3.

Table 2.9.3: Classification of a mixture for acute hazards, based on the sum of concentrations of classified components

Sum of the concentration (in%) of the components classified as	Mixture is classified as:
Acute 1 × $M_a \geq 25\%$	acute 1

a *For an explanation of the M factor, see item 2.9.3.4.6.4*

2.9.3.4.6.3 Classification in categories Chronic 1 and 2

2.9.3.4.6.3.1 First, all components classified as Chronic Category 1 They should be considered. If the sum of the concentration of the components (in%) is greater than or

equal to 25%, the mixture should be classified in Chronic Category 1. If the result of the calculation is classification of the mixture as Category Chronic 1, the classification process will be complete.

2.9.3.4.6.3.2 In cases where the mixture is not classified as Category Chronic 1, should It is considered the classification of the mixture as Chronic 2. A mixture should be Chronic classified in Category 2 is the sum of the concentration (in%) of all components classified as Chronic Category 1 multiplied by 10, plus the sum of concentration (in%) of all components classified as Chronic 2 is greater than or equal to 25%. If the calculation result is one classification of the mixture in Category Chronic 2, the classification process is complete.

2.9.3.4.6.3.3 The classification of mixtures for chronic hazards, based on the addition of classified components, is summarized in Table 2.9.4 below.

Table 2.9.4: Classification of a mixture for long term risk, based on sum of the concentrations of classified components

Sum of the concentration (in%) of the components classified as	Mixture is classified as:
Chronic 1 × $M_a \geq 25\%$	chronic 1
(M x 10 x Chronic 1) + Chronic 2 ≥ 25%	Chronicle 2

a *For an explanation of the M factor, see item 2.9.3.4.6.4*

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2.9.3.4.6.4 Mixtures with highly toxic components

2.9.3.4.6.4.1 The components of Acute Category 1 or Chronic 1 with much toxicity less than 1 mg / L and / or chronic toxicities well below 0.1 mg / L (if not quickly degradable) and 0.01 mg / L (rapidly degradable) may influence the toxicity of the mixing and for this reason are assigned a greater weight in applying the method of addition of classified components. When a mixture contains components classified as Acute 1 or Chronic 1, the layered approach described in items 2.9.3.4.6.2 and 2.9.3.4.6.3 should be applied using a weighted sum obtained by multiplying the concentrations of the components of Acute and Chronic Category 1 1 by a factor of multiplication, instead of simply adding the percentages. This means that concentration "Acute 1" in the left column of Table 2.9.3 and the "Chronic 1" concentration in the column

left in Table 2.9.4 should be multiplied by the appropriate multiplication factor. The factors by which one must multiply these components are defined using the value toxicity as summarized in Table 2.9.5 below. Therefore, to classify a mixture containing components toxicity Acute 1 and / or Chronic 1, the classifier must be informed of the value of the M factor in order to apply the addition method. Alternatively, you can It is used additivity formula (paragraph 2.9.3.4.5.2) when the data is available toxicity for all highly toxic components of the mixture and when convincing evidence that all other components, including those for which no acute toxicity data available, are little or not toxic and do not contribute significantly to the environmental risk of the mixture.

Table 2.9.5: Multiplication factors for highly toxic components of mixtures

Acute toxicity	**factor M**	**toxicity chronicle**	**factor M**	
Value of C (E) G_{50}		**Value NOEC**	**components not quickly degradable**	**components quickly degradable**
$0.1 < L(E)L_{50} \leq 1$	1	$0.01 < NOEC \leq 0.1$ 1		-

0.01 < L (E) L_{50} ≤ 0.1	10	0.001 < NOEC ≤ 0.01	10	1
0.001 < L (E) L_{50} ≤ 0.01	100	0.0001 < NOEC ≤ 0.001	100	10
0.0001 < L (E) L_{50} ≤ 0.001	1000	0.00001 < NOEC ≤ 0.0001	1000	100
0.00001 < L (E) L_{50} ≤ 0.0001	10000	0.000001 < NOEC ≤ 0.00001	10000	1000
Continues in factor 10 intervals		Continues in factor 10 intervals		

2 .9.3.4.6.5 Classification of mixtures with components without any information available

2.9.3.4.6.5.1 When there is no information available on the acute aquatic risk and / or Chronic one or more relevant components, it can be concluded that the mixture can not be allocated to any definite risk category. In this situation, the mixing should be

classified based solely on the known components, with the additional statement where: "X% of the mixture consists of one or more components of unknown risk for aquatic environment ".

2.9.4 Lithium Batteries

The batteries, cells and batteries contained in equipment or batteries and Packed with equipment batteries containing lithium in any form should be allocated to UN 3090 numbers, 3091, 3480 or 3481, as appropriate. Can be transported in such entries provided they meet the following provisions:

a) each cell or battery is such that it is established that meets the requirements of each test provided in subsection 38.3 of Part III of Manual of Tests and Criteria;
manufactured batteries according to a type that meets the Subsection 38.3 of the requirements of Tests and Criteria Manual, Revision 3, Amendment 1, or any subsequent revision and amendment applicable on the date the test may continue to be transported, except if provided for in contrary in this Regulation.
Batteries that meet only the requirements of the Manual Tests and Criteria, Revision 3, are no longer valid. However, batteries and batteries manufactured in this way before 1 July 2003 may continue to be transported, provided that all other requirements applicable are met.

Notice: *Batteries should be the type that is shown to meet the testing requirements of subsection 38.3 of Part III of the Manual of Tests and Criteria,*

regardless of whether the cells with which they are composed are of a tested type.

b) each cell and battery is provided with a ventilation device security that is designed to prevent a violent rupture under normal conditions of carriage;

c) each cell and battery is equipped with an efficient means of preventing short external circuits;

d) each battery containing cells or series of cells connected in parallel It is equipped with effective means that are necessary for the

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inversions prevent dangerous current flow (diodes, fuses, etc.);

e) batteries are manufactured in response to a program quality management that includes:

I. a description of the organizational structure and responsibilities of staff regarding the design and product quality;

Ii. adequate instructions for inspection and testing, quality control, quality assurance and operation processes;

iii. process controls, which should include appropriate activities for prevent and detect failures by internal short circuit during manufacture of batteries;

iv. quality records, such as inspection reports, data testing, calibration data and certificates. Test data should be kept and made available when required by authority competent;

v. revisions to be made by management to ensure effective operation of the quality management program;

saw. a process for control of documents and revisions;

vii. means for control of cells or batteries that are inconsistent with the design under test, as set forth in a) above;

viii. training programs and qualification procedures for competent staff; and

ix. procedures to verify that the final product has not undergone damage.

Notice: *internal quality management programs may be accepted. No it will require certification by a third party, however, arranged above procedures, i) ix) should be properly recorded and traceable. A copy of the management program quality must be available whenever requested by a competent authority.*

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