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Procedure of Classification for Hazardous Products

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Preface

Article 4, Article 5 and Article 6 of this standard are mandatory while the rest are recommendable.

Conformity between this standard and UN Recommendations on the Transport of Dangerous Goods – Model Regulations (14th revision) is non-equivalent. The technical content of this standard is consistent with the above model regulation but the format has been revised according to GB/T1. 1-2000.

Appendix A to this standard is a specification appendix.

This standard was proposed by and is under the jurisdiction of the National Hazardous Chemicals Management Technical Committee (SAT/TC251).

The organisation in charge of drafting this standard was the Hazardous Products Central Laboratory of the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China.

The organisation that participated in drafting this standard was Tianjin Entry-Exit Inspection and Quarantine Bureau.

The main drafters of this standard included Wang Libing, Pang Zhen, Feng Zhixie, Sun Shujun, Zhou Lei and Zheng Qun.

This standard is its first issue.

Procedure of Classification for Hazardous Products

1 Scope

This standard sets the definition, classification, requirements, tests and labelling of hazardous products.

This standard applies to the classification of the hazardous properties of hazardous products.

2 Normative References

The provisions of the following documents become provisions of this standard after being referenced. For dated reference documents, all later amendments (excluding corrigenda) and versions do not apply to this standard; however, the parties to the agreement are encouraged to study whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply to this standard.

GB190 Packaging and Labelling of Hazardous Products
GB/T13690-92 Classification and Labelling of Common Use Hazardous Chemicals
UN Recommendations on the Transport of Dangerous Goods - Model Regulations (14th revision)

3 Terms and Definitions

The following terms and definitions defined in GB/T13690 and UN Recommendations on the Transport of Dangerous Goods - Model Regulations (14th revision) apply to this standard.

3.1 Explosives

Explosives are solid or liquid substances which can produce drastic chemical reactions when certain outside factors (such as heat, pressure or impact) produce large amounts of gas and heat that create a sharp increase in surrounding pressure, i.e. resulting in an explosion which could damage surroundings. Explosives also include substances that have no danger of mass explosion but that have a minor risk of small scale burning, projections or explosions.

3.2 Gas

Gases are substances that have a vapour pressure greater than 300 kPa at 50°C or have a standard pressure of 101.3 kPa at 20°C and are completely gaseous. This class includes compressed gases, liquefied gases, dissolved gases, refrigerated liquefied gases, mixtures of gases, mixtures of one or more gases with one or more substance vapours from another class of , articles charged with gas and aerosols.

3.3 Flammable Liquids

Flammable liquids are liquids, mixtures of liquids, or liquids containing solids in a solution (excluding liquids classified as others on account of their dangerous characteristics) that have a closed-cup test flash point equal to or below 61°C.

3.4 Flammable solids, Substances liable to spontaneous combustion and substances that emit flammable gases when in contact with water

Flammable solids are solids with a low burning point that are sensitive to heat, impact and friction and that are liable to being ignited by an outside source of fire and burning rapidly (excluding solids that are classified as explosive). They can emit poisonous fumes or poisonous solids.

Substances liable to spontaneous combustion refer to substances that have a low spontaneous burning point and are likely to oxidise in the air whilst emitting heat and burning spontaneously.

Substances that emit flammable gases when in contact with water are substances that are liable to become spontaneously flammable or to emit flammable gases in dangerous quantities when they come into contact with water.

3.5 Oxidisers, Organic Peroxides

Oxidisers are substances that are not necessarily combustible but that may cause or contribute to the combustion of other materials, usually by yielding oxygen.

Organic peroxides refer to organic compounds containing peroxide in their molecules, which are liable to spontaneous burning and explosions, easily decompose and are sensitive to heat, vibration or friction.

3.6 Toxic substances and Infection substances

Toxic substances are substances liable to cause either death, serious injury or harm through swallowing, inhaling or contact with the skin.

Infectious substances are substances known or reasonably expected to contain pathogens.

3.7 Radioactive substances

Radioactive materials refer to substances with LSA (Low Specific Activity) higher than $7.4 \times 10^4 \text{Bg/Kg}$.

3.8 Corrosive substances

Corrosive substances are substances to which chemical action will cause severe damage when in contact with living tissue, or in the case of leakage will cause material damage or even destruction or damage to transport vehicles.

3.9 Miscellaneous

Miscellaneous dangerous substances and articles are substances and articles that present a danger during transportation that is not covered by other classes. Miscellaneous also covers the liquid substances that are transported at temperatures of equal to or exceeding 100°C and solid substances that are transported at the temperature of equal to or exceeding 240°C.

4 Classifications

4.1 Hazardous Product Classification

4.1.1 Hazardous products are classified into 9 classes according to the specific hazard or the most predominant hazards they present. Some classes are subdivided into divisions. The orders of the classes and divisions do not represent the orders of hazards.

4.1.2 Class 1: Explosives

- Division 1.1: Substances and articles with a mass explosion hazard;
- Division 1.2: Substances and articles with a projection hazard but no mass explosion hazard;
- Division 1.3: Substances and articles with a fire hazard and either a minor blast hazard or a minor projection hazard or both, but no mass explosion hazard;
- Division 1.4: Substances and articles that present no significant hazard;
- Division 1.5: Very insensitive substances with a mass explosion hazard;
- Division 1.6: Extremely insensitive articles with no mass explosion hazard.

4.1.3 Class 2: Gases

- Division 2.1: Flammable gases;
- Division 2.2: Non-flammable, non-toxic gases;
- Division 2.3: Toxic gases.

4.1.4 Class 3: Flammable liquids

4.1.5 Class 4: Flammable solids, Substances liable to spontaneous combustion and Substances that emit flammable gases when in contact with water

- Division 4.1: Flammable solids, self-reactive substances and desensitised solid explosives;
- Division 4.2: Substances liable to spontaneous combustion;
- Division 4.3: Substances that emit flammable gases when in contact with water.

4.1.6 Class 5: Oxidising substances and organic peroxides

- Division 5.1: Oxidising substances;
- Division 5.2: Organic peroxides.

4.1.7 Class 6: Toxic and infectious substances

- Division 6.1: Toxic substances;
- Division 6.2: Infectious substances.

4.1.8 Class 7: Radioactive material

4.1.9 Class 8: Corrosive substances

4.1.10 Class 9: Miscellaneous dangerous substances and articles

4.2 Packaging Classification of Hazardous Products

With the exception of hazardous products from Class 1, Class 2, Class 7 and Division 62, the packaging for other hazardous products could be classified in 3 classes in accordance with the degree of danger they present:

- Packing group I: Substances presenting high danger;
- Packing group II: Substances presenting medium danger;
- Packing group III: Substances presenting low danger.

5 Requirements

5.1 Safety Requirements

5.1.1 New product manufacturers or clients applying for product classification should provide all safety data for the product, such as toxic data.

5.1.2 If there is any suspected explosibility, an initial small scale test should be conducted before a larger quantity test. The initial test should cover the mechanical stimulation (impact and friction) of the substance and its sensitivity to heat and flame.

5.1.3 For tests involving the triggering off of a potential explosive substance or article, a safety waiting time should be kept after the initiation.

5.1.4 Special care should be taken to dispose of any tested sample as soon as possible after the test completion.

5.2 Test Requirement

5.2.1 Any testing of hazardous properties should be carried out according to test conditions.

5.2.2 The test sample should be the same as the substance to be transported. The content of each active substance and each thinner should be listed in the test report with an accuracy of at least within $\pm 2\%$ (in mass). All components with potential major impact to the test result should be accurately listed in the test report.

5.2.3 All materials that come into contact with the test substance should have no effect on the test result. In the case of possible interference, preventative measures

should be taken to prevent any impact on the test results. Any preventative measures taken in the test should be listed in the test report.

5.2.4 The test should be conducted under the representative transportation conditions (temperature, density). If transportation conditions are not included in the list of test conditions, an additional test on the predicted transportation condition must be carried out.

5.2.5 If the test result is related with granularity of the substance, the corresponding physical status should be listed in the test report.

6 Tests

6.1 Tests should be conducted division by division in all 9 classes of hazardous products as defined in the UN Recommendations on the Transport of Dangerous Goods - Model Regulations (14th revision), unless there is a definite exemption.

6.2 If a substance, mixture or solution presents more than one hazard and its name is not listed in Article 3.2 of the Hazardous Product List in the UN Recommendations on the Transport of Dangerous Goods - Model Regulations (14th revision), it should be classified according to Appendix A. The order of the following hazards is not indicated in Appendix A as they are all predominant.

- a) Substances and articles in Class 1;
- b) Gases in Class 2;
- c) Desensitised liquid explosives in Class 3;
- d) Self-reactive substances and desensitised explosives in Division 4.1;
- e) Substances liable to spontaneous combustion in Division 4.2;
- f) Substances in Division 5.2;
- g) Inhaling toxic substances of Packaging Classification I in Division 6.1;
- h) Substances in Division 6.2;
- i) Substances in Class 7. With the exception of radioactive materials in packaging, any radioactive materials with other hazards should be classified in Class 7 and minor hazards should also be determined.

6.3 Non-specific products with several hazards named in the Hazardous Product List found in Article 3.2 of the UN Recommendations on the Transport of Dangerous Goods - Model Regulations (14th revision), indicate the importance of packaging classifications for the presented hazards over other packaging classifications.

7 Labelling

The labelling of the hazardous properties of dangerous products should be carried out according the regulation of GB 190.

Appendix A

(specification appendix)

Table A1. Order of Hazard

	4.2	4.3	5.1 I	5.1 II	5.1 III	6.1, I Skin	6.1, I Oral	6.1 II	6.1 III	8, I Liquid	8, I Solid	8, II Liquid	8, II Solid	8, III Liquid	8, III Solid
3 □*.....		4.3				3	3	3	3	3	-	3	-	3	-
3 □*...		4.3				3	3	3	3	8	-	3	-	3	-
3 □*...		4.3				6.1	6.1	6.1	3**	8	-	8	-	3	-
4.1 □* ...	4.2	4.3	5.1	4.1	4.1	6.1	6.1	4.1	4.1	-	8	-	4.1	-	4.1
4.1 □*...	4.2	4.3	5.1	4.1	4.1	6.1	6.1	6.1	4.1	-	8	-	8	-	4.1
4.2 □.....		4.3	5.1	4.2	4.2	6.1	6.1	4.2	4.2	8	8	4.2	4.2	4.2	4.2
4.2 □...		4.3	5.1	5.1	4.2	6.1	6.1	6.1	4.2	8	8	8	8	4.2	4.2
4.3 □...			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
4.3 □...			5.1	4.3	4.3	6.1	4.3	4.3	4.3	8	8	4.3	4.3	4.3	4.3
4.3 □...			5.1	5.1	4.3	6.1	6.1	6.1	4.3	8	8	8	8	4.3	4.3
5.1 □.....						5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
5.1 □...						6.1	5.1	5.1	5.1	8	8	5.1	5.1	5.1	5.1
5.1 □...						6.1	6.1	6.1	5.1	8	8	8	8	5.1	5.1
6.1 □□Skin										8	6.1	6.1	6.1	6.1	6.1
6.1 □□Oral										8	6.1	6.1	6.1	6.1	6.1
6.1 □□Inhaling										8	6.1	6.1	6.1	6.1	6.1
6.1 □□Skin										8	6.1	8	6.1	6.1	6.1
6.1 □□Oral										8	8	8	6.1	6.1	6.1
6.1 □.....										8	8	8	8	8	8

* Substances excluding self-reactive substances and solid desensitised explosives in Division 4.1 and liquid desensitised explosives in Class 3

** Pesticides are classified in 6.1.

- Indicating impossible combination.