

Regulation of Labelling and Hazard Communication of Dangerous and Harmful Materials

— Promulgated by the Council of Labor Affairs of the Executive Yuan on October 19, 2007 by the Order of Lao-An-3-Tzu-No. 0960145703

Chapter 1 General Provisions

Article 1

These Regulations have been enacted in accordance with the provisions of Article 7 Paragraph 2 of the Labor Safety and Health Act.

Article 2

The dangerous and harmful materials designated in these regulations (referred to as hazardous materials) are:

1. Those listed in Attachment 1 of these Regulations.
2. In addition to Attachment 1, chemicals that possess physical hazards or health hazards as specified in National Standards CNS 15030 Classification and Labelling of Chemicals.
3. Any others designated by the Competent Authority of the Central Government.

Article 3

Terminology used in these Regulations:

1. Manufactured article: means a manufactured item formed to a specific shape or design during manufacture, and the final use of which is entirely or partially determined by the specified shape or design, and during normal usage, will not release hazardous materials.
2. Containers: means any bag, cartridge, bottle, box, can, barrel, reactor, storage tank, piping system or any other container that can hold hazardous materials, but it does not include engines, fuel tanks or other operation system in a transportation vehicle.
3. Manufacturer: means the enterprise that manufactures hazardous materials for wholesale, retail, process, or use.
4. Supplier: means the enterprise that imports, exports, wholesales, or retails hazardous materials.

Article 4

The provision of these rules does not apply to:

1. Hazardous industrial waste.
2. Tobacco or tobacco products.
3. Food, beverages, drugs, cosmetics.
4. Articles.
5. General domestic consumer products not for industrial uses.
6. Fire extinguishers.
7. Intermediate products undergoing chemical reactions in reactors or processes.
8. Others designated by the Competent Authority of Central Government.

Chapter 2 Labelling

Article 5

Employer shall conspicuously label the following items on those containers containing hazardous materials in accordance with the classification and hazard pictograms prescribed by Attachment 2, and with the format of Attachment 3 that shows the labels with following items, using Chinese characters as standard, and foreign languages as supplement if necessary:

1. Hazard Pictograms
2. Content including:
 - (1) Name.
 - (2) Hazardous ingredients.
 - (3) Signal Word.
 - (4) Hazard Statements
 - (5) Precautionary Statements
 - (6) Name, address, and telephone number of manufacturer or supplier.

If the hazardous materials inside the containers indicated above are mixtures, the hazardous ingredients should be indicated on the labels are the danger or harmful materials within the mixture, in accordance with National Standards CNS 15030 Classification and Labelling of Chemicals along with all of the ingredients possess physical hazard or health hazards.

If the hazardous materials can not be classified in accordance with the Attachment 2, the container that shall be labelled as prescribed in Paragraph 1 may only be labelled with the information specified in Item 2 of Paragraph 1.

If the volume of the container is 100ml or less, the container that shall be labelled as prescribed in Paragraph 1 may only be labelled with the name, hazard pictograms, and signal word.

Article 6

For mixtures as prescribed in Paragraph 2 of the preceding Article, the Employer shall label the container based on the hazardous properties after mixing.

The hazardous properties as defined in the preceding paragraph are:

1. If a mixture has been tested as a whole, use the results of the testing.
2. Unless the hazards of mixtures have been supported by scientific proofs, the health hazards and hazards of a mixture that has not been tested as a whole shall be assessed using scientific data in accordance with the methods for classifying mixtures set out by National Standards CNS 15030 Classification and Labelling of Chemicals. The physical hazards of flammable, explosive, and reactive properties shall be evaluated using scientifically valid data.

Article 7

The labelling of hazardous substances such as agrochemicals, environmental chemicals, and radioactive substances, are subject to the provisions of other existing regulations.

Article 8

The shape of the hazard pictograms as part of the label prescribed in Article 5 is a 45 degrees vertical square, and it must be sized so that it can be clearly recognized. The symbols should be in black with white background, and the red frame of the symbol shall be wide enough to have sufficient warning effect.

Article 9

Employer may not need to label one of the following containers containing hazardous materials:

1. Inner container inside a labelled external one and is served as internal lining that will not be taken out.
2. External container with a labelled inner container and the label is visible from outside.

3. Portable container with its hazardous materials transferred from labeled containers by a worker and only used immediately by the same worker during the shift.
4. Hazardous materials transferred from labelled containers only for the identified laboratory use to conduct experiments or research.

Article 10

For one of the following containers containing hazardous materials, the employer may install a placard with the information specified in Paragraph 1 of Article 5 in an obvious location instead of labelling the containers. For a piping system, however, labelling may be substituted by hanging an application plate or by painting the pipelines with specified identification color or symbols:

1. Several containers which contain the same type of hazardous material and are stored in the same location.
2. Ducting or piping systems.
3. Chemical equipment such as reactor, distillation tower, absorption tower, extractor, blender, precipitator, heat exchanger, measuring tank, or storage tank.
4. Equipment such as cooling devices, stirring devices, or compression devices.
5. Conveying apparatus.

When installing the placard with information specified in Items 2 through 5 of the preceding paragraph, if the name, address, and telephone number of the manufacturer may change frequently but the Material Safety Data Sheet (MSDS) is available, the information required under Paragraph 2 (6), Paragraph 1 of Article 5 may be exempted.

Article 11

When transporting containers containing hazardous materials within the work site, the employer does not need to duplicate the labelling prescribed in Attachment 2 for containers that have already been labelled in accordance with applicable transport laws and regulations. However, the containers must be labelled in accordance with these regulations while workers are engaging in operations involving loading, unloading, transporting, handling, or utilization of hazardous materials.

Chapter 3 Communication Measures

Article 12

For containing hazardous materials or meet the concentration limits specified in Attachment 4, an employer shall provide to workers a Materials Safety Data Sheet (MSDS) in accordance with Attachment 5 with safety and health precaution information.

Article 13

The manufacturer or supplier shall prepare and make available a Material Safety Data Sheet for each hazardous material prescribed in the preceding Article. If the substance is a mixture composed of two hazardous materials or more, the Material Safety Data Sheet (MSDS) shall be prepared based on its hazardous properties after mixing.

The hazardous materials prescribed in the previous paragraph shall be listed by their chemical name, and the methods of hazardous classification of mixtures is as follows:

1. If a mixture has been tested as a whole, use the results of the testing.
2. Unless the hazards of mixtures have been supported by scientific proofs, nor the health hazards of a mixture that has not been tested as a whole, shall be assessed using scientific data in accordance

with the standards for classifying mixtures set out by National Standards CNS 15030 Classification and Labelling of Chemicals, and the physical hazards of flammable, explosive, and reactive properties shall be evaluated using scientifically valid data.

Article 14

When several mixtures indicated in the preceding article are in the same group of materials with different concentrations, but the same hazardous components, usage, and hazardous classifications, a same Material Safety Data Sheet (MSDS) can be used, but the different names of the materials should be clearly noted.

Article 15

An employer shall check the accuracy of the Material Safety Data Sheet (MSDS) based on the actual circumstances, and update the content, dates, and versions as needed. The records of updating shall be kept for three years.

Article 16

After a vehicle carrying hazardous materials enters a working site, an employer's trained personnel shall confirm that the materials are labelled and Material Safety Data Sheets (MSDS) in accordance with these regulations before loading, unloading, moving, handling or using the materials. The applicable training indicated in the preceding paragraph includes general health and safety training for manufacturing, handling, or using of hazardous materials, as well as applicable curricula for specialized training of dangerous goods transport personnel designated by the Central Government Transportation Competent Authority.

Article 17

[In order to ensure that workers have accurate information about hazardous materials and thereby prevent occupational disasters, the employer shall adopt the following mandatory measures:](#)

1. Designate a hazardous materials communication plan based on actual circumstances, review and update promptly, and implement correctly according to the plan. The record of implementation shall be kept for three years.
2. Prepare an inventory of hazardous materials which shall include the name of the hazardous material, synonyms, the Material Safety Data Sheet (MSDS) index number, the manufacturer or supplier's name, address, and telephone number, usage data, and storage data. Refer to Attachment 6 for the format.
3. Place Material Safety Data Sheet(s) of hazardous materials at an easily accessible location at the work site.
4. Provide education and training to workers on the manufacturing, handling, or usage of hazardous materials. The curriculum content and hours of education and training shall be administered in accordance with the Labor Safety and Health Education and Training Regulations.
5. Any other measures needed to ensure the accuracy of hazardous substances information been provided to workers.

The hazardous material communication plan prescribed in Item 1 of the preceding paragraph shall include the plan, administration, record, and correcting measures of hazardous material inventory, Material Safety Data Sheet(s), label(s), and hazardous material training.

Article 18

A Material Safety Data Sheet shall be provided by a manufacturer or supplier that sells or supplies hazardous materials, or materials meet the concentration limits specified in Attachment 4.

Article 19

The employer that withholds the name, concentration or manufacturer's as well as supplier's name of a hazardous ingredient for the necessity of national security or trade secret protection purposes, shall provide the following written documentation to the Labor Inspection Agency which will then submit it to the Competent Authority of the Central Government for approval:

1. Documents that prove such information have been identified as a national security or a trade secret cause.
2. Counter measures undertaken to protect information of national security or trade secrets.
3. Financial benefits of the information to the applicant and the competitors.

When the Competent Authority of the Central Government reviews the submission as prescribed in the preceding Paragraph, scholars and experts may be invited for comments before ruling decisions.

Article 20

The Competent Authority, Labor Inspection Agency or medical doctors may request the enterprise to provide the name, concentration or manufacturer's as well as supplier's name of the hazardous ingredient when there is a need in conducting their duties. The enterprise shall not deny the request.

Chapter 4 Supplementary Provisions

Article 21

Employers shall handle the labelling for ships, aircraft, or vehicles transporting hazardous materials in accordance with related transportation laws and regulations.

Article 22

Employers shall handle the labelling of radioactive substances and materials hazardous to the environment listed in National Standards CNS 15030 Classification Labelling of Chemicals in accordance with laws and regulations related to ionizing radiation and environmental protection.

Article 23

The effective date of hazardous materials designated in Article 2 of these regulations shall be announced by the Competent Authority of the Central Government.

Article 24

The date of promulgation of these regulations shall be determined by the Competent Authority of the Central Government.

Attachment 1: Hazardous Materials Designated in Article 2, Paragraph 1, Item 1 of These Regulations

I. Dangerous Materials

1. The following explosive materials:
 - (1) Nitroglycerin, nitroglycol, nitrocellulose, and other explosive nitric esters etc.
 - (2) Trinitrobenzene, trinitrotoluene, picric acid and other explosive nitro-compounds.
 - (3) Peracetic acid, methyl ethyl ketone peroxide, dibenzoyl peroxide and other organic peroxides.
2. The following ignitable materials:
 - (1) Flammable solids mean phosphorous sulfide, red phosphorous, celluloids and those solids that are easily ignited by external ignition sources and burned rapidly.
 - (2) Pyrophoric substances mean yellow phosphorous, sodium dithionite, aluminum powder, magnesium powder, and other metallic powders in state of solid or liquid that are capable of self-heating or self-ignitable.
 - (3) Dangerous when wet substances mean metallic potassium, metallic lithium, metallic sodium, calcium carbide, calcium phosphide, and other substances that can release flammable gases upon contact with water.
3. The following oxidizing materials:
 - (1) Potassium chlorate, sodium chlorate, ammonium chlorate, and other chlorates.
 - (2) Potassium perchlorate, sodium perchlorate, ammonium perchlorate and other perchlorates.
 - (3) Potassium peroxide, sodium peroxide, barium peroxide, and other inorganic peroxides.
 - (4) Potassium nitrate, sodium nitrate, ammonium nitrate, and other nitrates.
 - (5) Sodium chlorite and other solid chlorites.
 - (6) Calcium hypochlorite and other solid hypochlorites.
4. The following flammable liquids:
 - (1) Ethyl ether, gasoline, acetaldehyde, propylene oxide, carbon disulfide, and other substances whose flash points are lower than -30 °C.
 - (2) n-Hexane, ethylene oxide, acetone, benzene, methylethylketone, and other substances whose flash point are -30 °C or higher but lower than 0 °C.
 - (3) Methanol, ethanol, xylene, amyl acetate and other substances whose flash points are 0 °C or higher but lower than 30 °C.
 - (4) Kerosene, light oil, turpentine oil, isopentane oil, isopentyl alcohol, acetic acid, and other substances whose flash points are 30 °C or higher but lower than 65 °C.
5. The following flammable gases:
 - (1) Hydrogen
 - (2) Acetylene, ethylene
 - (3) Methane, ethane, propane, butane
 - (4) Other gases that are flammable at 15 °C and 1 atmosphere.
6. The following explosive article:
 - (1) Powder: The products whose relatively slow explosion is in the form of rapid burning without obvious damages as the result of explosion, include:
 1. Smoke explosives of black powder and other nitrate type
 2. Smokeless explosives of nitrocellulose based.

3. Smokeless explosives of nitrocellulose and nitroglycerine based.
- (2) Dynamite: The products whose explosion is in the form of detonation and react very quickly with severe damages caused by the explosion, include:
 1. Priming explosive of Mercury Fulminate, Lead Azide, triphenyl lead and Diazophenol.
 2. Nitroglycerine and Nitro-esters
 3. Nitrate explosives
 4. Mixed explosives of perchlorates and chlorates.
 5. Nitro compound explosives of trinitrophenol and trinitrotoluene (T.N.T.)
 6. Liquid oxygen and other liquid explosives.
- (3) Blasting agent: The mixture which consist of oxidizers such as ammonium nitrate as the major ingredient and need to be initiated by detonators in the enclosed devices, include:
 1. ANFO blasting agent
 2. Slurry blasting agent
- (4) Initiator: The products which can direct fire for burning initiate, or detonate include:
 1. Detonators
 2. Safety fuses
 3. Detonating cards
- (5) Other explosive raw materials: The raw materials can directly detonate or be initiated, include:
 1. Lead Azide
 2. Mercury Fulminate
 3. Nitrostarch.
 4. Trinitrophenylmethylnitramine.

II. Harmful materials:

1. The following materials specified in the Regulations for Governing Prevention of Organic Solvent Toxication:
 - (1) Trichloromethane
 - (2) 1,1,2,2-Tetrachloroethane
 - (3) Carbon tetrachloride
 - (4) 1,2-Dichloroethylene
 - (5) 1,2-Dichloroethane
 - (6) Carbon disulfide
 - (7) Trichloroethylene
 - (8) Acetone
 - (9) Isoamyl alcohol
 - (10) Isobutyl alcohol
 - (11) Isopropyl alcohol
 - (12) Ethyl ether
 - (13) Ethylene glycol monoethyl ether
 - (14) Ethylene glycol monoethyl ether acetate
 - (15) Ethylene glycol monobutyl ether
 - (16) Ethylene glycol monomethyl ether

- (17) o-Dichlorobenzene
- (18) Xylenes (o-, m-, p- isomers)
- (19) Cresol
- (20) Chlorobenzene
- (21) Amyl acetate
- (22) Isoamyl acetate
- (23) Isobutyl acetate
- (24) Isopropyl acetate
- (25) Ethyl acetate
- (26) Propyl acetate
- (27) Butyl acetate
- (28) Methyl acetate
- (29) Styrene
- (30) 1,4-Dioxane
- (31) Tetrachloroethylene
- (32) Cyclohexanol
- (33) Cyclohexanone
- (34) 1-Butyl alcohol
- (35) 2-Butyl alcohol
- (36) Toluene
- (37) Dichloromethane
- (38) Methyl alcohol
- (39) Methyl isobutyl ketone
- (40) Methylcyclohexanol
- (41) Methylcyclohexanone
- (42) Methyl butyl ketone
- (43) 1,1,1-Trichloroethane
- (44) 1,1,2-Trichloroethane
- (45) Methyl ethyl ketone
- (46) N,N-Dimethylformamide
- (47) Tetrahydrofuran
- (48) n-Hexane
- (49) Gasoline
- (50) Coal tar naphtha
- (51) Petroleum ether
- (52) Petroleum naphtha
- (53) Petroleum benzine

(54) Turpentine

(55) Mineral spirit (Mineral thinner, petroleum spirit, white spirit)

2. The following materials specified in the Regulations for Prevention of Danger Posed by Special

Hazardous Chemicals:

(1) Yellow phosphorus match

(2) Benzene-contained glue (containing more than 5% by weight of benzene)

(3) Benzidine and its salts

(4) 4-Aminodiphenyl and its salts

(5) 4-Nitrodiphenyl and its salts

(6) β -Naphthylamine and its salts

(7) bis-Chloromethyl ether

(8) Dichlorobenzidine and its salts

(9) α -Naphthylamine and its salts

(10) o-Tolidine and its salts

(11) Dianisidine and its salts

(12) Beryllium and its compounds(Beryllium Alloy containing more than 3 % by weight of Beryllium)

(13) Benzotrichloride

(14) Polychlorinated biphenyls

(15) Ethyleneimine

(16) Vinyl chloride

(17) p-Dimethylaminoazobenzene

(18) 3,3-Dichloro-4,4-diaminodiphenylmethane

(19) Nickel carbonyl

(20) Chloromethyl methyl ether

(21) β -Propiolactone

(22) Benzene

(23) Acrylamide

(24) Acrylonitrile

(25) Chlorine

(26) Hydrogen cyanide

(27) Methyl bromide

(28) Toluene 2,4-diisocyanate

(29) Methylene bisphenyl isocyanate

(30) Isophorone diisocyanate

(31) Methyl isocyanate

(32) p-Nitrochlorobenzene

- (33) Hydrogen fluoride
- (34) Methyl iodide
- (35) Hydrogen sulfide
- (36) Dimethyl sulfate
- (37) Auramine
- (38) Magenta
- (39) Asbestos
- (40) Chromic acid and chromates
- (41) Coal tar
- (42) Arsenic trioxide
- (43) Dichromic acid and its salts
- (44) Alkyl mercury compounds (Alkyl is limited to methyl and ethyl.)
- (45) o-Phthalodinitrile
- (46) Cadmium and its compounds
- (47) Vanadium pentaoxide
- (48) Potassium cyanide
- (49) Sodium cyanide
- (50) Mercury and its inorganic compounds
- (51) Nitroglycol
- (52) Pentachlorophenol and its sodium salts
- (53) Manganese and its compounds (except Manganese hydroxide)
- (54) Ammonia
- (55) Carbon monooxide
- (56) Hydrogen chloride
- (57) Nitric acid
- (58) Sulfur dioxide
- (59) Phenol
- (60) Phosgene
- (61) Formaldehyde
- (62) Sulfuric acid

3. Other designated chemicals:

- (1) Acetaldehyde
- (2) Acetic acid
- (3) Acetic anhydride
- (4) Acetonitrile
- (5) Acetylene tetrabromide (1,1,2,2- tetrabromide ethane)
- (6) Acrolein

- (7) Acrylic acid
- (8) Allyl alcohol
- (9) Allyl chloride
- (10) Allyl glycidyl ether (AGE)
- (11) 2-Aminopyridine
- (12) sec-Amyl acetate
- (13) Aniline
- (14) o-, p- Anisidine
- (15) Antimony and its compounds
- (16) ANTU (α -Naphthylthiourea)
- (17) Arsine
- (18) Azinphos-Methyl
- (19) Barium and its soluble compounds
- (20) Benzyl chloride
- (21) Bipyridine
- (22) Bromine
- (23) Bromine pentafluoride
- (24) Bromoform
- (25) Boron tribromide
- (26) Boron trifluoride
- (27) 1,3-Butadiene
- (28) Butane
- (29) 1-Butanethiol
- (30) sec-Butyl acetate
- (31) tert-Butyl acetate
- (32) tert-Butyl alcohol
- (33) Butylamine
- (34) n-Butyl lactate
- (35) o-sec-Butylphenol
- (36) p-tert-Butyltoluene
- (37) Calcium cyanamide
- (38) Calcium oxide
- (39) Camphor(Synthetic)
- (40) Carbaryl
- (41) Carbofuran
- (42) Carbon dioxide
- (43) Cesium hydroxide

- (44) Chlorine dioxide
- (45) Chlorine trifluoride
- (46) Chlordane
- (47) Chloroacetaldehyde
- (48) α -Chloroacetophenone
- (49) Chloroacetyl chloride
- (50) Chlorobromomethane
- (51) 2-Chloro-1,3-butadiene
- (52) Chlorodifluoromethane
- (53) 1-Chloro-2,3-epoxypropane
- (54) Chloroethane
- (55) 2-Chloroethanol
- (56) Chloropentafluoroethane
- (57) Chloropicrin (Trichloronitromethane)
- (58) o-Chlorotoluene
- (59) Crotonaldehyde
- (60) Cumene
- (61) Cyanides
- (62) Cyclohexane
- (63) Cyclohexylamine
- (64) Cyclopentane
- (65) 2,4-D(2,4-Dichlorophenoxyacetic acid)
- (66) Decaborane
- (67) Diacetone alcohol
- (68) Diazinon
- (69) Diborane
- (70) Dichlorodifluoromethane
- (71) Dichloroethyl ether
- (72) Dichloromonofluoromethane
- (73) 1,1-Dichloro-1-nitroethane
- (74) 1,2-Dichloropropane
- (75) 1,3-Dichloropropene
- (76) 2,2-Dichloropropionic acid
- (77) Dichlorotetrafluoroethane
- (78) Dicrotophos
- (79) Dicyclopentadiene
- (80) Diethylamine

- (81) 2-Diethylaminoethanol
- (82) Diethylene triamine
- (83) Diethyl ketone
- (84) Difluorodibromomethane
- (85) Diisobutyl ketone
- (86) Diisopropylamine
- (87) Dimethylamine
- (88) N,N-Dimethylaniline
- (89) Dimethyldichlorovinyl phosphate
- (90) Dinitrobenzene
- (91) Dinitro-o-cresol
- (92) Dinitroethyleneglycol
- (93) Dinitrotoluene
- (94) o-Dioctyl phthalate
- (95) Dioxathion
- (96) Dipropyl ketone
- (97) Disulfoton
- (98) Divinybenzene (DVB)
- (99) Endosulfan
- (100) 1,2-Epoxypropane
- (101) Ethanolamine
- (102) Ethion
- (103) Ethyl acrylate
- (104) Ethylamine
- (105) Ethyl amyl ketone
- (106) Ethyl bromide
- (107) Ethyl butyl ketone
- (108) Ethylenediamine
- (109) Ethylene dibromide
- (110) Ethylene glycol
- (111) Ethylene glycol monomethyl ether acetate
- (112) Ethylene oxide
- (113) Ethyl formate
- (114) Ethyl mercaptan
- (115) Formic acid
- (116) Fluorides
- (117) Fluorine

- (118) Fluorotrichloromethane
- (119) Furfural
- (120) Furfuryl alcohol
- (121) Germanium tetrahydride
- (122) Hafnium
- (123) Heptachlor
- (124) n-Heptane
- (125) Hexachlorobutadiene
- (126) Hexachlorocyclopentadiene
- (127) Hexafluoro acetone
- (128) sec-Hexyl acetate
- (129) Hydrogen bromide
- (130) Hydrazine
- (131) Hydrogen peroxide
- (132) Hydrogen selenide
- (133) Hydroquinone
- (134) Iodine
- (135) Iron pentacarbonyl
- (136) Isopropylamine
- (137) Isopropyl ether
- (138) Lead and its inorganic compounds
- (139) Lindane
- (140) Lithium hydride
- (141) Maleic anhydride
- (142) Methyl acrylate
- (143) Methacrylic acid
- (144) Methylacrylonitrile
- (145) Methylal
- (146) Methylamine
- (147) Methyl n-amyl ketone
- (148) N-Methylaniline
- (149) Methyl chloride
- (150) Methylcyclohexane
- (151) Methyl ethyl ketone peroxide (MEKPO)
- (152) Methyl formate
- (153) Methyl hydrazine
- (154) Methyl isoamyl ketone

- (155) Methyl isobutyl carbinol
- (156) Methyl isopropyl ketone
- (157) Methyl methacrylate
- (158) Methyl parathion
- (159) Methyl propyl ketone
- (160) α -Methyl styrene
- (161) Mesityl oxide
- (162) Morpholine
- (163) Naphthalene
- (164) Nicotine
- (165) Nitric oxide
- (166) p-Nitroaniline
- (167) Nitrobenzene
- (168) Nitroethane
- (169) Nitrogen dioxide
- (170) Nitrogen trifluoride
- (171) Nitromethane
- (172) 1-Nitropropane
- (173) 2-Nitropropane
- (174) Nitrotoluene
- (175) Nonane (all isomers)
- (176) Octane
- (177) Osmium tetroxide
- (178) Oxalic acid
- (179) Oxygen difluoride
- (180) Ozone
- (181) Paraquat
- (182) Parathion
- (183) Pentaborane
- (184) Pentachloronaphthalene
- (185) Pentane
- (186) Perchloro methyl mercaptan
- (187) Perchloryl fluoride
- (188) p-Phenylenediamine
- (189) Phenylethane
- (190) Phenylhydrazine
- (191) Phenylmercaptan

- (192) Phorate
- (193) Phosdrin (Mevinphos)
- (194) Phosphine
- (195) Phosphoric acid
- (196) Phosphorus(Yellow)
- (197) Phosphorus oxychloride
- (198) Phosphorus pentachloride
- (199) Phosphorus pentasulfide
- (200) Phosphorus trichloride
- (201) Phthalic anhydride
- (202) 1-Propanol
- (203) Propionic acid
- (204) Propylene glycol monomethyl ether
- (205) Propylene imine
- (206) n-Propyl nitrate (NPN)
- (207) Pyrethrum
- (208) Pyridine
- (209) Quinone
- (210) Resorcinol
- (211) Selenium compounds
- (212) Selenium hexafluoride
- (213) Silicon dioxide
- (214) Silicon hydride (Silane)
- (215) Silver powder and its soluble compounds
- (216) Sodium azide
- (217) Sodium bisulfite
- (218) Sodium fluoroacetate
- (219) Sodium hydroxide
- (220) Stibine(Antimony hydride) (221) Sulfur hexafluoride
- (222) Sulfur monochloride
- (223) Sulfur tetrafluoride
- (224) Sulfuryl fluoride
- (225) Tellurium and its compounds
- (226) TEPP
- (227) Tetraethyl lead
- (228) 1,1,1,2- Tetrachloro -2,2- difluoroethane
- (229) 1,1,2,2- Tetrachloro -1,2- difluoroethane

- (230) Tetramethyl lead
- (231) Tetranitromethane
- (232) Tin and its inorganic compounds
- (233) Thioglycolic acid
- (234) Thionyl chloride
- (235) Thiram
- (236) m-Toluidine
- (237) o-Toluidine
- (238) p-Toluidine
- (239) Toxaphene
- (240) Trichloroacetic acid (TCA)
- (241) 1,2,4-Trichlorobenzene
- (242) 1,1,2-Trichloro-1,2,2-trifluoroethane
- (243) Triethylamine
- (244) Trifluorobromomethane
- (245) Trimethylamine
- (246) Trimethylbenzene
- (247) Trimethyl phosphite
- (248) 2,4,6-Trinitrotoluene (TNT)
- (249) n-Valeraldehyde
- (250) Vinyl acetate
- (251) Vinyl bromide
- (252) Vinyl toluene
- (253) Warfarin
- (254) Xylidine

Attachment 2: Classification and Labeling Requirements for Hazardous Materials

Hazardous Material Category			Label elements			Notes
Hazards	Hazard Class	Division, Category, or Type	Hazard Pictogram	Signal Words	Hazard Statements	To be handled in accordance with State Standards 15030 for Classification and labelling of chemicals. (Each hazard to be handled in accordance with CNS 15030-1 to CNS 15030-26) .
Physical Hazards	Explosives	Unstable explosives		Danger	Unstable explosive	
		1.1 Substances or articles that have mass explosion hazard		Danger	Explosive; mass explosion hazard	
		1.2 Substances or articles which have a projection hazard but not a mass explosion hazard		Danger	Explosive; severe projection hazard	
		1.3 Substances or articles which have a fire hazard and either a minor blast hazard or a minor projection hazard but not a mass explosion hazard		Danger	Explosive; Fire, blast or projection hazard	

		1.4 Substances or articles that do not pose a significant hazard		Warning	Fire or projection hazard	
		1.5 Very insensitive substances or articles which have a mass explosion hazard	1.5 (orange background)	Danger	May mass explode in fire	
		1.6 Extremely insensitive substances or articles which do not have a mass explosion hazard	1.6 (orange background)	None	None	
Flammable Gases	Category 1		Danger	Extremely flammable gas		
	Category 2	No symbol	Warning	Flammable gas		
Flammable Aerosols	Category 1		Danger	Extremely flammable aerosol		
	Category 2		Warning	Flammable aerosol		
Oxidizing Gases	Category 1		Danger	May cause or intensify fire; oxidizer		
Gases under pressure	Compressed gas		Warning	Contains gas under pressure; may explode if heated		
	Liquefied gas		Warning	Contains gas under pressure; may explode if heated		
	Refrigerated liquefied gas		Warning	Contains refrigerated gas; may cause cryogenic burns or injury		

		Dissolved gas		Warning	Contains gas under pressure; may explode if heated	
Flammable liquids	Category 1		Danger	Extremely flammable liquid and vapour		
	Category 2		Danger	Highly flammable liquid and vapour		
	Category 3		Warning	Flammable liquid and vapour		
	Category 4	No symbol	Warning	Combustible liquid		
Flammable solids	Category 1		Danger	Flammable solid		
	Category 2		Warning	Flammable solid		
Self-reactive substances and mixtures	Type A		Danger	Heating may cause an explosion		
	Type B		Danger	Heating may cause a fire or explosion		
	Types C and D		Danger	Heating may cause a fire		
	Types E and F		Warning	Heating may cause a fire		
	Type G	No symbol	None	None		
Pyrophoric liquids	Category 1		Danger	Catches fire spontaneously if exposed to air		
Pyrophoric solids	Category 1		Danger	Catches fire spontaneously if exposed to air		

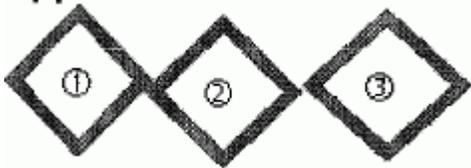
Self-heating substances and mixtures	Category 1		Danger	Self-heating; may catch fire	
	Category 2		Warning	Self-heating in large quantities; may catch fire	
Substances and mixtures, which in contact with water, emit flammable gases	Category 1		Danger	In contact with water releases flammable gases which may ignite spontaneously	
	Category 2		Danger	In contact with water releases flammable gases	
	Category 3		Warning	In contact with water releases flammable gases	
Oxidizing liquids	Category 1		Danger	May cause fire or explosion; strong oxidizer	
	Category 2		Danger	May intensify fire; oxidizer	
	Category 3		Warning	May intensify fire; oxidizer	
Oxidizing solids	Category 1		Danger	May cause fire or explosion; strong oxidizer	
	Category 2		Danger	May intensify fire; oxidizer	
	Category 3		Warning	May intensify fire; oxidizer	
Organic peroxides	Type A		Danger	Heating may cause an explosion	
	Type B		Danger	Heating may cause a fire or explosion	

		Types C and D		Danger	Heating may cause a fire	
		Types E and F		Warning	Heating may cause a fire	
		Type G	No symbol	None	None	
	Corrosive to metals	Category 1		Warning	May be corrosive to metals	
Health Hazards	Acute toxicity: oral	Category 1		Danger	Fatal if swallowed	
		Category 2		Danger	Fatal if swallowed	
		Category 3		Danger	Toxic if swallowed	
		Category 4		Warning	Harmful if swallowed	
		Category 5	No symbol	Warning	May be harmful if swallowed	
	Acute toxicity: skin	Category 1		Danger	Fatal in contact with skin	
		Category 2		Danger	Fatal in contact with skin	
		Category 3		Danger	Toxic in contact with skin	
		Category 4		Warning	Harmful in contact with skin	
		Category 5	No symbol	Warning	May be harmful in contact with skin	
	Acute toxicity: inhalation	Category 1		Danger	Fatal if inhaled	
		Category 2		Danger	Fatal if inhaled	
		Category 3		Danger	Toxic if inhaled	

	Category 4		Warning	Harmful if inhaled	
	Category 5	No symbol	Warning	May be harmful if inhaled	
Skin corrosion/irritation	Category 1A		Danger	Causes severe skin burns and eye damage	
	Category 1B				
	Category 1C				
	Category 2		Warning	Causes skin irritation	
	Category 3	No symbol	Warning	Causes mild skin irritation	
Serious eye damage/eye irritation	Category 1		Danger	Causes serious eye damage	
	Category 2A		Warning	Causes serious eye irritation	
	Category 2B	No symbol	Warning	Causes eye irritation	
Respiratory sensitization	Category 1		Danger	May cause allergy or asthma symptoms or breathing difficulties if inhaled	
Skin sensitization	Category 1		Warning	May cause an allergic skin reaction	
Germ cells mutagenicity	Category 1A		Danger	May cause genetic defects	
	Category 1B				
	Category 2		Warning	Suspected of causing genetic defects	
Carcinogenicity	Category 1A		Danger	May cause cancer	
	Category 1B				
	Category 2		Warning	Suspected of causing cancer	
Toxic to	Category 1A		Danger	May damage	

reproduction	Category 1B			fertility or the unborn child	
	Category 2		Warning	Suspected of damaging fertility or the unborn child	
	Additional category for effects on or via lactation	No symbol	None	May cause harm to breast-fed children	
Specific target organ systemic toxicity (single exposure)	Category 1		Danger	Causes damage to organs	
	Category 2		Warning	May cause damage to organs	
	Category 3		Warning	May cause Respiratory irritation or may cause drowsiness or dizziness	
Specific target organ systemic toxicity (repeated exposure)	Category 1		Danger	Causes damage to organs through prolonged or repeated exposure	
	Category 2		Warning	May cause damage to organs through prolonged or repeated exposure	
Aspiration hazard	Category 1		Danger	May be fatal if swallowed and enters airways	
	Category 2		Warning	May be harmful if swallowed and enters airways	

Attachment 3: Label Format



Name:

Hazardous ingredients:

Signal words:

Hazard statements:

Precautionary statements:

Manufacturer:

or supplier:

(1) Name :

(2) Address :

(3) Telephone Number :

* For more detailed information , please refer to the Material Safety Data Sheet.

Notes:

1. Hazard pictograms, signal words, and hazard statements are specified in Appendix 2.
2. When two or more hazard pictograms are required, they should all be listed so as to be clearly identified. See the container conditions for different listing methods.

Attachment 4: Table of Concentration Limits for each Health Hazard Class

Health Hazard Class	Concentration Limit
Acute toxicity	$\geq 1.0\%$
Skin corrosion/Irritation	$\geq 1.0\%$
Serious damage to eyes/eye irritation	$\geq 1.0\%$
Respiratory/Skin sensitization	$\geq 1.0\%$
Mutagenicity: Category 1	$\geq 0.1\%$
Mutagenicity : Category 2	$\geq 1.0\%$
Carcinogenicity	$\geq 0.1\%$
Reproductive toxicity	$\geq 0.1\%$
Specific target organ systemic toxicity (single exposure)	$\geq 1.0\%$
Specific target organ systemic toxicity (repeated exposure)	$\geq 1.0\%$

Attachment 5: Content and Template for Material Safety Data Sheet

1. Identification

Product Name:

Other Names:
Recommended use and restrictions on use:
Names, addresses, and phone numbers of the manufacturer or supplier:
Emergency contact phone numbers/fax numbers:

2. Hazard(s) identification

Product hazard class:
Label content:
Other hazards:

3. Composition/information on ingredients

Pure material:

Chinese and English name:
Synonyms:
Chemical Abstract Service No. (CAS No.):
The hazardous ingredient (% of the content):

Mixtures:

Chemical properties:	
Chinese and English names of the hazardous ingredients	Concentration or concentration ranges (ingredient percentage)

4. First-aid measures

The first aid measures for different exposure routes: inhalation: skin contact: eye contact: ingestion:
The most important symptoms and hazardous effects:
The protection of first-aiders:
Notes to physicians:

5. Fire-fighting measures

Suitable fire extinguishing media:
Specific hazards may be encountered during fire-fighting:
Specific fire-fighting methods:
Special equipment for the protection of firefighters:

6. Accidental release measures

Personal precautions:
Environmental precautions:
Methods for cleaning up:

7. Handling and storage

Handling:	
Storage:	
8. Exposure controls/personal protection	
Engineering control:	
Control parameters: 8 hours time weighted average exposure limits/Short-term exposure limits/maximum exposure limits biological standards:	
Personal protective equipment: Respiratory protection: Hand protection: Eye protection: Skin and body protection:	
Hygiene measures:	
9. Physical and chemical properties:	
Appearance (physical state, color, etc.)	Odor:
Odor threshold:	Melting point:
pH value:	Boiling point/boiling point range:
Flammability (solid, gas)	Flash point: °F °C
Decomposition temperature:	Test method: Open cup Closed cup
Auto-ignition temperature:	Explosion limits:
Vapor pressure:	Vapor density:
Density:	Solubility:
Partition coefficient(n-octanol/water,log Kow):	Evaporation rate
10. Stability and reactivity	
Stability:	
Possible hazardous reactions under specific conditions:	
Conditions to avoid:	
Materials to avoid:	
Hazardous decomposition products:	
11. Toxicological information	
Routes of exposure:	
Symptoms:	
Acute toxicity:	
Chronic toxicity or long term toxicity:	
12. Ecological information:	
Ecotoxicity:	
Persistence and degradability:	

Bioaccumulative potential:
Mobility in soil:
Other adverse effects:
13. Disposal considerations
Methods of waste disposal:
14. Transport information
United Nations number(UN No):
UN Proper shipping name:
Transport hazard class(es):
Packing group:
Marine pollutant(Yes/No):
Specific transport measures and precautionary conditions:
15. Regulatory information
Applicable regulations:
16. Other information
Literature references
Organization that prepared the MSDS
Name:
Address/telephone number:
Person who prepared the MSDS
Title:
Name (signature):
Date that the MSDS was prepared:

Items that should be listed in the Material Safety Data Sheet:

1. Identification
product name · other names · recommended use and restrictions on use · names, addresses, and phone numbers of the manufacturer or supplier、 emergency contact phone numbers/fax numbers.
2. Hazard(s) identification
label content · other hazards · product hazard class.
3. Composition/information on ingredients
pure material: Chinese and English name · synonyms · chemical abstract service number (CAS No.) · the hazardous ingredient (% of the content).
mixtures: chemical properties · Chinese and English names of the hazardous ingredients · concentration or concentration ranges (ingredient percentage).
4. First-aid measures
the first aid measures for different exposure routes · the most important symptoms and hazardous effects · the protection of first-aiders · notes to physicians.

