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Safety Code for Inspection of Hazardous Properties for Dangerous Goods of Paint

(Pre-approval Draft)

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General Administration of Quality Supervision, Inspection and Quarantine

Preamble

Sections 5 and 6 of the present standards are mandatory, others are recommendatory.

The level of consistency between the present standards and the United Nations' "Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria" (the 4th revised edition) is non-equivalent, and their relevant technical contents are consistent with that of the above model regulations, but editorial amendments are made to the standards' format according to GB/T1.1-2000.

The present standards are proposed by and under the administrative authority of the National Standardization Technical Committee for the Administration of Hazardous Chemical (SAC/TC251).

The entity in charge of the present standards' drafting is: Dangerous Goods Central Lab under the General Administration of Quality Supervision, Inspection and Quarantine.

The entities participating in the present standards' drafting are: Tianjin Entry-exit Inspection and Quarantine Bureau, Asia-Pacific Region Dangerous Goods Association, Jiangnan University.

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Safety Code for Inspection of Hazardous Properties for Dangerous Goods of Paint

1 Scope

The present standards provide the requirements, testing and inspection rules of liquid paints.

The present standards apply to the inspection of hazardous properties of dangerous goods of paints.

2 Regulatory Reference Documents

The provisions in the following documents are incorporated herewith by reference into the present standards. For any reference document with an indicated date, all of its subsequent modification notices (not including any errata) or revised versions will not be applicable to the present standards; however, all parties who have made an agreement based on the present standards are encouraged to consider whether any such latest version of these documents can be used. As to any reference document without an indicating date, its latest version will be applicable to the present standards.

GB/T 616 Chemical reagents - General method for the determination of boiling point

GB/T 9750 Symbols for packaging of paint products

GB 16359 Radiological protection standards for radioactive luminescent

paints

GB 18581 Indoor decorating and refurbishing materials — Limits of harmful substances in solvent-type paints for wooden products

GB 18582 Indoor decorating and refurbishing materials — Limits of harmful substances in internal-wall paints

GB 19458 Safety code for inspection of hazardous properties for dangerous goods — General principles

ASTM D93-00 Standards of Pensky-Martens closed tester for testing flash points

ASTM D6450-99 Standard method for testing flash points by a continuous closed-cup process

UN “Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria” (the 4th revised edition)

3 Terms & definitions

The following terms & definitions and the ones determined by the UN “Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria” (the 4th revised version) are applicable to the present standards.

3.1 Radioactive luminescent paint

Luminescent substances of a mixture of adhesive with powder products in which the luminescent matrices are combined with radioactive nuclide for emitting visible light under activation by their radioactive rays.

3.2 Flammable liquid

This category of chemicals refers to flammable liquids, liquid mixtures or liquids containing solid materials, but not including the liquids which have been listed into other categories due to their hazardous properties; their flash points by the closed-cup flash point testing are equal to or below 60°C.

3.3 Flash point

The minimal temperature at which the mixture of a sample's vapour with air, heated under specified conditions, can flash when in contact with a flame.

4 Requirements

4.1 The packaging of hazardous chemical paints should conform to the relevant provisions of GB/T 9750 and GB 19458. As to the paints formulated by two or more components, the formulation ratio of each component should be clarified on the packaging label. As to a paint to be diluted for its application, the diluting ratio should be clarified on the packing label.

4.2 Paint samples should be stored in places that are ventilated, dry, and avoiding direct sunlight, the storage temperature should be 5°C□40°C, and the valid storage period should not be less than half a year.

5 Tests

5.1 Closed-cup flash point test

5.1.1 Testing device

Closed-cup flash point tester

5.1.2 Testing method

The flash point of a liquid should be tested according to the method of ASTM D93-00 or ASTM D6450-99.

5.2 Continuous burning test

5.2.1 Testing device

The device for testing continuous burning includes a thermometer, a barometer, an electric stove, a timer, an injector and fuel gas etc.

5.2.2 Testing method

Testing should be performed according to the method in Section 32 of the UN “Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria” (the 4th revised edition).

5.3 Test for determining a liquid’s initial boiling point

The test should be performed according to the standard method of GB/T 616.

5.4 Solvent separation test

5.4.1 Testing device

A 100 ml measuring cylinder (the total height is about 25cm with the internal diameter of scale sector being uniform in size, approx. 3cm).

5.4.2 Testing method

5.4.2.1 The sample of a viscous liquid paint with a flash point below 23°C is stirred to uniformity.

5.4.2.2 Introduce the stirred liquid into a measuring cylinder to reach to the mark of 100mL. After having it plugged properly, keep the measuring cylinder undisturbed for 24h. After 24h, measure the height of the top separation layer.

5.4.2.3 The test result is indicated by the percentage of the height of the solution top separation layer relative to the total height of the sample in the measuring cylinder.

5.5 Viscosity test

5.5.1 Testing device

A viscosity tester (orifice diameter: 4mm and 6mm), and a timer.

5.5.2 Testing method

5.5.2.1 The sample of a viscous liquid paint with a flash point below 23°C is stirred to uniformity.

5.5.2.2 Carefully introduce the stirred liquid into the orifice with a 4mm diameter of the viscosity tester, start timing immediately and record the time taken for the sample to completely pass through the viscosity tester. If the time to pass through is over 100s, carefully introduce the sample into the orifice with a 6mm diameter of the viscosity tester and time it. Record the time taken for the sample to

completely pass through the viscosity tester.

5.6 Judgment on categories

5.6.1 Judgment on a hazardous category

After having been tested by a closed-cup flash point test, a paint sample with a flash point equal to or below 60.5°C is classified as a Category 3 flammable liquid. However, if the flash point is above 35°C, a paint which does not burn continuously is not classified as a Category 3 flammable liquid.

5.6.2 Judgment on suitable packing type

5.6.2.1 The judgments on packing types for hazardous chemical paints are shown in Table 1.

Table 1 Hazard classification by flammability

Flash point (closed- cup)	Initial boiling point	Packing type
-	≤ 35°C	I
□23°C	□35°C	□
≥ 23°C□≤ 60°C	□35°C	□
Note: For a judgment on packing type for a viscous flammable paint with a flash point below 23°C, see 5.6.2.2.		

5.6.2.2 If a viscous paint with a flash point below 23°C conforms to the following conditions, then it is classified as in packing type □:

a) in a solvent separation test, the height of the top separation layer of clear solvent is less than 3% of the total height;

b) the mixture does not contain any substance with a major hazardous risk or a secondary hazardous risk belonging to toxic materials under Section 6.1 or corrosive materials of Category 8; and

c) the test results conform to those in Table 2

Table 2 Results of closed-cup flash point test and viscosity test

Orifice diameter (mm)	Passing through time t (s)	Flash point (°C)
4	20 □ t ≤ 60	□17□
4	60 □ t ≤ 100	□10°C
6	20 □ t ≤ 32	□5°C
6	32 □ t ≤ 44	□-1°C
6	44 □ t ≤ 100	□-5°C
/	100 □ t	≤ -5°C

6 Rules for inspection

6.1 Inspected items: inspection should be performed item by item according to the requirements of Sections 4 & 5 of the present standards.

6.2 Inspecting conditions:

Hazardous properties should be inspected when any of the following conditions exists:

— when the production of a new product is going to be started or the production of an old product is going to be changed;

— if, after starting formal production, there is any major change, such as to material or process, which may affect the properties of a product;

— when under normal operation, once every year;

— after production has been stopped for a prolonged time, at the time when production is restarted;

— when the inspection results of a product leaving a factory are significantly

different from the results of a previous inspection of hazardous properties; and

— when a national quality supervision authority requires an inspection of hazardous properties.

6.3 Rules for judgment:

Tests should be performed according to Sections 5.1 to 5.5 of the present standards, and judgments on the hazardous properties of hazardous chemical paints and suitable packing types should be made on the basis of the test results and following Section 5.6 of the present standards.