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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

SN/T 5273-2020

**Import and export of dangerous chemicals, classification
method of hazardous characteristics of tricresyl phosphate**

进出口危险化学品 磷酸三甲苯酯危险特性分类方法

(English Translation)

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed and managed by the General Administration of Customs of the People's Republic of China.

Drafting organization of this standard. Nanjing Customs of the People's Republic of China.

Introduction

In the United Nations "Model Regulations for Recommendations on the Transport of Dangerous Goods", tricresyl phosphate is a listed substance with a UN number 2574, the correct shipping name is "tricresyl phosphate, containing more than 3% ortho isomers", and the hazard category is 6.1. According to the United Nations the correct shipping name description of No. 2574, only when the ortho-isomer content in tricresyl phosphate is

greater than 3%, the product needs to be classified as category 6.1 Toxic substances are transported, otherwise they can be classified as category 9 miscellaneous dangerous goods according to the environmental hazard data of the actual products.

United Nations No. 3082 for transportation.

In order to accurately identify the hazardous characteristics of tricresyl phosphate, a method for the determination of ortho-isomers in tricresyl phosphate was established.

Develop this standard.

Classification method for hazardous properties of import and export hazardous chemicals
tricresyl phosphate

1 Scope

This standard specifies the classification method for dangerous goods hazardous properties of industrial pure tricresyl phosphate.

This standard applies to the classification of dangerous goods of industrial pure tricresyl phosphate.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article Pieces. For undated reference documents, the latest version (including all amendments) is applicable to this document.

Recommendations on the Transport of Dangerous Goods Model Regulations (United Nations) (20th revised edition) International Maritime Transport of Dangerous Goods Regulations (United Nations) Technical Regulations for the Safety of Air Transport of Dangerous Goods (United Nations)

3 Terms and definitions

The following terms and definitions apply to this document.

Tricresyl Phosphate

Molecular formula $C_{21}H_{21}O_4P$, CAS number 1330-78-5, is a colorless or light yellow transparent oily liquid, insoluble in water, soluble in Most organic solvents such as ethanol and benzene are an important chemical raw material in modern industry, mainly used as plasticizers and paint plasticizers.

The classification of hazardous properties classifies chemicals in accordance with the United Nations "Model Regulations on the Recommendation on the Transport of Dangerous

Goods" (20th revised edition) (TDG), "International International regulations or national regulations such as the Maritime Transport of Dangerous Goods Regulations (IMDG), the Air Transport of Dangerous Goods Safety Technical Regulations (ICAO-TI), etc.

The industry standard conducts the appraisal of the transportation hazard to determine its transportation hazard category and degree of danger.

4 Method summary

Weigh a certain amount of tricresyl phosphate to prepare an ethyl acetate (5.1) solution, filter it through an organic filter membrane (6.2), and use gas chromatography-mass spectrometer was used for analysis, and the external standard method was used for quantification. According to the content of tri-o-cresyl phosphate, its hazardous characteristics are determined. Phosphorus in this method the quantitative detection limit of tri-o-cresyl acid is 10 mg/kg.

5 Reagents and materials

5.1

Ethyl acetate. chromatographically pure.

5.2

Tri-o-cresyl phosphate standard product. purity $\geq 99\%$.

5.3

Tri-o-cresyl phosphate standard stock solution. accurately weigh 25 mg tri-o-cresyl phosphate standard product (5.2), accurate to 0.1 mg, Transfer to a 250 mL volumetric flask, dissolve with ethyl acetate (5.1) and dilute to the mark, and mix. The concentration of this solution is 100 mg/L.

5.4

Preparation of standard working solution. accurately pipette 0.1 mL, 0.5 mL, 1.0 mL, 2.0 mL, 4.0 mL, 6.0 mL, 8.0 mL and 10.0 mL tri-o-cresyl phosphate standard stock solution (5.3) in 8 100 mL volumetric flasks, dilute to the mark with ethyl acetate (5.1), the concentrations of the 8 standard working solutions are 0.1 mg/L, 0.5 mg/L, 1.0 mg/L, 2.0 mg/L, 4.0 mg/L, 6.0 mg/L, 8.0 mg/L and 10.0 mg/L.

6 Apparatus and equipment

6.1

Gas Chromatography-Mass Spectrometry (GC-MS).

6.2

Organic filter membrane. 0.22 μm .

6.3

Analytical balance. accurate to 0.1 mg.

7.1 Preparation of test solution

Accurately weigh 25 mg of sample to the nearest 0.1 mg, place it in a 250 mL volumetric flask, dissolve it with ethyl acetate (5.1) and dilute to Calibrate, mix, and analyze on the machine after filtering with the organic filter membrane (6.2).

7.2 Preparation of blank test solution

Prepare a blank test solution using the reagent blank according to the method described in 7.1.

7.3 Gas Chromatography-Mass Spectrometry Conditions

7.3.1

Chromatographic column. HP-5MS 30 mm (column length) x 0.25 mm (inner diameter) x 0.25 μm (film thickness) capillary column, or equivalent.

7.3.2

Column temperature. the initial temperature is 100 $^{\circ}\text{C}$, the temperature is increased to 220 $^{\circ}\text{C}$ at 30 $^{\circ}\text{C}/\text{min}$, and then the temperature is increased to 300 $^{\circ}\text{C}$ at 15 $^{\circ}\text{C}/\text{min}$, and the temperature is maintained for 5 min.

7.3.3

Temperature of the injection port. 300 $^{\circ}\text{C}$.

7.3.4

Ion source temperature. 230 $^{\circ}\text{C}$.

7.3.5

Carrier gas. helium (purity > 99.999%).

7.3.6

Column flow rate. 1.0 mL/min, constant flow mode.

7.3.7

Injection volume. 1 μL .