HG

CHEMICAL INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

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HG/T 3989-2014

Replacing HG/T 3989-2007

m-Dihydroxybenzene (1,3-Benzenediol)

间苯二酚（1,3-苯二酚）

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Table of Contents

Foreword

This standard was drafted according to the rules given in GB/T 1.1-2009 “Directives for standardization - Part 1: Structure and drafting of standards”.

This standard replaces HG/T 3989-2007 “m-Dihydroxybenzene (1,3-Benzenediol)”. As compared with HG/T 3989-2007, in addition to editorial changes, the main technical changes of this standard are as follows:

- DELETE the purposes of product (see clause 1; clause 1 of the 2007 version);
- ADD the CAS RN (see clause 1);
- ADD some normative references (see clause 2; clause 2 of the 2007 version);
- MODIFY the requirements for appearance indicators of high-quality products (see clause 3; clause 3 of the 2007 version);
- MODIFY the dry-product crystallization point into the crystallization point (see clause 3; clause 3 of the 2007 version);
- DELETE the grade-1 products; RETAIN the high-quality product and qualified product (see clause 3; clause 3 of the 2007 version);
- MODIFY the technical indicators of qualified products (see clause 3; clause 3 of the 2007 version);
- ADD the contents of the safety instruction manual (see 4.2);
- MODIFY the sampling amount (see clause 5; clause 4 of the 2007 version);
- MODIFY the consumption of hydrochloric acid for the determination of m-Dihydroxybenzene (chemical method) (see clause 6.4; clause 5.3 of the 2007 version);
- MODIFY the expression of “inspection rules” (see clause 7; clause 6 of the 2007 version);
- MODIFY the contents of “marking, tag” (see clause 8.1 and 8.2; clause 7.1 of the 2007 version);
- ADD the range of error of net content in the packaging requirements (see 8.3; clause 7.2 of the 2007 version).

This standard was proposed by China Petroleum and Chemical Industry Association.

m-Dihydroxybenzene (1,3-Benzenediol)

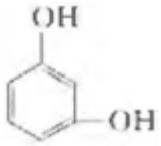
Warning: The personnel who use this standard shall have practical experience of working in laboratory. This standard does not point out all safety issues. The user has the responsibility of taking appropriate safety and health measures, ensure complying with the conditions as specified by the relevant laws and regulations of China.

1 Scope

This standard specifies the requirements, safety information, sampling, test methods, inspection rules, marking, tag, packaging, transportation, storage of m-Dihydroxybenzene (1,3-Benzenediol).

This standard is applicable to the quality control of the m-Dihydroxybenzene product.

Structural formula:



Molecular formula: $C_6H_6O_2$

Relative molecular mass: 110.11 (according to the 2009 international relative atomic mass)

CAS RN: 108-46-3

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

GB 190 Packing symbol of dangerous goods

GB/T 191-2008 Packaging - Pictorial marking for handling of goods (MOD ISO 780:1997)

(6) Content of catechol / %, ≤	0.05	0.20	6.5
(7) Content of phenol / %, ≤	0.05	0.20	6.5

4 Safety information

4.1 Safety

According to GB 12268-2012, the m-Dihydroxybenzene is the 6.1 item toxic substance, which has a hazardous product number of UN:2876. The exposure of skin to m-Dihydroxybenzene which causes skin to absorb it or eat by mistake, the inhalation of its vapor or dust will cause poisoning. Once incident occurs, it shall seek doctor in time. During use and handling, it shall wear personal protection equipment and pay special attention to safety.

4.2 Safety data sheet

According to GB/T 16483, this product shall provide a detailed safety data sheet during exit-factory. The safety data sheet shall contain the following information:

a) The hazardous information of this product;

b) The method of safe use;

c) The requirements for transportation and storage;

d) Protective measures;

e) Emergency response measures, etc.

5 Sampling

Carry out sampling in batches. The manufacturer uses the uniform products as a batch. The sampling amount per batch shall comply with the provisions of clause 7.6 of GB/T 6678-2003. The sampled products must be well-packed. During sampling, it shall not allow the foreign matters to fall into the product. During sampling, use the probe to take sample from upper, middle and lower part of the product. The total amount of sample taken shall be not less than 500 g. Fully mix the sample taken, contain it into two clean, dry, well-sealed vessels in the dark, attach tag to them, indicate the product's name, product's batch number, manufacturer's name, sampling date, sampling location. One vessel for inspection, the other is retained for reference.

6 Test methods

6.1 General requirements

conditions. After shaking the mobile phase uniformly, use ultrasonic generator for de-gassing.

6.5.5 Preparation of solution

Weigh 0.04 g (accurate to 0.001 g) of m-Dihydroxybenzene. Put it into a 10 mL brown volumetric flask. Add methanol solution to dissolve it and dilute it to the mark. Mix it uniformly. Let it be oscillated and fully dissolved in the ultrasonic generator to prepare for use.

6.5.6 Determination procedures

Turn on the instrument to warm it up. After the instrument runs stably, use the microinjector or the auto-sample injector to inject 5 μL of the specimen solution. After the component is empty (see the chromatogram as shown in Figure 1). Use the chromatography workstation or integrator to process the results.

Under the preconditions of guaranteeing the degree of separation, sensitivity, linear response, it may adjust appropriately the sample injection amount.

6.5.7 Calculation of results

The purity of m-Dihydroxybenzene as well as the content of quinol, catechol, phenol is calculated in w_i, expressed in %, which is calculated according to the formula (2):

$$w_i = \frac{A_i}{\Sigma A_i} \times 100\ \% \qquad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\ (2)$$

Where:

A_i - The peak area of each component i;

ΣA_i - The sum of the peak areas of each component i;

The calculation result retains 2 decimal places.

6.5.8 Allowable difference

The difference of the parallel determination results of m-Dihydroxybenzene shall be not more than 0.20%. The relative error of the parallel determination results of the content of quinol, catechol, phenol, other organic impurities shall be not more than 10%. Take the arithmetic mean as the determination result.

6.5.9 Chromatogram

The chromatogram is as shown in Figure 1.

comply with the requirements of this standard, the entire batch of products is disqualified.

8 Marking, tag, packaging, transportation and storage

8.1 Marking

Each package of m-Dihydroxybenzene shall be printed with a durable and clear marking according to the relevant provisions of GB 190 and GB/T 191-2008. The marking shall include at least:

a) Product's name;

b) Manufacturer's name and address;

c) Date of manufacture;

d) Number of marking of production certificate;

e) Net content;

f) Warning sign (toxic substance).

8.2 Tag

The product shall have tags. The compilation of tags shall comply with the provisions of GB 15258. On the tag it shall be indicated of the date of manufacture of product, qualification certificate, number of implemented standard, batch number.

8.3 Packaging

The m-Dihydroxybenzene is packed by the woven bag which is internally lined with black plastic bag or the paper-plastic composite bag. The net content of each bag is 25 kg ± 0.25 kg. The net content of other packaging may be determined through negotiation with the user. The product's packaging shall comply with GB 12463 and the relevant provisions on the packaging of hazardous chemical products.

8.4 Transportation

The m-Dihydroxybenzene product shall be transported strictly according to the requirements for hazardous cargo and toxic cargo in China. It shall be handled gently, avoid sun-exposure, collision, rain.

8.5 Storage

The m-Dihydroxybenzene is a toxic substance, which will burn in case of

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