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

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**Waste chemicals - Determination methods for loss on drying
and loss on ignition**

废弃化学品 干燥减量和灼烧减量测定方法

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Table of Contents

- 5 Method for determining loss on drying
 - 5.1 Drying under normal pressure
 - 5.1.2 Instruments and Equipment
 - 5.1.3 Test Procedure
 - 5.1.3.1 Weigh 10 g to 50 g of the sample, accurate to
 - 5.2 Reduced pressure drying
 - 5.2.3 Test Procedure
 - 5.2.3.1 Weigh 10 g to 50 g of the sample, accurate to
- 6 Determination of Loss on Ignition
 - 6.2 Instruments and Equipment
 - 6.2.4 Test sieve. phi200x502/
 - 6.3 Test Procedure

Foreword

This document conforms to GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting is scheduled. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China Petroleum and Chemical Industry Federation. This document is under the jurisdiction of the National Technical Committee on Standardization of Waste Chemicals Disposal (SAC/TC 294). This document was drafted by: Shenzhen Aikelt Testing Co., Ltd., Nanchang Aviation University, and Zhejiang Huayou Cobalt Co., Ltd. East China Normal University, Longbai Group Co., Ltd., Hubei Yihua Chemical Technology R&D Co., Ltd., Hunan Sandeyingtai Environmental Protection Technology Co., Ltd. Jiangxi University of Science and Technology, CNOOC Tianjin Chemical Research and Design Institute Co., Ltd., and CNOOC Shell Petrochemical Co., Ltd. The main drafters of this document are. Peng Juan, Xie Yu, Meng Fanbing, He Yan, Sun Liang, Zhang Gang, Zhan Qing, An Xiaoying, Fan Congbin, Peng Yihua, and Lei Yangui. Zhong Chenglin, Zhou Jie, Pei Long, Fan Sina, Wang Zhenxi, Li Yan, Gong Chuangzhou, Ding Ling, Yin Ping. Waste chemical reduction through drying and incineration Determination methods Warning. This document should be used by personnel with formal laboratory work experience. This document does not address all potential safety issues. Users are responsible for taking appropriate safety and health measures and ensuring compliance with relevant national

regulations.

1.Scope This document describes the methods for determining the loss on drying and loss on ignition of waste chemicals. This document applies to the determination of loss on drying and loss on ignition of solid or semi-solid waste chemicals at room temperature. This document does not apply to flammable, explosive, or radioactive waste chemicals, or waste chemicals that release highly toxic gases during drying or incineration processes. Determination of drying loss and ignition loss of waste chemicals that can cause explosions.

4.Sampling and Sample Preparation Waste chemicals with clearly defined components shall be sampled and prepared in accordance with the relevant product standards; waste chemicals with unknown components or mixtures shall be sampled and prepared in accordance with GB/T 33057. Sampling and sample preparation shall be carried out in accordance with the methods specified in the regulations.

5.1 Drying under normal pressure

5.1.1 Principle Weigh a certain amount of sample, place it in an electric thermostatic drying oven, dry it to constant weight, and calculate the drying loss.

5.1.2 Instruments and Equipment

5.1.2.1 Electric thermostatic drying oven. The temperature can be controlled at $105\text{ }^{\circ}\text{C}\pm 2\text{ }^{\circ}\text{C}$.

5.1.2.2 Dryer. Built-in desiccant.

5.1.3.1 Weigh 10 g to 50 g of the sample, accurate to

0.01 g, and place it in a pre-dried electric thermostatic drying oven at $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$. Inside a heavy, flat weighing bottle or a covered container.

5.1.3.2 Open the container lid and place it in an electric thermostatic drying oven preheated to $105\text{ }^{\circ}\text{C}\pm 2\text{ }^{\circ}\text{C}$ for 4 h.

5.1.3.3 Remove from the electric thermostatic drying oven, place in a desiccator to cool for 30 minutes, and then weigh.

5.1.3.4 Repeat the above steps for 1 hour each time until constant weight is achieved (the absolute difference between two consecutive weighings is no greater than

0.02 g).

5.1.3.5 For samples with high moisture content (greater than 60%), the samples should be dried for 12 hours first, and then repeated drying should be performed at 1-hour intervals. Dry and weigh.

5.2 Reduced pressure drying

5.2.1 Principle Weigh a certain amount of sample, place it in a vacuum drying oven, dry it to constant weight, and calculate the drying loss.

5.2.2 Instruments and Equipment Vacuum drying oven. meets the requirements of GB/T 29251.

5.2.3.1 Weigh 10 g to 50 g of the sample, accurate to

0.01 g, and place it in a flat weighing bottle or container that has been pre-dried at $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and has reached constant weight. Inside a covered container.

5.2.3.2 Based on the known properties of the waste chemicals, select a suitable temperature of $40\text{ }^{\circ}\text{C}\sim 70\text{ }^{\circ}\text{C}$ as the vacuum drying temperature, referring to the saturated steam temperature of water. (See Appendix A) Select a suitable pressure lower than the saturated vapor pressure of water at the corresponding temperature, record the selected temperature and pressure values, and explain them. reason.

5.2.3.3 Place the weighed sample into the vacuum drying oven, close the oven door and vent valve, maintain a suitable pressure inside the vacuum drying oven, and heat simultaneously. Bring the chamber to the required temperature (not higher than $70\text{ }^{\circ}\text{C}$), and after 4 hours, turn off the power, open the vent valve, and wait for the pressure to return to normal before opening the chamber door.

5.2.3.4 After removing it, immediately cover it and place it in a desiccator (5.1.2.2) to cool for 30 minutes before weighing.

5.2.3.5 Repeat the above steps for 1 hour each time until constant weight is achieved (the absolute difference between two consecutive weighings is no greater than

0.02 g).

5.2.3.6 For samples that cannot reach constant weight through the above test steps, set a drying time of not less than 4 hours according to the material properties, and record the results. Reasons for choosing conditions.

5.3 Experimental Data Processing Loss on drying, expressed as a mass fraction wLOD, is calculated according to formula (1).

6 Determination of Loss on Ignition

6.1 Principle Weigh a certain amount of the pre-dried sample and ignite it to constant weight within a set temperature range. Calculate the sample's mass based on its mass before and after ignition. Reduce by burning.

6.2 Instruments and Equipment

6.2.1 High-temperature furnace. The temperature can be controlled at $(600\pm 25)^{\circ}\text{C}$ ~ $(1050\pm 25)^{\circ}\text{C}$.

6.2.2 Crucible. 50 mL, with lid, made of high temperature and corrosion resistant material.

6.2.3 Dryer. Built-in desiccant.

6.2.4 Test sieve. $\phi 200\times 502$

0.9 GB/T 6003.1-2022.

6.3 Test Procedure

6.3.1 Crush or grind the pre-dried sample, and if necessary, pass it through a test sieve.

6.3.2 Based on the known properties of the main components of the waste chemicals, select a suitable temperature of 600°C ~ 1050°C as the incineration temperature, and record the selected temperature. Determine the conditions and explain the reasons.

6.3.3 Weigh 1 g to 5 g of the sample treated in 6.3.1, accurate to 0.0001 g, and place it in a high-temperature furnace at the selected ignition temperature as described in 6.3.2. It is heated in a crucible to constant weight.

6.3.4 Samples with high organic content should be carbonized on an electric furnace before being placed in a high-temperature furnace for burning.

6.3.5 Spread the sample evenly in the constant-weight crucible, place the crucible in a high-temperature furnace, raise the temperature to the set ignition temperature, ignite for 4 hours, and then stop heating. After cooling slightly, use crucible tongs to remove the crucible and place it in a desiccator. After cooling to room temperature, weigh it.

6.3.6 Repeat the above steps, igniting for 1 hour each time, until constant weight is achieved (the absolute difference between two consecutive weighings is no greater than 0.002 g).

6.3.7 For samples that cannot achieve constant weight through the above test steps, set an ignition time of not less than 4 hours according to the material properties, and record it accurately. Explain the reasons for the selection criteria.

6.4 Experimental Data Processing Loss on ignition, expressed as mass fraction wLOI, is calculated according to formula (2).