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

SN/T 3321.2-2013

**Limestone and dolomite. Part 2: Determination of carbon and
sulfur content. High frequency combustion with infrared
absorption method
(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 by AND shall be under the jurisdiction of the National Certification and Accreditation Administration.

The drafting organizations of this standard. Shanghai Entry-exit Inspection and Quarantine Bureau of the People's Republic of China.

1 Scope

This standard specifies the method for the measurement of volatile organic compounds (VOCs) in packing materials through the static headspace gas chromatography.

This standard is applicable to the measurement of volatile organic compounds of the known chemical compositions in in packing materials; however, the volatile organic compounds as generated due to the thermal degradation of packing materials are not covered by the measurement scope of this standard.

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/T 6682 Water for analytical laboratory use - Specification and tests methods

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Packaging materials

It is the general term of the materials that are used to manufacture the packaging containers AND constitute the packaging of the packed product.

3.2

Polymer packaging

immediately with water, OR otherwise seek treatment immediately if serious. The volatile substances such as vinyl chloride and acrylonitrile shall not be released into the laboratory air. It shall prepare and treat the standard sample in a well-ventilated fume hood.

The reagents and water used in this standard are, unless otherwise noted or required, analytical pure reagents and class III water as specified in GB/T 6682.

5.2 Solvents. it is used to dissolve the polymer, AND it shall not contain any

interference which has the same retention time as that of the volatile component to be measured. Typical polymer solvents include.

- a) Dimethylformamide (DMF);
- b) Dimethylacetamide (DMAC);
- c) Propylene carbonate;

d) O-dichlorobenzene.

Note: The volatile contaminants in the solvent can be removed through an inert gas purging for 24 h ~ 48 h.

5.3 Diluent. it is used to dilute and prepare the standard working solution of volatile organic compounds, its retention time in the gas chromatography shall be inconsistent with that of the substance to be measured, AND the commonly used diluent includes.

a) Water;

b) n-Hexadecane.

5.4 Volatile organic standard sample. the highest concentrations available for commercial analysis of volatile organic compounds by this method. Examples of volatile organic compounds that may be present in the styrene polymer package are as follows.

a) Styrene;

b) Acrylonitrile.

c) Butadiene;

d) Benzene;

Note: Suitable detectors include the following detectors.

a) Flame ionization detector (FID), which is used for the detection of conventional organic volatiles;

b) Mass spectrometer (MSD), which is used for the detection of conventional organic volatiles;

c) Electron capture detector (ECD), which is used for the detection of halides;

d) Nitrogen and phosphorus detector (NPD), which is used for the detection of acrylonitrile.

6.2 Gas chromatographic column. Select a capillary gas chromatographic column which can separate the components to be measured. As for the volatile

organic analysis of the styrene polymer package (1, 3-butadiene, acrylonitrile, styrene, benzene, toluene, ethylbenzene, cumene), it is preferable to select HP-INNOWA x 60 m x 0.32 mm (inner diameter) x 0.25 µm OR its equivalent.

6.3 Automatic headspace sampler. it is composed of the thermostatic sample

tray and the related accessories as required to reach to the requirements for headspace vapour automatic sample injection.

6.5 Syringe. it is calibrated; and the gas-tight syringes for headspace gas

chromatographic sample injection can be heated during sampling and injection process.

6.8 Analytical balance. its sensitivity is 0.0001 g.

Note 1: AVOID contacting with heated portion of the chromatograph, such as detectors, columns, sample trays, hot vials, etc.

Note 2: Once heated, pressure is created in the sample vial containing the polymer volatile components. After analysis, it shall use the syringe to empty the pressure in the vial.

8.1.3 Headspace analysis conditions

The headspace heating temperature and time conditions are selected in accordance with 8.1.2. Other headspace conditions are dependent on the instrument used. OPTIMIZE the relevant parameters to obtain stable analysis results and large detection signal values. The typical headspace analysis conditions are shown in Appendix A.

8.2.1 Calibration with solvent dissolution

Accurately PIPETTE the standard working solution A of certain volume [5.6.b)] into the headspace bottle; the pipetted solution volume shall be consistent with the volume of the solvent which is used to dissolve the sample in 7.4; quickly SEAL the headspace bottle; PREPARE for the headspace-gas chromatographic analysis. The calibration curve shall contain at least 5 different