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

SN/T 2823-2011

**Food contact materials for export. Polymers. Certain epoxy
derivatives subject to limitation. Determination of NOGE and its
hydroxy and chlorinated derivatives**

食品接触材料 高分子材料 受限的某些环氧衍生物 NOGE及其羟基和氯化衍生物的
测定

(English Translation)

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Foreword

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

This standard is identical with the European standard EN15137:2006 "food contact materials and articles restricted certain epoxy derivatives Determination of NOGE and its hydroxy and chlorinated derivatives "(in English).

This standard adopts EN15137:2006 When the following editorial changes, the main differences are as follows.

--- Remove the EN15137:2006 in the previous page, directory, foreword, test reports, appendix ZA and after page;

--- "This standard" instead of EN15137. in 2006, "This part of this standard";

--- The EN15137:2006 introduction as the introduction of this standard;

--- The EN15137:2006 in the normative references EN13130-1:2004 into identical with the GB/T 23296.1;

--- Increasing the GB/T 6682 related experimental water national standards;

--- The EN15137:2006 in Chapter 4 in the order in which the reagents GB/T 20001.4-2001 requirements have been modified;

--- With a decimal point instead of a comma as the decimal point, ",";

--- "mL" changed to "mL" representation;

--- In this standard 6.1.1,6.2.2,7.2.2,7.3.1 and 7.3.2, respectively pieces of EN15137:2006 in 6.1.1,6.2.2,7.2.2,7.3.1 7.3.2 and in each section;

--- EN15137:2006 in 5.9.2 recommended chromatographic analysis conditions corresponding to 7.1 of this standard;

--- The standard Chapter 8, 9 and 10 respectively correspond to pieces of EN15137:2006 in 7.4, paragraphs 8 and 9 of each chapter.

This standard is proposed and managed by the National Certification and Accreditation Administration Committee.

This standard was drafted. People's Republic of China Jiangsu Entry-Exit Inspection and Quarantine Bureau, Ningbo Entry-Exit Inspection and Quarantine of People's Republic of China Bureau, People's Republic of China Shanghai Entry-Exit Inspection and Quarantine Bureau.

Introduction

Novolac glycidyl ethers (NOGE) as a monomer for the production of certain polymeric food contact materials and articles.

NOGE is mainly used in epoxy coatings and the edge of the tank-type products, and can also be used in organic sol coating. After processing is completed, the remaining NOGE and its reaction products may be left to live in the final product, which may migrate to the contact with food. The following analysis the method can detect NOGE cans coating products and reaction products.

In this standard, "NOGE and its derivative" refers to a substance 2002/16/EC and its amendments Directive 2004/13/EC stipulated, the main components include those containing two or more benzene rings NOGE class and at least one epoxy group-containing chlorine and ethanol group, relative molecular mass Derivatives of less than 1000 Daltons.

The cans coated article extract directly into the high-performance liquid chromatography (HPLC) analysis of the resulting chromatogram is difficult to resolve, primarily due Interference is a complex mixture of other ingredients, the monomer and the instability of the derivatives generated and (or) the reaction product formed Thereof. Through all the epoxy groups and the reaction product is hydrolyzed quantitatively NOGE can be simplified, and can be directly on the substance Properties for confirmation.

Export of food contact materials - Polymer Some epoxy derivatives NOGE limited and Determination of hydroxy and chlorinated derivatives

1 Scope

This standard specifies the NOGE class components products like cans inside wall coating containing two or more benzene rings and at least one epoxy group and Chlorine-containing alcohol groups, determination of molecular weight less than 1000 Daltons derivatives.

This standard applies to cans inside wall coating products, containing more than two benzene rings NOGE class component and at least one epoxy group and

Chlorine-containing alcohol groups and a molecular weight less than 1000 Daltons measured derivative, this minimum standard can be determined 1mg/L of NOGE and its derivatives Biological solutions.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

Laboratory use specifications and test methods GB/T 6682 Analysis GB/T 23296.1 plastic food contact materials restricted substances - Part 1. plastic substances to foods and food simulants special Test methods and determination of exposure to food simulants and conditions of the selected set migration guide Principle 3

3.1 Determination of coating the inner wall of the tank-type products NOGE and its derivatives

Cans inside wall coating products were extracted with acetonitrile at room temperature for 24h. The extract was injected into the HPLC, gradient elution various Material separation, fluorescence detector. By HPLC retention time comparison with a reference material, as well as fluorescence and UV detection Detection signal to identify the various substances. High temperature epoxy group-containing component and chlorine ethanol groups in the alkaline medium completely hydrolyzed to glycols Substance of NOGE and its derivatives to be confirmed and quantified. The product (NOGE as hydrates) after hydrolysis were separated by HPLC, using Fluorescence detector. Because of increasing polarity NOGE hydrate, which appears in the liquid chromatogram earlier. And high performance liquid chromatography before hydrolysis Spectrum comparison, since the disappearance of all the epoxy component and chlorohydrin derivatives will be obtained after hydrolysis of a small peak in the chromatogram simplified.

If some peaks still exist, the substance should be considered as interfering substances from the substrate. Determination of total glycols substance, to determine whether Comply with the limit requirement. If so, then the total amount of hydrated derivative minus NOGE NOGE hydrated before hydrolysis derivative content.

3.2 Hydrolysis

NOGE and its partial hydrate hydrolysis occurs under neutral and acidic conditions. HCl adducts are stable under acidic, neutral Only slow hydrolysis in aqueous solution, but in alkaline conditions, all the adduct (except ethers) are completely hydrolyzed. For the epoxy Hydrochloric acid and the adduct total hydrolysis of the sample solution should be in a buffer solution of pH8.5, at 100 deg.] C for at least 20h, then assayed NOGE hydrate.

Note 1: The partial structure NOGE and its derivatives refer to Appendix A and Appendix B.

Note 2: Appendix C to the flowchart explaining the principles of measuring cans coating NOGE and its derivatives.