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

GB/T 24148.9-2014

**Plastics -- Unsaturated polyester resins (UP-R) -- Part 9:
Determination of overall volume shrinkage**

塑料 不饱和聚酯树脂 (UP-R) 第9部分：总体积收缩率测定

(English Translation)

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Foreword

GB/T 24148 "plastic unsaturated polyester resins (UP-R)" is divided into the following nine sections.

- Part 1. Designation system;
- Part 2. Sample preparation and performance measurement;
- Part 3. Technical requirements;
- Part 4. Determination of viscosity;
- Part 5. Determination of solid content;
- Part 6. 130 °C reactivity was measured;
- Part 7. Determination of gel time at room temperature;
- Part 8. platinum - cobalt colorimetric determination of color;
- Part 9. Total volume shrinkage rate determination.

This section GB/T 24148 Part 9.

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

This section uses redrafted law, modify the use of ISO 3521:1997 "Plastics - Unsaturated polyester resins and epoxy overall volume Shrinkage rate determination "(in English) and amendments ISO 3521:1997/Cor1.2003.

This part of ISO 3521:1997 and ISO 3521:1997/Cor1.2003 compared to the existence of technical differences, these differences involve the strip Through the vertical section has a single line in the outside margin position (I) were marked.

This part of ISO 3521:1997 Main technical differences and the reasons are as follows.

- This section applies only to the scope of liquid unsaturated polyester resins for

determination of total volumetric shrinkage.

--- Remove the "6.1.2 epoxy resin" relevant content, because the scope of this part applies only to liquid unsaturated polyester resins, cyclic Epoxy resin does not belong to the scope of the unsaturated polyester resin.

This section for ease of use, but also made the following editorial changes.

--- Remove the ISO 3521:1997 Foreword;

--- Increase the national standard foreword;

--- The "Normative references" international standards with the corresponding equivalents listed in a chapter of the document using our national standards instead.

This part is proposed by the China Petroleum and Chemical Industry Association.

This part of the National Standards Technical Committee plastic thermosetting plastics Club (SAC/TC15/SC11) centralized.

This section is responsible for drafting unit. East China University of Huachang Polymer Co., Ltd.

Participated in the drafting of this section. Zhejiang Tianhe Resin Co., Ltd., the National Quality Supervision and Inspection Center of synthetic resin, the resin material has a combined Tianjin Ltd., Jiangsu Fu Ling Chemical Co., Ltd., Changzhou Tianma Group Co., Ltd., Jiangsu Yabang Paint Co., Ltd.

1 Scope

This section GB/T 24148 specifies the method for determination of the total volume of unsaturated polyester resin shrinkage.

This section applies to liquid unsaturated polyester resins.

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.

GB/T 15223-2008 liquid plastic resin density was measured using a pycnometer method (ISO 1675. 1985, IDT)

3 Terms and Definitions

The following terms and definitions apply to this document.

The total volume shrinkage overallvolumeshrinkage After casting parts by volume curing

process and cured to produce a contraction when cooled to room temperature sum.

Principle 4

The total volume shrinkage is calculated by density measurements obtained from the same sample before and after curing.

First measured the density of the resin composition.

- a) at an initial temperature condition of mixing of the components of the measurement, the mixed ingredients not included in the unsaturated polyester resin initiator (See 6.1.2 Note 1);
- b) the completion of the sample after curing at 23 °C conditioning.

The total volume shrinkage is by the percentage of the density of the sample before and after curing changes calculated from.

The total volume shrinkage = After curing density of the sample - density before curing the cured specimen had a density x 100% Mixing the mixture by a known density estimation period and the measurement results obtained to 0.00.

For high-temperature reaction mixture, the density of the mixture is calculated by the density of the components come.

After adjustment sample cured state density at 23 °C condition to be measured in silicone oil.

5 Instruments

5.1

Balance, accurate to 1mg, with a density measuring device (as selected responsive balance).

5.2

plumb, quality 25g ± 5g, size should avoid the wall effect. We should know plumb at curing temperature and 23 °C ± 0.1 °C conditions volume.