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**GB**

NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA

ICS 87.040

G 51

**GB/T 24147-2009**

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**Waterborne ultraviolet curable resin - Water soluble  
unsaturated polyester acrylate resin**

水性紫外光(UV)固化树脂 水溶性

不饱和聚酯丙烯酸酯树脂

**Issued on: June 15, 2009**

**Implemented on: February 1, 2010**

**Issued by: General Administration of Quality Supervision, Inspection and  
Quarantine of PRC;  
Standardization Administration of PRC.**

## Table of Contents

Foreword .....	3
1 Scope .....	4
2 Normative references .....	4
3 Requirements .....	5
4 Sampling .....	5
5 Test methods .....	5
6 Inspection rules .....	6
7 Marking, packaging, and storage .....	7

# **Waterborne ultraviolet curable resin - Water soluble unsaturated polyester acrylate resin**

## **1 Scope**

This standard specifies the requirements, test methods, inspection rules, marking, packaging, and storage of water-soluble unsaturated polyester acrylate resins.

This standard is mainly applicable to water-based UV-curing ink, and can also be used in the fields of coatings and adhesives.

## **2 Normative references**

The provisions in the following documents become the provisions of this standard through reference in this standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Part, however, parties who reach an agreement based on this standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies to this standard.

GB/T 1725 Paints, varnishes and plastics - Determination of non-volatile-matter content (GB/T 1725-2007, ISO 3251: 2003, IDT)

GB/T 1728-1979 Methods of test for drying time of coatings of paints and putties

GB/T 2794-1995 Determination methods for viscosity of adhesives

GB/T 3186 Paints, varnishes and raw materials for paints and varnishes - Sampling (GB/T 3186-2006, ISO 15528: 2000, IDT)

GB/T 8170 Rules of rounding off for numerical values & expression and judgement of limiting values

GB/T 9750 Marks for package of coating products

GB/T 13491-1992 General rule for packing of coatings

GB/T 14518-1993 Determination of the pH of adhesives

GB 18582-2008 Indoor decorating and refurbishing materials - Limit of harmful substances of interior architectural coatings

## 5.5 Water dilution stability

Dilute the sample with distilled water to that the content of non-volatile matter is about 3%; after the solution is standing for 5 minutes, visually observe whether there is flocculation and whether a uniform and transparent liquid can be formed.

## 5.6 Photo-curing time

### 5.6.1 Instruments and reagents

**5.6.1.1** Balance: It shall be accurate to 0.001 g.

**5.6.1.2** Wire rod coater: The size shall be 25, and the diameter of the corresponding winding wire shall be 0.25 mm.

**5.6.1.3** 1000 W UV lamp.

**5.6.1.4** Coated art paper: 70 g/m<sup>2</sup>.

**5.6.1.5** Photoinitiator.

### 5.6.2 Determination of the photo-curing time

take 5 g of resin solution and add a prescribed amount of photoinitiator to it. After stirring well, apply it on the coated art paper with a wire rod coater, irradiate at 10 cm vertically away from an ultraviolet lamp, and record the time consumed when the paint film is just dried; express the time in seconds (s). Judgment of paint film drying shall be carried out according to the first method in Chapter 3 of GB/T 1728-1979.

## 5.7 Content of volatile organic compounds (VOC)

The test shall be carried out according to the provisions of Appendix A and Appendix B in GB 18582-2008, and the test results shall be calculated according to A.7.2 in Appendix A.

# 6 Inspection rules

## 6.1 Inspection classification

**6.1.1** Product inspection is divided into factory inspection and type inspection.

**6.1.2** The factory inspection items include appearance, pH value, non-volatile matter, viscosity, water dilution stability, and photo-curing time.

**6.1.3** Type inspection items include all the technical requirements listed in this standard. Under normal production conditions, the inspection shall be conducted at least once a

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Contact: Wayne Zheng, [Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net)

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