KES

Testing Methods for Polyvinyl Chloride

KES T – L223

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Additional Rule

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1. Scope of Application

This shall regulate test method for polyvinyl chloride.

2. Meaning of Terminology

Polyvinyl chloride shall be composition with vinyl chloride.

3. Test Method

3.1 Specific density

3.1.1 Equipment and tool

(1) Density meter : Uberode type density meter as shown in figure 1.

(2) Chemical scale : amount 100 ~ 200 g, weight/mg

(3) Decicator : decicator of KS L 3202 with dryer of silica gel or calcium chloride. (Shape and dimension of this chemical glass equipment)

(4) Weighing bottle : 50 mm weighing bottle of KS L 2302

(5) Mass flask : 50 mℓ mass flask of KS L 2302

(6) Stop watch : 0.2 second scale

(7) Thermostat reservoir

3.1.2 Test sample

(1) Nitrobenzene : First grade of KS M 8236 [Nitrobenzene]

3.1.3 Operation

Weigh 200 ± 1 mg poly sample dried in room temperature in decicator with drier of silica gel or calcium chloride and move it in 50 mℓ flask and heat it to 100 ℃ by adding 40 mℓ nitrobenzene.

When poly is resolved completely in appearance, cool it and add it with nitrobenzene. Then, use it as test solution at the temperature of 30 ± 0.05 ℃ with 50 mℓ.

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Put test solution to A part of ubbelohde type density meter indicated in figure 1 and make solution level positioned between two lines drawn in sphere A.

Make density meter vertical in thermostat of 30 ± 0.05 ℃ and dip sphere C at the bottom of water reservoir. When test temperature reached measured temperature, block this pipe by hand or pinch cock.

Then, suck it through rubber pipe connected to pipe 2 and suck test solution to upper line of sphere B and make test solution fall by opening inlets of pipe 2 and 3. At this time, measure falling second when water level falls pass through lower line from upper line.

Measure falling second of nitrobenzene by this method and calculate specific density nsp to 3 digits below decimal point. Perform measurement 3 times and calculate average of these.

$$\eta_{sp} = \frac{t_2}{t_1} - 1$$

Where η_{sp} : Specific density

t_1 : Falling second of nitrobenzene (s)

t_2 : Falling second of test solution

3.2 Polymerization rate

To calculate polymerization rate, calculate intrinsic viscosity according to the following equation1 and calculate polymerization rat (P) according to equation 2.

Intrinsic viscosity $(\eta) = \frac{\sqrt{2}}{C} \cdot \sqrt{\eta_{sp} - \ln \eta_{rel}}$ ..... ①

Where η rel : Relative viscosity ($\frac{t_2}{t_1}$)

η_{sp} : Specific viscosity

C : Density (g / ℓ)

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