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MEASUREMENTS ON MARIS POLYMERS

Introduction:

On 8th April 2016 ten (10) different liquid samples were received from "MARIS POLYMERS" on which three types of measurements were carried out: viscosity, solvent separation and flash point (closed cup).

Methods:

1) **Viscosity**

Viscosity measurements were carried out using a brass ISO Mini Cup (1/2 volume of standard cup[1]) with hole diameter 6mm, according to the instructions in section 32.4.3 of UN Part III, Classification Procedures, Test methods and Criteria (on the basis of ISO 2431).

The viscosity determination entails the measurement of the flow time t_{ISOm} ($t_{ISO} = t_{ISOm}*2$) until the first interruption of the flow through the orifice. All measurements were carried out at an ambient temperature of 23±1°C. The measurement facility is shown in Figure 1. For this ISO cup the viscosity equation is: $V = 13.8t_{ISOm} - 285/t_{ISOm}$

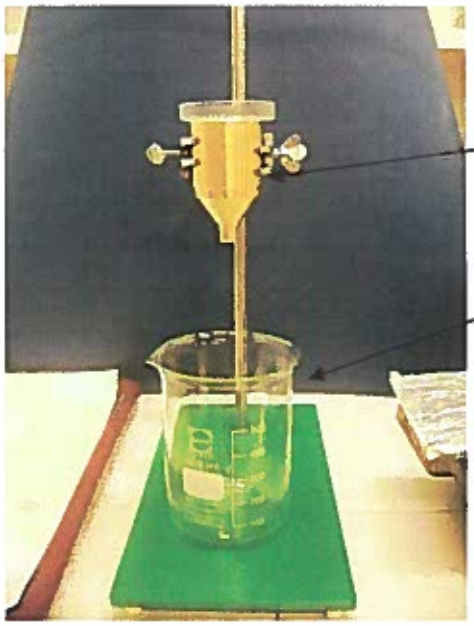

Figure 1. The Σχήμα 1. The lab facility used for measuring the viscosity on the basis of ISO 2431 (mini cup). The flow time till first break is measured by an electronic timer and the ambient temperature by an electronic thermometer.

[1] see e.g. https://www.gardco.com/pages/viscosity/vi/iso_cups.cfm

2) Solvent separation

The separation of the solvent is measured according to section 32.5.1, of UN Part III, Classification Procedures, Test methods and Criteria.

The material is placed in a measuring cylinder of 100ml, sealed and the fraction separated (%) is measured after 24 hours at an ambient temperature of 23±1°C. The facility is shown in Figure 2.

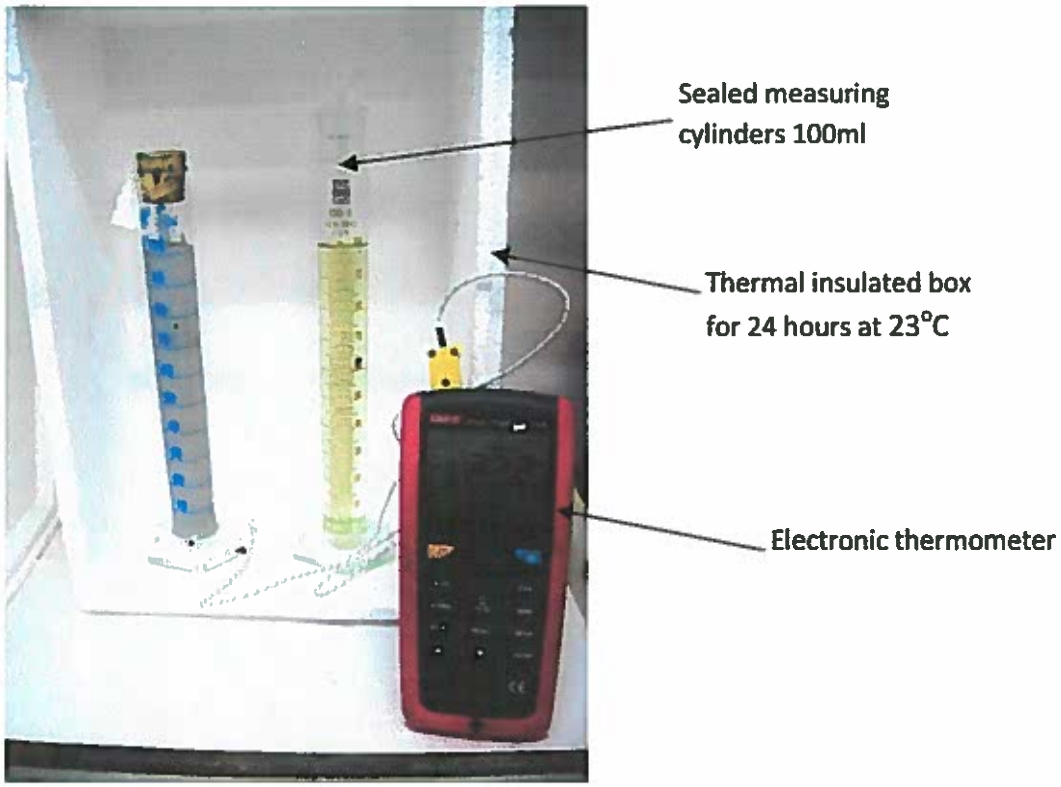

Figure 2. The facility used for measuring the solvent separation

3) Flash point

Flash-point testing was carried out with a laboratory facility based closely on the standard ASTM D93 "Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Method".

The equipment is shown in Figure 3. A closed brass container containing the liquid sample (about 100ml) is slowly heated from approximately 10 degrees below the expected flash point. The temperature was varied at a rate of less than 0.5 °C per minute and measurement accuracy was estimated at ±1°C against a standard thermometer. Stirring of each liquid sample is carried out by the use of a stirrer at a rate of approximately 100rpm.

Flash testing was carried out approximately every 1°C by the use of a flame through the top aperture (after stopping any stirring) and the flash-point was determined at the temperature when a flame ("flash") covers evenly the whole surface of the liquid inside.

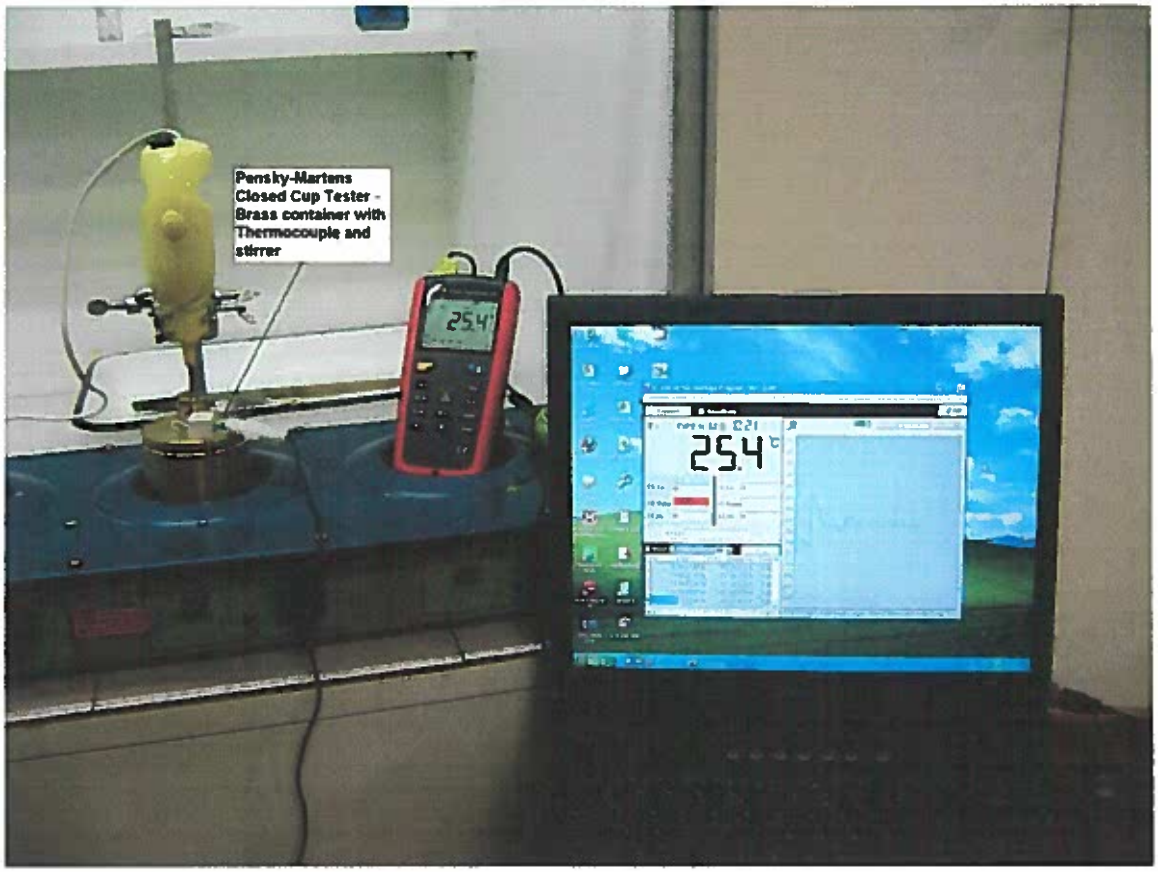

Figure 3. The laboratory-adapted Pensky-Martens Closed Cup apparatus for flash-point testing

RESULTS:

#	Name of sample	Batch No or date	Flash point, closed cup, (±1°C)	Solvent separation, (±1%)	Flow time t_{ISO} for ISO 6mm (±2sec)	Viscosity ISO 6mm cup, (±10centistoke)
1	MARISEAL 250 (white)	16022623	31	<1	398	2745
2	MARISEAL 260 (white)	5/4/2016	30	<1	374	2579
3	MARISEAL 270 (grey)	16022130	34	<1	146	1003
4	MARISEAL 400 (grey)	16022165	33	59	10	12
5	MARISEAL 420 (white)	15019178	35	<1	380	2620
6	MARISEAL 600, comp. A	15021748	34	<1	430	2966
7	MARISEAL 600, comp. B	16022335	36	<1	274	1889
8	MARISEAL 670	5/4/2016	29	<1	>1200	>8280
9	MARISEAL DETAIL (grey)	5/4/2016	31	<1	390	2690
10	MARITRANS	16022115	29	<1	54	362

ΤΕΛΟΣ ΑΝΑΦΟΡΑΣ