UC-4760 #80

SUMMARY REPORT

PLASTICS INTERMEDIATES
POLYESTER RESINS
HIGH PURITY ASBESTOS AS A THIXOTROPE FOR POLYESTERS

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SUMMARY High purity asbestos from the Mining and Metals Division can be used as a viscosity modifier and thixotropic aid in polyesters. A concentration of 2.5-3.0 per cent asbestos in a hand lay-up polyester provides thixotropy equivalent to 1.0 per cent Cab-o-sil.

INTRODUCTION Polyester resins (40 per cent styrene) for hand lay-up and spray-up applications customarily are modified by addition of 1.0 per cent Cab-o-sil. Reportedly,(1) viscosity of the resulting polyester, measured using a #2 spindle and a model LVT Brookfield viscometer, is as follows:

Rpm	Viscosity range, cps
6	900-1300
12	750-900
30	600-750
60	400-500

The purpose of this study was to determine whether high purity asbestos (6-8¢/lb.) could be used as a replacement for Cab-o-sil (72-74¢/lb.).

DISCUSSION The polyester used in this study was prepared using 2.0 moles of phthalic anhydride per 1.0 mole of maleic anhydride and a 10 per cent excess of propylene glycol. Viscosity, after dilution to 40 per cent styrene, was 275 cpoise (ref: 149PLS118).

Table I shows the effect of high purity asbestos and Cab-o-sil on viscosity of the polyester at 25°C. It is apparent that between 2.5 and 3.0 per cent asbestos provides thixotropy equivalent to 1.0 per cent Cab-o-sil. All of the samples showed signs of filler settling upon standing 1-2 hours at room temperature. Settling rate of asbestos was slower as the concentration increased.

Research and Development Department
Chemicals Division
Union Carbide Corporation

PLAINTIFF'S EXHIBIT
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TABLE I

COMPARISON OF EFFECT OF HIGH PURITY ASBESTOS AND CAB-O-SIL ON VISCOSITY OF A HAND LAY-UP POLYESTER (40% STYRENE)

	Thixotrope			
	HP Asbestos			Cab-o-sil
	2%	2.5%	3.0%	1.0%
Viscosity(1) @ 25°C., cps @				
6 rpm	725	900	1350	1150
12 rpm	663	813	1225	913
30 rpm	588	692	>1000	665
60 rpm	>500	>500	>500	>500

Ref: 149PLS124 and 125

(1) Using a #2 spindle and a model LVT Brookfield viscometer.

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