

# GELLING TIME OF MIXTURES OF POLYMERISED CASHEW NUT SHELL LIQUID (CNSL) AND PARAFORM

by

S. C. Ganguli and A. H. Bhatkhande

Explosives Research and Development Laboratory, Kirkee

## ABSTRACT

This note describes the determination of gelling time, its variation and control in respect of some typical mixtures.

In connection with certain investigations it was necessary to control the gelling time (Pot Life) of 6% w/w mixtures of polymerised CNSL and paraform. It was found that the gelling time at 30°C could be varied from about 10 mins to 18 hours by taking suitable mixtures of diethylsulphate (DES) polymerised CNSL and heat polymerised CNSL.

DES polymerised CNSL was obtained by heating CNSL conforming to specification IS: 840-1956 with 3.5% DES under vigorous stirring at  $180 \pm 2^\circ\text{C}$  till a viscosity of 200 poises at 30°C was attained. 500 gms CNSL required about 25 mins to attain this viscosity. The material had an iodine value of 194 and molecular weight of about 1900 as determined by the freezing point method in nitrobenzene solution. The loss in weight on heating was 2.8%.

Heat polymerised CNSL was obtained by heating CNSL at  $320 \pm 5^\circ\text{C}$  under vigorous stirring till a viscosity of 200 poises at 30°C was attained. The material had an iodine value of 198 and a molecular weight of 990 as determined by the freezing point method in nitrobenzene solution. The loss in weight on heating was about 17%.

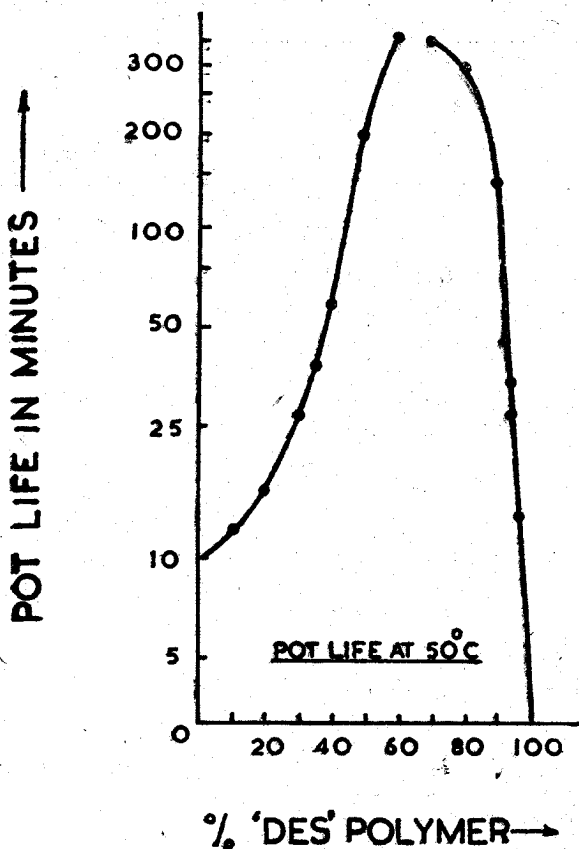
The unpolymerised CNSL had an iodine value of 264 and molecular weight 385.

The gelling time (Pot Life) was determined by the IPT Penetrometer, the needle being replaced by a disc 2.54 cm dia. The material was considered to have fully gelled when penetration of the disc was 5 mm in 5 secs. The sum of the weights of the mounted disc and the carrier was adjusted to be  $60 \text{ gm} \pm 0.5 \text{ gm}$ .

Typical data obtained are given below and shown in the figure at 50°C.

TABLE I

%DES Polymer	100	95	90	80	70	60	50	40	30	26	20	15	10	0
Pot life at 30°C mins	12	178	..	..	..	..	about..	..	161	126	102	85	65	
							18 hrs							
Pot life at 50°C mins	4	27	137	292	352	358	195	57	27	20	16	14	12	10



The mutual retardation of the gelling time by DES polymer and Heat polymer appears to be due to steric blocking and is under detailed study.

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