

## PRELIMINARY STUDIES ON THE PRETREATMENT OF FIELD COAGULUM IN THE PRODUCTION OF TSR

Production of technically specified rubber (TSR) was started in India in the early seventies. During 1990-91 there were 26 TSR factories with a total production of 17,000 tonnes. Nearly 80 per cent of the TSR produced in India has been from field coagulum (FC) grade rubber. Factories in the estate sector, generally, process their own FC while commercial factories process FC from estates and small holdings. There have been complaints from the consuming industry with respect to the consistency in the quality of TSR, especially that produced by the commercial factories. Tyre manufacturers in India, who have been consuming the ISNR 20 grade of TSR, have recently revised the specifications for TSR required by them. The specification limits for ISNR 20 prescribed by the Bureau of Indian Standards and those proposed by the Automotive Tyre Manufacturers' Association (ATMA) of India, are given in Table 1.

Table 1. BIS and ATMA specifications for ISNR 20

Parameters	Limits	
	BIS	ATMA
Dirt content, % max	0.2	0.15
Nitrogen, % max	0.7	0.50
Volatile matter content, % max	1.0	0.80
Ash content, % max	1.0	0.75
Po, min	30	35
PRI, min	40	55

Variations in the Wallace plasticity (Po) and plasticity retention index (PRI) have been contributing very much to the

lack of consistency in the quality of TSR. Plasticity is an indirect measure of the viscosity of rubber and was reported to be influenced by storage hardening (Bateman and Sekhar, 1966; Gregory and Tan, 1975; Burfield, 1974; 1986; Burfield and Tan, 1987) and processing conditions (Sekhar, 1960). Factors affecting PRI have also been studied by Nadarajah (1972), Mathew and Thomas (1975), Morimoto (1985) and Hasma and othman (1990). In the present work an attempt is made to study the influence of pretreatment of field coagulum on the Po and PRI of TSR.

In one set of experiments, dried field coagulum grade of rubber was given three treatments : (1) spread in the factory floor for up to 6 days, (2) soaked in water for periods up to 6 days and (3) soaked in water with daily change of water for up to 6 days. These results are given in Table 2. Field coagulum stored at room temperature for different periods was used for the study on the influence of period of air drying of crepe. Each sample was thoroughly blended and processed into thick crepe and air dried

Table 2. Effect of soaking of field coagulum

Storage condition		Soaking/storage time (days)		
		2	4	6
1	Po	35	35	27
	PRI	50	50	49
2	Po	32	31	31
	PRI	62	71	70
3	Po	33	33	33
	PRI	51	45	42

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