

All India Rubber Industries Association (Eastern Region)

"Trends in Rubber Process Oils - A face to face interaction between the Rubber Industry and IOC" - A programme organized by AIRIA (ER) in the evening of 13th September 2011 at Floatel Hotel, Kolkata.

In pursuance of the catalytic role - a key operational principle of the Association as business facilitator, All India Rubber Industries Association (Eastern Region) organized the captioned programme for the benefit of its members, *thanks to Indian Oil Corporation Ltd. for their all out support and sponsorship.*

By and large the Association members were keen and deputed their representatives to attend the Seminar. There were 80 participant members. As the then Chairman of AIRIA (ER) Mr. Sawar Dhanania was pleased to express his greetings and warm welcome to one and all. He specially thanked the IOC Officials for their support and sponsorship, thus enabling the Association to hold the programme.

Highlighting the importance, Mr. Dhanania mentioned that Rubber Processing Oils are superior blends of aromatic and aliphatic components designed for processing of rubber and related polymers. These products are available in a number of viscosity and composition grades meeting specific end requirements. Tailor-made formulations for typical requirements are also made by the producers. He also stated that to the best of his knowledge Indian Oil and its subsidiaries account for 47% petroleum products market share.

From the Indian Oil Corporation Ltd. the main technical presentation on Rubber Processing Oils was given by Mr. Soumen Ganguly, the Service Institute Sales Manager (SISM) of their West Bengal Sales Office (WBSO). Efficacy of the IOC Process Oils vis-à-vis the rubber industry was the core of his presentation. The categories of products dwelt on were IOC Aromatic Process Oils 'Primo', 'Medium', Napthenic 'Servorubber 24' and Paraffinic 'Servorubbes 32 and 50'.

IOC Process Oil is used for manufacturing of automobile tyres, tread rubber and other dark colour rubber goods such as battery casings, rubber bushes, etc. Rubber process oils are widely used in rubber industry for improving processing ability of rubber in milling and mixing at lower temperatures. They are used as carrier oils, plasticizers, dust control agents and processing aids. These are ASTM 101 type oils. As for the *performance benefits*, reportedly,

■ it reduces the mixing time and power consumption, ■ Improvement in uniform dispersion of ingredients, ■ Better extrusion due to the lubricating action. ■ Improves the processability, particularly of natural rubber.

The characteristics of the products highlighted are:

SAE GRADE	IOC PROCESS OIL PRIMO	IOC PROCESS OIL MEDIUM
Kinematic Viscosity, cSt @ 100°C 20 - 26	20.5 - 25.5	20 - 26
Aniline Point, Deg C 48 - 52	44 - 50	48 - 52
Flash Point, (COC)°C, Min. 220	200	220
Pour Point °C, Max	33	39

Performance benefits and characteristics of SERVO Rubber 24 and SERVORUBBES 32 & 50, as highlighted, are:

Performance benefits:

SERVO Rubber 24	SERVORUBBES 32 and 50
<p>■ <i>Improves the plasticity of rubber, resulting in lower milling temperature, ■ Accelerates the dispersion of ingredients in the batch during compounding thus resulting in reduced milling time and less power consumption. ■ Improves the elongation and tear strength of the cured stocks. ■ Imparts better ageing properties in the rubber goods. ■ Does not stain and therefore is suitable for manufacture of white walled tyres.</i></p>	<p>■ Helps achieve lower milling temperature and shorter milling time. ■ Provides excellent air retention property which is one of the primary requirements of good quality tubes. ■ Reduces mould fouling thus provides good quality control. ■ Improves tear and elongation strength of the finished rubber goods. ■ Improves ageing properties of rubber articles.</p>

Characteristics	SERVO Rubber 24	SERVORUBBES 32	SERVORUBBES 50
Kinematic Viscosity, cSt @ 40°C	20 - 24	26 - 35	72 - 76
Flash Point, (COC), °C Min	160	190	8.8 - 9.2
Pour Point, °C Max	6	0	242
Colour, ASTM, Max.	7.5	2.0	1.5
Aniline Point, °C 80 - 88	75 - 85	97	115

Their Asst. Manager (Institutional Lube Sales- WBSO), Ms. Anjali Chakraborty informed the member participants that IOC distributes its products directly to bulk and retail customers via a wide and ubiquitous network of retail outlets and dealers/distributors.

Barring the IOC product specific performance benefits and characteristics, as aforesaid, given below is a succinct sum-up of the salient points that emerged from the presentations relating to the reasons why petroleum oils are essentially needed by the rubber industry:

- ❖ RUBBER PROCESS OILS used by manufacturer of finished rubber product, to aid processing and RUBBER EXTENDERS OILS used by raw material manufacturers to soften polymers. Extender oil by swelling the polymer and by providing lubricants between rubber molecules softens the stiff rubbery polymers. By adding extender oils the molecular weight, viscosity & solvency of the base polymers can be varied & because of oil content more additional ingredients can be blended.
- ❖ Process oils assist in the mixing operation, reduces compounding time, improve process ability and modify the physical properties of the finished product.
- ❖ New rubber compounding process requires high speed mixing & short mixing times & proper polymer consistency for rapid processing. Process oils can aid to optimize these conditions, the compounder can achieve a workable mass with good dispersion of fillers by selecting correct process oil.
- ❖ Sticking to calendar - Process oils as well as other ingredients (like wax) impart an oiliness to the rubber mass that helps prevent tube machine dies. It is particularly important in extrusion & injection mouldings where output & rejection rates are adversely affected by a sticky non-uniform formulation.

The presentations were followed by question-answer session. The members' queries were duly answered. There being no other presentations, the member participants submitted to the IOC Officials the feedback form duly filled in and thus the programme was concluded with vote of thanks.
