EPT

The copolymerization of ethylene with propylene, or their copolymerization with a non-conjugated diene, produces rubber like polymers. These polymers have low glass transition temperatures and therefore they have good dynamic properties. The chains are saturated in the main backbone and may only contain double bonds in side chains. So they possess excellent heat resistance and simultaneously good ozone and oxidation resistance. The copolymers of ethylene with propylene is abbreviated to EPM (ethylene, propylene, methylene -repeated unit in the chain). The terpolymers of ethylene, propylene and diene is abbreviated to EPDM (where the D stands for diene).

Advantages of Metallocene Catalyst & Mitsui Production

High activity	No De-ashing Process, Less Gel: Excellent visual aspects, less defects Low Chlorine Content: longer lifetime
Homogeneous Polymerization	High Mechanical Properties (20% increase in tensile strength and 10% increase in fatigue resistance) Homogeneous Diene Distribution, high loading (cost saving)
Less entangled molecules	Good mixing process ability (cost saving)

Ethylene-propylene rubbers began to be produced in the early 1960s, since then they have developed rapidly. Ziegler-Natta catalysts have been used by most producers. The use of Metallocene Catalyst was invented by Dr. Kaminsky in 1980 at Mitsui. As a result, Mitsui is a leader in both Metallocene and Ziegler-Natta-based EPDM technology and it continues to invest in new grades as well as additional capacity to meet customer needs in a growing market.

EPDM rubber is classified according to 4 parameters: Mooney viscosity, ethylene, diene and oil content (in extended grades).

Because of usually high molecular weight of EPDM, Mooney viscosity is measured at 125°C. Ethylene content depending on the application changes between 25-75%. Also diene content varies from 2% up to 15%. Different oil extended grades contain 10-100phr naphthenic oil for improving process ability and access to very low hardness.

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