

# MITSUI EPT 0045

Mitsui EPT 0045 is EPR with low Mooney viscosity which is designed for excellent mixing processability, extrudability and heat aging resistance. This grade is suitable for heat resistant electric wires, heat resistant belts and electrical parts of automotive when it is crosslinked with peroxide. It is also suitable for improvement of heat aging resistance when blended with other EPDM.

## APPLICATIONS

Heat resistant belts

## PROPERTIES

- Low Mooney viscosity
- Low ethylene content
- Broad molecular weight distribution and ethylene distribution
- Relatively high green strength

## FEATURES

- Excellent mixing processability
- Excellent extrudability in compounding with low loading fillers and color compounding
- Excellent heat aging resistance

## Representative Values\*

Typical Polymer	Test Method	Value
Mooney Viscosity ML(1+4)100°C	ASTM D 1646	40
Polymer Composition, mass % Ethylene	ASTM D 3900	51
Diene Type		none

\*These values are typical properties only and are not to be regarded as sales specifications.

# MITSUI EPT 2060M

Mitsui EPT 2060M is low ethylene, medium Mooney and low diene EPDM synthesized by Mitsui's Metallocene technology. 2060M can be blended with butyl rubber to make tire inner tube. It is suitable for tire inner tube and peroxide cure products.

## APPLICATIONS

Tire inner tube, peroxide cure products

## PROPERTIES

- Medium Mooney viscosity
- Low ethylene content
- Low ENB

## FEATURES

- Co-vulcanization with IIR
- Good heat resistance

## Representative Values\*

Properties	Test Method	Value
Mooney Viscosity		
ML <sub>1+4</sub> 100°C	Mitsui Chemicals Method	40
Polymer Composition, wt%		
Ethylene	Mitsui Chemicals Method	55
Diene (ENB)	Mitsui Chemicals Method	2.3

(Based on iodine value)

\*These values are typical properties only and are not to be regarded as sales specifications.

# 三井EPT 3045

三井EPT 3045はバナジウム触媒によって合成された飽和炭化水素系ゴムです。  
本銘柄は、混練加工性、押出成形性に重点を置いて品質設計した低ムーニー粘度のEPDMで電線、電気部品、明色ゴム製品に、また他のEPDMの混練加工性、押出成形性の改良に好適な銘柄です。

## 用途例

電線、一般型物

## 基本性状

- 低ムーニー粘度
- 中程度のエチレン含量
- 分子量分布、組成分布が広い
- グリーン強度がやや高い

## 特長

- 混練加工性に優れる
- 押出成形性、射出成形性優れる
- 低充填または明色配合での押出成形性に優れる

## 代表値 ※

物性	試験方法	三井EPT 3045
ムーニー粘度 ML(1+4)100°C	ASTM D 1646	40
ポリマー組成 wt%		
エチレン	ASTM D 3900	56
ジエン	ASTM D 6047	4.7
		(ヨウ素価 13)
ジエン種		ENB

※ これらの値は代表値であり、製品の規格値を示すものではありません。

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Apr, 12, 2010

To PN INTER CORPORATION CO., LTD.

Specification for MITSUI EPT 3062EM

ITEM	Properties	Testing Method	Unit	Value
1	Mooney Viscosity, ML(1+4)125°C	Mitsui Chemicals Method*1	—	38~48
2	Diene Content	Mitsui Chemicals Method*2	%	3.2~5.8
3	Ethylene Content	Mitsui Chemicals Method*3	%	61.5~67.5
4	Volatile Matter	Mitsui Chemicals Method*4	%	≤0.6
5	Oil Content	Mitsui Chemicals Method*4	Phr	17~23

Remarks

\*1 If the sample condition is flake or pellet type, preparing the sheet with compression molding at 160°C.→ Cutting the around 10mm thin and 12g weight two sample sheets.→ Measuring the viscosity with the device and condition as below.

Measuring device: Mooney Viscosity Meter      Measuring condition: ML(1+4)125°C

\*2 Making the 100μm thin film.→ Measuring the peak values of absorption spectrum at around 1686cm<sup>-1</sup> and 4325cm<sup>-1</sup> by infrared spectroscopic analysis.→ Calculating the ratio of the peak values of absorption spectrum at 1686cm<sup>-1</sup> and 4325cm<sup>-1</sup> (1686cm<sup>-1</sup>/4325cm<sup>-1</sup>).→ Estimating the diene content by using above ratio and master data.

\*3 Making the 100μm thin film.→ Measuring the peak values of absorption spectrum at 1155cm<sup>-1</sup> and 721cm<sup>-1</sup> by infrared spectroscopic analysis.→ Calculating the ratio of the peak values of absorption spectrum at 1155cm<sup>-1</sup> and 721cm<sup>-1</sup> (1155cm<sup>-1</sup>/721cm<sup>-1</sup>).→ Estimating the tentative ethylene content by using above ratio and master data.→ Estimating the real ethylene content by using the below equation.

Ethylene content=(100-Diene content)\*(Tentative ethylene content)/100

\*4 Weighing the sample 5g precisely.→ Making the thin film between polyester films with compression molding at 160°C.→ Peeling the polyester film at one side and drying 1 hour at 105°C in the desiccators.→ Estimating the weight ratio (volatile matter value) by using the weights before and after drying.

\*5 The Sample is dissolved in the specific solvent. Chromatogram area is obtained by GPC (Gel Permeation Chromatography)  
Oil content value is obtained from the calibration Curve.

ACCEPTED AND AGREED:

PN INTER CORPORATION CO., LTD.

Mitsui Chemicals, Inc.

By:  
Title:

By: Shinichi Nishiyama  
Title: Quality Assurance Div.

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Apr, 12, 2010

To PN INTER CORPORATION CO., LTD.

Specification for MITSUI EPT 3072EM

ITEM	Properties	Testing Method	Unit	Value
1	Mooney Viscosity, ML(1+4)125°C	Mitsui Chemicals Method*1	—	46~56
2	Diene Content	Mitsui Chemicals Method*2	%	4.1~6.7
3	Ethylene Content	Mitsui Chemicals Method*3	%	61.0~67.0
4	Volatile Matter	Mitsui Chemicals Method*4	%	≤0.6
5	Oil Content	Mitsui Chemicals Method*4	Phr	36~44

Remarks

\*1 If the sample condition is flake or pellet type, preparing the sheet with compression molding at 160°C.→ Cutting the around 10mm thin and 12g weight two sample sheets.→ Measuring the viscosity with the device and condition as below.

Measuring device: Mooney Viscosity Meter      Measuring condition: ML(1+4)125°C

\*2 Making the 100μm thin film.→ Measuring the peak values of absorption spectrum at around 1686cm<sup>-1</sup> and 4325cm<sup>-1</sup> by infrared spectroscopic analysis.→ Calculating the ratio of the peak values of absorption spectrum at 1686cm<sup>-1</sup> and 4325cm<sup>-1</sup> (1686cm<sup>-1</sup>/4325cm<sup>-1</sup>).→ Estimating the diene content by using above ratio and master data.

\*3 Making the 100μm thin film.→ Measuring the peak values of absorption spectrum at 1155cm<sup>-1</sup> and 721cm<sup>-1</sup> by infrared spectroscopic analysis.→ Calculating the ratio of the peak values of absorption spectrum at 1155cm<sup>-1</sup> and 721cm<sup>-1</sup> (1155cm<sup>-1</sup>/721cm<sup>-1</sup>).→ Estimating the tentative ethylene content by using above ratio and master data.→ Estimating the real ethylene content by using the below equation.

$$\text{Ethylene content} = (100 - \text{Diene content}) * (\text{Tentative ethylene content}) / 100$$

\*4 Weighing the sample 5g precisely.→ Making the thin film between polyester films with compression molding at 160°C.→ Peeling the polyester film at one side and drying 1 hour at 105°C in the desiccators.→ Estimating the weight ratio (volatile matter value) by using the weights before and after drying.

\*5 The Sample is dissolved in the specific solvent. Chromatogram area is obtained by GPC (Gel Permeation Chromatography)  
 Oil content value is obtained from the calibration Curve.

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# MITSUI EPT 3090EM

Mitsui EPT 3090EM is low ethylene, high Mooney and medium diene EPDM synthesized by Mitsui's Metallocene technology. 3090EM is extended 10phr high quality paraffinic oil for better mixing even though its Mooney is very high. It is very good at low temperature properties and suitable for water hoses and molded goods.

## APPLICATIONS

Automotive water hose, extruded profile

## PROPERTIES

- High Mooney viscosity
- Low ethylene content

## FEATURES

- Low temperature properties
- Easy mixing
- Good heat resistance

## Representative Values\*

Properties	Test Method	Value
Mooney Viscosity		
ML <sub>1+4</sub> 125°C	Mitsui Chemicals Method	59
Polymer Composition, wt%		
Ethylene	Mitsui Chemicals Method	48
Diene (ENB)	Mitsui Chemicals Method	5.2
		(Based on iodine value)
Extended oil, phr	Mitsui Chemicals Method	10

\*These values are typical properties only and are not to be regarded as sales specifications.

# MITSUI EPT 3091

Mitsui EPT 3091 is low ethylene, high Mooney and medium diene EPDM synthesized by Mitsui's technology. 3091 shows high green strength. It is suitable for extruded profile and molded parts.

## APPLICATIONS

Extruded profiles, molded parts

## PROPERTIES

- High Mooney viscosity
- Low ethylene content
- Medium diene content
- High green strength

## FEATURES

- Good mixing
- Good extrudability
- Good heat resistance

## Representative Values\*

Properties	Test Method	Value
Mooney Viscosity		
ML(1+4)125°C	Mitsui Chemicals Method	57
Polymer Composition, wt%		
Ethylene	Mitsui Chemicals Method	61
Diene (ENB)	Mitsui Chemicals Method	5.4

(Based on iodine value)

\*These values are typical properties only and are not to be regarded as sales specifications.

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Apr, 12, 2010

To PN INTER CORPORATION CO., LTD.

Specification for MITSUI EPT 4045M

ITEM	Properties	Testing Method	Unit	Value
1	Mooney Viscosity, ML(1+4)100°C	Mitsui Chemicals Method*1	—	39~51
2	Diene Content	Mitsui Chemicals Method*2	%	6.3~8.9
3	Ethylene Content	Mitsui Chemicals Method*3	%	41.5~47.5
4	Volatile Matter	Mitsui Chemicals Method*4	%	≤0.6

Remarks

\*1 If the sample condition is flake or pellet type, preparing the sheet with compression molding at 160°C.→ Cutting the around 10mm thin and 12g weight two sample sheets.→ Measuring the viscosity with the device and condition as below.

Measuring device: Mooney Viscosity Meter      Measuring condition: ML(1+4)100°C

\*2 Making the 100μm thin film.→ Measuring the peak values of absorption spectrum at around 1686cm<sup>-1</sup> and 4325cm<sup>-1</sup> by infrared spectroscopic analysis.→ Calculating the ratio of the peak values of absorption spectrum at 1686cm<sup>-1</sup> and 4325cm<sup>-1</sup> (1686cm<sup>-1</sup>/4325cm<sup>-1</sup>).→ Estimating the diene content by using above ratio and master data.

\*3 Making the 100μm thin film.→ Measuring the peak values of absorption spectrum at 1155cm<sup>-1</sup> and 721cm<sup>-1</sup> by infrared spectroscopic analysis.→ Calculating the ratio of the peak values of absorption spectrum at 1155cm<sup>-1</sup> and 721cm<sup>-1</sup> (1155cm<sup>-1</sup>/721cm<sup>-1</sup>).→ Estimating the tentative ethylene content by using above ratio and master data.→ Estimating the real ethylene content by using the below equation.

Ethylene content=(100-Diene content)\*(Tentative ethylene content)/100

\*4 Weighing the sample 5g precisely.→ Making the thin film between polyester films with compression molding at 160°C.→ Peeling the polyester film at one side and drying 1 hour at 105°C in the desiccators.→ Estimating the weight ratio (volatile matter value) by using the weights before and after drying.

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# MITSUI EPT 9090M

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Mitsui EPT 9090M is low ethylene, medium Mooney and very high diene EPDM synthesized by Mitsui's Metallocene technology. Precisely incorporated long chain branching structure in 9090M realizes smooth extrusion and good foam-ability. It is suitable for sponge applications.

## APPLICATIONS

Weather strip sponge, insulation sponge

## PROPERTIES

- Medium Mooney viscosity
- Low ethylene content
- Very high ENB

## FEATURES

- Easy mixing and extrusion
- Fast curing
- Smooth surface

## Representative Values\*

Properties	Test Method	Value
Mooney Viscosity		
ML <sub>1+4</sub> 125°C	Mitsui Chemicals Method	58
Polymer Composition, wt%		
Ethylene	Mitsui Chemicals Method	41
Diene (ENB)	Mitsui Chemicals Method	14.0

(Based on iodine value)

\*These values are typical properties only and are not to be regarded as sales specifications.

# K-9330M

K-9330M is completely new grade developed for the applications which require very good performance in low temperature, for example, a gasket, and high tackiness during processing, for example, a belt. Thanks to be copolymerized butene (C4) instead of propylene (C3), K-9330M shows excellent performance in low temperature and high tackiness compared to conventional EPT.

K-9330M is suitable for injection molding because it is designed low mooney viscosity.

## APPLICATIONS

Gaskets, belts, anti-vibration rubber, hoses

## PROPERTIES

- Ethylene-butene-diene copolymer
- Low Mooney viscosity
- Low ethylene content
- High diene(ENB) content

## FEATURES

- Excellent low temperature property
- High tackiness

## Representative Values\*

Properties	Testing Method	Value
Mooney Viscosity ML(1+4)100°C	Mitsui Chemicals Method	30
Polymer Composition, wt%		
Ethylene	Mitsui Chemicals Method	50
Diene (ENB)	Mitsui Chemicals Method	7.1

\*These values are typical properties only and are not to be regarded as sales specifications.

# MITSUI EPT PX-008M

Metallocene VNB-EPT is designed especially for applications that require ultra high-heat resistance, high tensile strength, good durability and high abrasion resistance. VNB-EPT can be vulcanized with peroxide but not with sulfur. VNB-EPT is suitable for hoses, anti-vibration rubbers, electric wire and cables, transmission belts and so on.

## APPLICATIONS

Water hoses, Turbo charger hoses, Anti-vibration rubber parts, belts, Wire & Cable

## PROPERTIES

- High Mooney viscosity
- Low ethylene content
- Low diene(VNB) content
- Low branched
- Oil (Low Mw EPR) extended

## FEATURES

- Good heat-resistance
- Good durability
- Good mechanical properties
- High cross-linking efficiency
- Low compression set

## Representative Values\*

Properties	Test Method	Value
Mooney Viscosity ML(1+4)125°C	Mitsui Chemicals Method	48
Polymer Composition, wt%		
Ethylene	Mitsui Chemicals Method	60
Diene (VNB)	Mitsui Chemicals Method	1.5
Extended oil, phr	Mitsui Chemicals Method	15

\*These values are typical properties only and are not to be regarded as sales specifications.

# MITSUI EPT X-4010M

Mitsui EPT X-4010M is ethylene-propylene-diene terpolymer (EPDM) synthesized by Metallocene Catalyst. This grade is suitable for molded sponges which requires high fluidity, corner molding of weather-strips and high hardness products.

## APPLICATIONS

Corner Joints (dense and sponge)

## PROPERTIES

- Ultra-low Mooney viscosity
- High diene
- Heat and UV stability
- Amorphous

## FEATURES

- High fluidity, excellent cast molding
- Easy to lower Mooney viscosity or improve fluidity by blending it with other EPDM
- Fast curing
- Excellent low temperature flexibility

## Representative Values\*

Typical Polymer	Test Method	Value
Mooney Viscosity		
ML(1+4)100°C	ASTM D 1646	8
Polymer Composition, mass %		
Ethylene	ASTM D 3900	54
Diene	ASTM D 6047	7.6
Diene Type		ENB

\*These values are typical properties only and are not to be regarded as sales specifications.