

# Santoprene™ 211-45

Thermoplastic Vulcanizate

ExxonMobil Chemical

## Message:

It is a soft, colorable, universal thermoplastic vulcanized elastomer (TPV) in the thermoplastic elastomer (TPE) series. This material has good physical properties and chemical resistance at the same time, and is widely used in the field of injection molding. This brand of Shanduping TPV is a shear rate dependent product that can be processed on conventional thermoplastic injection molding equipment. This is a polyolefin-based material that can be recycled in the production process.

| General Information |                                 |                   |             |
|---------------------|---------------------------------|-------------------|-------------|
| UL YellowCard       | E80017-250525                   |                   |             |
| Features            | Good dimensional stability      |                   |             |
|                     | Low compressive deformability   |                   |             |
|                     | Recyclable materials            |                   |             |
|                     | Good formability                |                   |             |
|                     | Good liquidity                  |                   |             |
|                     | Good coloring                   |                   |             |
|                     | Ozone resistance                |                   |             |
|                     | Good chemical resistance        |                   |             |
|                     | Fatigue resistance              |                   |             |
|                     | Soft                            |                   |             |
| Uses                | Washer                          |                   |             |
|                     | Seals                           |                   |             |
|                     | Application in Automobile Field |                   |             |
| Agency Ratings      | UL QMFZ2                        |                   |             |
|                     | UL QMFZ8                        |                   |             |
| RoHS Compliance     | RoHS compliance                 |                   |             |
| UL File Number      | E80017                          |                   |             |
| Appearance          | Natural color                   |                   |             |
| Forms               | Particle                        |                   |             |
| Processing Method   | Multiple injection molding      |                   |             |
|                     | Injection molding               |                   |             |
| Physical            | Nominal Value                   | Unit              | Test Method |
| Specific Gravity    |                                 |                   |             |
| --                  | 0.958                           | g/cm <sup>3</sup> | ASTM D792   |
| --                  | 0.960                           | g/cm <sup>3</sup> | ISO 1183    |
| Hardness            | Nominal Value                   | Unit              | Test Method |

| Durometer Hardness (Shaw A, 15 seconds, 23°C, 2.00mm)                                                                                                          | 49            |       | ISO 868              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------|----------------------|
| Elastomers                                                                                                                                                     | Nominal Value | Unit  | Test Method          |
| Tensile Stress - Across Flow (100% Strain, 23°C)                                                                                                               | 1.40          | MPa   | ASTM D412, ISO 37    |
| Tensile Strength - Across Flow (Break, 23°C)                                                                                                                   | 3.50          | MPa   | ASTM D412, ISO 37    |
| Tensile Elongation - Across Flow (Break, 23°C)                                                                                                                 | 340           | %     | ASTM D412, ISO 37    |
| Compression Set                                                                                                                                                |               |       |                      |
| 23°C, 22 hr <sup>1</sup>                                                                                                                                       | 11            | %     | ASTM D395B           |
| 125°C, 70 hr <sup>2</sup>                                                                                                                                      | 35            | %     | ASTM D395B           |
| 23°C, 22 hr <sup>3</sup>                                                                                                                                       | 11            | %     | ISO 815              |
| 125°C, 70 hr <sup>4</sup>                                                                                                                                      | 35            | %     | ISO 815              |
| Aging                                                                                                                                                          | Nominal Value | Unit  | Test Method          |
| Change in Tensile Strength in Air (150°C, 168 hr)                                                                                                              | -23           | %     | ASTM D573, ISO 188   |
| Change in Ultimate Elongation in Air (150°C, 168 hr)                                                                                                           | 26            | %     | ASTM D573, ISO 188   |
| Change in Durometer Hardness in Air (Shore A, 150°C, 168 hr)                                                                                                   | 1.0           |       | ASTM D573, ISO 188   |
| Change in Tensile Strength (125°C, 70 hr, in IRM 903 Oil)                                                                                                      | -39           | %     | ASTM D471, ISO 1817  |
| Change in Ultimate Elongation (125°C, 70 hr, in IRM 903 Oil)                                                                                                   | -54           | %     | ASTM D471, ISO 1817  |
| Change in Volume                                                                                                                                               |               |       |                      |
| 125°C, 70 hr, in IRM 903 oil                                                                                                                                   | 120           | %     | ASTM D471            |
| 125°C, 70 hr, in IRM 903 oil                                                                                                                                   | 120           | %     | ISO 1817             |
| Thermal                                                                                                                                                        | Nominal Value | Unit  | Test Method          |
| Brittleness Temperature                                                                                                                                        | -62.0         | °C    | ASTM D746, ISO 812   |
| RTI Elec                                                                                                                                                       | 100           | °C    | UL 746               |
| RTI                                                                                                                                                            |               |       | UL 746               |
| 1.00 mm                                                                                                                                                        | 90.0          | °C    | UL 746               |
| 3.00 mm                                                                                                                                                        | 95.0          | °C    | UL 746               |
| Electrical                                                                                                                                                     | Nominal Value | Unit  | Test Method          |
| Dielectric Strength (23°C, 2.00 mm)                                                                                                                            | 30            | kV/mm | ASTM D149            |
| Dielectric Constant (23°C, 2.03 mm)                                                                                                                            | 2.40          |       | ASTM D150, IEC 60250 |
| Flammability                                                                                                                                                   | Nominal Value | Unit  | Test Method          |
| Flame Rating                                                                                                                                                   |               |       | UL 94                |
| 1.00 mm                                                                                                                                                        | HB            |       | UL 94                |
| 3.00 mm                                                                                                                                                        | HB            |       | UL 94                |
| Additional Information                                                                                                                                         |               |       |                      |
| 如果适用,这是基于扇形浇口注塑成型的平板测试结果.拉伸强度,伸长率和拉伸应力沿垂直流动方向测定 - ISO 1 型,ASTM die C.25% 形变时的永久压缩变形.从埃克森美孚欧洲分支机构直接购买的所有产品都符合 REACH 法规. 对于埃克森美孚未进口至欧洲的产品,用户应自行评估其是否满足 REACH 法规. |               |       |                      |
| Legal statement                                                                                                                                                |               |       |                      |

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| Injection               | Nominal Value        | Unit               |
|-------------------------|----------------------|--------------------|
| Drying Temperature      | 82.2                 | °C                 |
| Drying Time             | 3.0                  | hr                 |
| Suggested Max Moisture  | 0.080                | %                  |
| Suggested Max Regrind   | 20                   | %                  |
| Rear Temperature        | 177 - 193            | °C                 |
| Middle Temperature      | 179 - 199            | °C                 |
| Front Temperature       | 179 - 204            | °C                 |
| Nozzle Temperature      | 191 - 229            | °C                 |
| Processing (Melt) Temp  | 193 - 241            | °C                 |
| Mold Temperature        | 10.0 - 51.7          | °C                 |
| Injection Rate          | Fast                 |                    |
| Back Pressure           | 0.345 - 0.689        | MPa                |
| Screw Speed             | 100 - 200            | rpm                |
| Clamp Tonnage           | 4.1 - 6.9            | kN/cm <sup>2</sup> |
| Cushion                 | 3.18 - 6.35          | mm                 |
| Screw L/D Ratio         | 16.0:1.0 to 20.0:1.0 |                    |
| Screw Compression Ratio | 2.0:1.0 to 2.5:1.0   |                    |
| Vent Depth              | 0.025                | mm                 |

#### Injection instructions

Santoprene TPV与乙缩醛和PVC不相容.推荐采用SPI/SPE#3表面光洁度(不抛光).更多关于加工和模具设计的信息,请查阅我们的《注射成型指南》.

#### NOTE

- |    |        |
|----|--------|
| 1. | Type 1 |
| 2. | Type 1 |
| 3. | Type a |
| 4. | Type a |

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