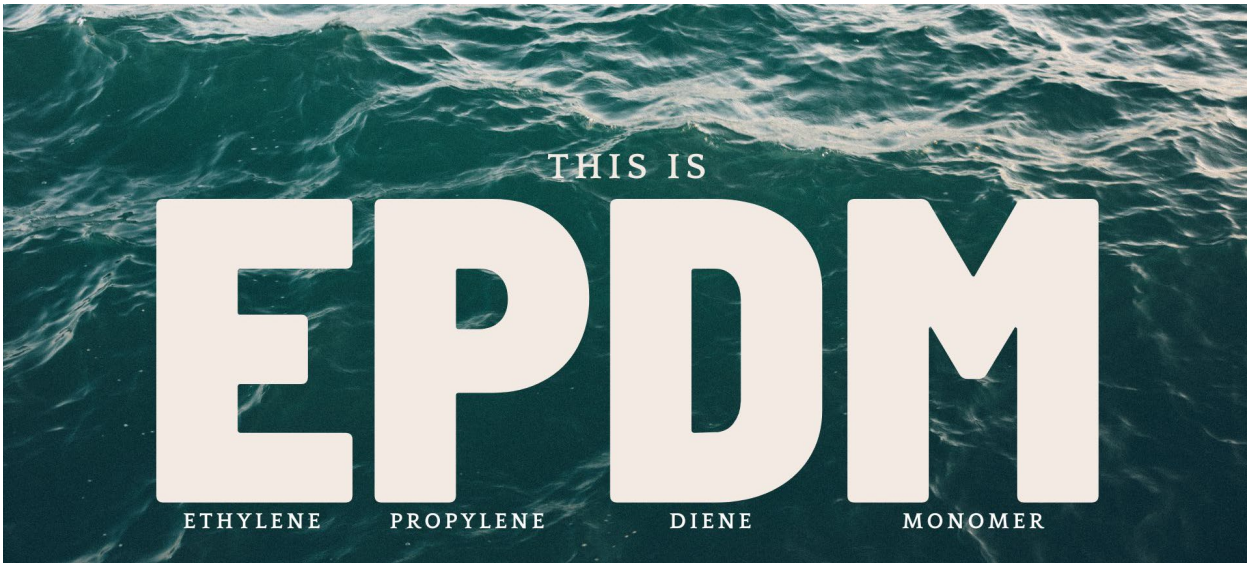


What is EPDM Material?

Properties, Applications, and Common Questions of Ethylene Propylene Diene Monomer

By Cody David & Juan Ramirez

EPDM material, also known as ethylene propylene diene monomer or EP rubber, is a form of synthetic rubber exhibiting unique characteristics of strong outdoor resistance and robust physical-dynamic properties. These characteristics make it the ideal choice for gasketing, sealing solutions, O-rings, potable water gaskets, grommets, and weather-stripping applications.

Advantages

EPDM is an excellent fit for applications requiring:

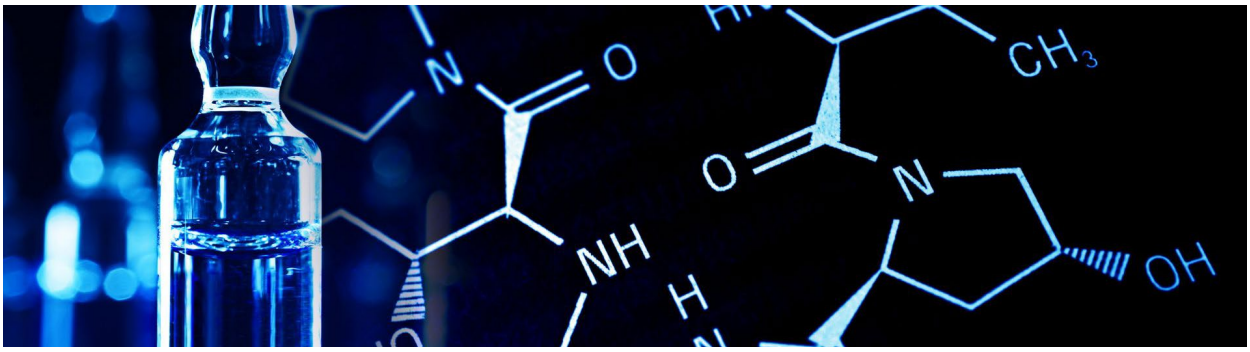
- Weather resistance (heat, ozone, and sunlight)
- Electrical insulation
- Durability (high abrasion resistance & non cracking tendencies)
- High compression set
- Water resistance

Disadvantages

EPDM is a poor fit for applications requiring:

- Oil, gas & fuel resistance (petroleum-based products)
- Resistance to aromatics or solvents

EPDM rubber products come in all shapes and sizes, as demanded by the application. Many industrial and consumer applications rely on EPDM rubber extrusions, rubber molded parts and custom sheet rubber.



1. Understanding EPDM Material Properties

When choosing which material is most suitable for your application, the following charts serve as a basis when considering the use of EPDM. We recommend consulting with a rubber manufacturer and/or material design specialists prior to making this selection. WARCO has developed thousands of rubber compounds, and would be happy to provide guidance.

Table 1: General Physicals of EPDM

Property	Value
Durometer Hardness (Shore A)	30 to 90
Tensile Strength (psi)	800 to 2600
Elongation at Break (%)	100 to 900
Compression Set (%)	10 to 30
Temperature Range (°F)	-60°F to +300°F

Table 2: EPDM Chemical Resistance Guide

Chemical	Resistance Capability
Acetone	Excellent
Fuels	Poor
Salt Water	Excellent
Aromatic Hydrocarbons	Poor
Alcohols	Good
Animal and Vegetable Oils	Good

For a comprehensive guide regarding chemical resistances and recommendations for common rubber polymers including EPDM material, see our guide at warco.com/chemical.

Table 3: EPDM Material Characteristics

Category	Property	Performance
Mechanical	Abrasion Resistance	Excellent
	Impact Resistance	Very Good
	Rebound Rating	Very Good
	Tear Resistance	Fair
	Flex Cracking Resistance	Very Good
Environmental	Chemical Resistance	Good
	Oil Resistance	Poor
	Weather Resistance	Excellent
	Ozone Resistance	Excellent
	Oxidation Resistance	Excellent
	Sunlight Resistance	Outstanding
Application Specific	Flame Resistance	Poor
	Minimum Service Temperatures	Good
	Maximum Service Temperatures	Very Good
	Gas Permeability	Good
	Radiation Resistance	Good
	Steam Resistance	Excellent

For more specific information regarding Ethylene Propylene Diene Monomer rubber products and their characteristics, see our webpage on EPDM at warco.com/epdm. Topics covered include:

- General Information
- Physical Properties
- Environmental Properties
- Specific Chemical Resistances
- And many more

2. Applications Suitable for EPDM Rubber

EPDM's properties make it a suitable choice for a diverse number of applications across various industries, including but not limited to:

- **EPDM Rubber Strips**: Used in outdoor applications for sealing and protecting against weather conditions.
- **EPDM Automotive Parts (valves & seals)**: Commonly utilized in automotive engines and components for durability and resistance to heat and wear.
- **EPDM Electrical Insulation**: Serves as an insulating layer in electrical components due to its strong electrical resistance properties.
- **EPDM Tubing/Cord for Window & Door Seals**: Offers effective sealing against moisture, air, and dust in construction and household applications.
- **EPDM Gasket Material**: Used in industrial machinery to prevent leakage and provide a durable seal in dynamic environments.
- **EPDM Vibration Dampening Padding**: Reduces vibration and noise in industrial machinery and equipment.
- **EPDM Roofing Rolls**: Commonly used in roofing for its weather resistance and durability against sunlight and ozone.

EPDM is a comparatively cost-effective material, making it the ideal elastomer for high volume applications that require its uniquely high-performance characteristics.

3. WARCO's Pre-Formulated EPDM Rubber Products

While we have a vast array of EPDM products designed for a specific application & customer, we also offer a selection of pre-formulated rubber products that have been developed for EPDM applications that WARCO regularly services.

Many of these products are available as sheet rubber, heavy gauge slab rubber, extruded rubber or custom molded rubber. Click on each product to learn more.

EPDM Product	Primary Feature
PURE™: NSF/ANSI/CAN 61 Certified Rubber	Certified to NSF/ANSI/CAN 61 & 372
Peroxide Cure EPDM	Exceptional heat and aging stability
EPDM MIL-R-21252 / MIL-DTL-21252	Meets the MIL-R-21252 / MIL-DTL-21252 specification
EPDM MIL-R-900	Meets the MIL-R-900 specification
EPDM MIL–R–83285 / SAE-AMS-R-83285	Meets the MIL-R-83285 / SAE-AMS-R-83285 specification
EPDM ASTM D2000 M4AA	Meets the ASTM D2000 M4AA specification
Commercial EPDM	Excellent ozone, oxidants, and weather resistance

4. Common Questions About EPDM

Throughout our extensive 114-year history of formulating and manufacturing rubber products for a wide range of applications, we have compiled a list of commonly encountered questions pertaining to EPDM. If you have any additional questions regarding rubber applications, please contact us at sales@warco.com or 714-532-3355.

Q1: **What is EPDM generally attacked by?**

EPDM is generally attacked by mineral oils, solvents, and aromatic hydrocarbons. See a more extensive list at warco.com/chemical.

Q2: **What is EPDM generally resistant to?**

EPDM is generally resistant to animal and vegetable oils, ozone, strong and oxidizing chemicals. See a more extensive list at warco.com/chemical.

Q3: **What is the shelf life of EPDM?**

EPDM has a shelf life of 5 to 15 years when stored in a cool, dry place below temperatures of 75°F and away from direct sunlight or open flames. See Rubber Storage Conditions for more information on how to properly store your rubber products.

Q4: **How does EPDM rubber compare to SBR rubber?**

Depending on availability, both polymers can service similar applications. However, EPDM tends to have better physical properties with lower comparative amount of polymer content in the formulations. Depending on the application requirements and polymer availability, you can get better physical properties than SBR at similar costs.

Q5. **What is the difference between sulfur cured EPDM and peroxide cured EPDM?**

While there are a number of differences between these two rubber product types, the primary distinction is in high temperature resistance. Peroxide cured EPDM can resist temperatures up to +300°F, while sulfur cured EPDM will generally be rated up to +250°F maximum.

Q6. **What does EPDM stand for?**

EPDM or EP rubber stands for Ethylene Propylene Diene Monomer.

Any More Questions? Reach Out!

EPDM is only one of the many key rubber products for which we all depend on. Each rubber polymer has a unique set of characteristics, strengths, and weaknesses and a comprehensive understanding of each one is critical to the success of any project. Our technical team is more than equipped to answer any questions you have about using EPDM rubber in your applications.

Unlike many other rubber manufacturers that depend upon external laboratories, mixing, and testing facilities, WARCO can develop compounds, mix materials, and thoroughly test and process your rubber products in one single facility.

Our wealth of experience and knowledge in material design and engineering, unique manufacturing processes, and tight control over each step of production are among the key contributors to how WARCO remains America's Choice for Quality Rubber Since 1910™.

If you have any questions, please email them to sales@warco.com or contact us directly at (714) 532-3355.