Choosing Elastomers

Your Guide to Common Elastomers & Traits

Give Your Rubber a Chance! It's Unique Just Like Your Project!

With so many formulations and recipes choosing the right rubber formulation can be quite a challenge. That's why we created the Aero Rubber Company®, Inc. Sales Engineering Team over 40 years ago. Every formulation has a trade off. We know what those are and want to pass on our years of experience to you. Before calling us, look over the charts on the next pages. This will serve as a general guide and give you a starting point for identifying the correct material for your needs. **Once you've taken a look at the chart, give us a call to discuss your choices and recieve a quote.**

Be prepared, we will ask questions.

Tell us about your project! What will it be used as?
Under what conditions will it be used?
What chemicals will it encounter?
Do you have a specific material specification such as ASTM or Military Spec?

Aero's experienced sales engineers stand ready to guide you towards the best solution for your specific requirements. We even provide specification certifications at no charge when requested.

A few words to the wise:

1. Each rubber manufacturer has their own elastomer recipes. Each one is considered a trade secret.

2. A rubber compound can be a blend of two or more elastomers (elastomers are major ingredients in different rubber compounds). This formulation recipe influences the finished part's function, service life and competitive pricing.

3. The chosen elastomers' formulation (recipe) will affect the physical properties of the part, its function and service life. It is the user's responsibility to make the final determination for specifying the elastomer to be used for an application or project, including performance charachteristics & suitability for service life & function.
4. The information presented herein should be used only as a general "guide". We cannot guarantee its completeness, nor accuracy, nor assume responsibility for its use due to the myriad of combinations and options available.

AERO RUBBER COMPANY,® INC.

Our Customers Define Quality - We Make It Happen!®

Choosing Elastomers

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Elastomer Characteristics	Temp. Min*	Temp. Max*	Ozone Resistance	UV Resistance	Grease/Oil Resistance	Fuel Resistance	Solvent Resistance	Abrasion Resistance	Tear Resistance	Tensile Strength	Non-Latex	Other Properties
Elastomer Common Names												
Natural Rubber Gum Rubber Polyisoprene	-55° F	200° F	Poor	Poor	Poor	Poor	Poor	Good	Good	Excellent	No	• Made from rubber tree latex • High elongation & resilience • Low compression set •Good flexing qualities at low temperature
Synthetic Natural Synthetic Polyisoprene	-55° F	200° F	Poor	Poor	Poor	Poor	Poor	Good	Good	Excellent	Yes	• The synthetic version of natural rubber
Neoprene Chloroprene Polychloroprene	-40° F	220° F	Good	Good	Good	Fair	Poor	Fair	Good	Good-Fair	Yes	• Popular elastomer - considered general purpose. • Poor resistance to strong acids, esters, ketones, chorinated, aromatic and nitro hydrocarbons
Nitrile Buna 'N' NBR	-30° F	250° F	Poor	Poor	Excellent	Excellent	Excellent	Fair	Good	Good-Fair	Yes	• Poor resistance to ketones and chlorinated hydrocarbons
Hydrogenated Nitrile Butadiene Rubber (HNBR)	-20° F	300° F	Poor	Poor	Excellent	Excellent	Fair	Fair	Good	Excellent- Good	Yes	• Commonly used for seals & o-rings • Higher temperature version of Nitrite • Excellent resistance to common automotive fludis and many industrial chemicals • Poor resistance to ethers, esters, ketones and chlorinated hydrocarbons
SBR Buna 'S' GRS	-20° F	212° F	Good	Good	Poor	Poor	Poor	Excellent	Good	Good-Fair	Yes	• Fair resistance to weathering
EPDM EPT EP	-60° F	250° F	Excellent	Excellent	Poor	Poor	Poor	Good	Good	Good-Fair	Yes	• Popular for outdoor applications • Good resistance to steam, brake fluids and weak acids. • Poor resitance to oils, aromatic hydrocarbons and petroleum products

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Elastomer Common Names												
EPDM Peroxide Cured	-60° F	300° F	Excellent	Excellent	Poor	Poor	Poor	Good	Excellent	Excellent-Good	Yes	• Good resistance to steam, brake fluids and weak acids. • Poor resistance to oils, aromatic hydrocarbons and petroleum products
Silicone	-100° F	450° F	Excellent	Excellent	Poor	Poor	Poor	Poor	Poor	Poor	Yes	• Frequently used in medical, food processing and pharmaceutical fields due to its purity when processed • Long service life makes it ideal for industrial applications • Poor resistance to steam, oils & concentrated acids
Fluorosilicone	-100° F	400° F	Excellent	Excellent	Good	Good	Good	Poor	Poor	Fair	Yes	• A substitue for silicone when improved chemical resistance is required. • Excellent resistance to moderate or oxidizing chemicals, ozone, aromatic chlorinated solvents and bases. • Poor resistance to brake fluids & ketones
Fluoroelastomer (FKM) Viton (DuPont) Fluorel (3-M)	-10° F	400° F	Excellent	Excellent	Excellent	Excellent	Good	Good	Good	Fair	Yes	• Ideal when high temperature & chemical resistance are needed • Poor resistance to ketones, nitro-containing compounds, low molecular weight esters & alcohols • Limited hardness range
Butyl	-60° F	250° F	Excellent	Excellent	Poor	Poor	Poor	Good	Good	Good	Yes	• Vacuum & pressure retention, low extractable, self-sealing, vibration damping. • Developed during WWII for inner tubes and tires. • Used for tank liners & gloves.

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Elastomer Common Names												
Hypalon (trade name) (CSM) Chlorsulphonated	-40° F	250° F	Excellent	Excellent	Good	Good	Poor	Good	Good	Good	Yes	• Commonly used as coating for fabric to make inflatable boats & hoses.
Polyurethane (Ether or Ester Based)	-90° F	225° F	Excellent	Excellent	Excellent	Good	Poor	Excellent	Excellent	Excellent	Yes	• Thermoplastic that has used for abrasion resistance & flexibility. • Can be more expensive than regular rubber. • Bad for citric acids & some solvents. • 175° F maximum in hot water

The information provided above is for reference purposes only and is intended to be utilized as a "guide" when comparing the typical physical properties of different materials. Aero recommends that the buyer perform any tests required to determine the performance characteristics and suitability of a particular material for a specific application. We cannot guarantee its completeness, nor accuracy, nor assume responsibility for its use due to the myriad of combinations and uses.

A rubber compound can be a blend of two or more elastomers (when compatible) in order to influence the finished part's function and service life as well as competitive pricing.

*"Typical Temperature Range" is unrelated to any particular use or application. It is a general guideline to compare with other elastomers. Field tests of part samples by the user and ASTM lab tests of compound slabs are necessary to determine functional acceptability and service life.