

Technical Specifications for Rubber

There are a number of design factors that are considered when a manufacturer selects an appropriate kind of rubber. Manufacturers of rubber often provide comparative charts to help makers select the product that will perform best in the situation required.

Urethane outperforms neoprene in all of the properties that are critical to shockmount design, this is exactly why Modern Conscience uses urethane.

Tensile Strength

Tensile strength is used to define how hard something can be pulled on before it rips apart. Urethane rubber has a stronger tensile strength than neoprene rubber. Because of this stronger tensile strength, urethane will stretch farther than neoprene before tearing and failing.

Cut Resistance and Abrasion Resistance

Cut resistance and abrasion resistance are both important in shockmount design. Shockmounts are used to fasten fiberglass seats to bases and chair parts to others. Because of this contact with metal chair components it is critical that the shockmounts have the highest possible abrasion and cut resistance. Urethane rubber has better cut and abrasion resistance than neoprene rubber.

Tear Strength

Tear strength is a measure of how much force is required to tear the rubber. Urethane has better tear strength than neoprene.

Cost

Urethanes are more expensive than neoprene- this is the main reason a manufacturer would choose neoprene over urethane. Modern Conscience makes their products out of urethane and charges less for those products than manufacturers who use neoprene.

Urethane is superior to neoprene in all of the material properties that are critical in the design of an Eames shockmount. This is not an opinion, it is scientific fact based on extensive material test comparisons conducted by independent manufacturers of rubber products. It's not a secret; you can find this exact same information by searching the internet for rubber comparisons.

Other shockmount manufacturers use neoprene for one simple reason: selling you cheap

products at a higher profit is more important than quality. Neoprene is great for wetsuits, not for shockmounts.

Manufacturers' Comparisons for Various Rubber Products

We have assembled charts from several rubber manufacturers here so that you may see that it is common knowledge that urethane outperforms neoprene in every material property.

About Rubber and Polyurethane

Rubber is good for shock absorption, insulation, and sealing because it is strong, stretches, and bounces back.
Polyurethane bridges the gap between rubber and plastics by combining rubber's characteristics with the cut, tear, and abrasion resistance of plastics.

Note: The charts below will help you make general comparisons.

Maximum Temperature

Gum Latex	Polyurethane Vinyl	SBR	Buna-N Neoprene	Buna-N/Vinyl Butyl EPDM	ECH Polyethylene	Santoprene	Aflas Silicone Viton® Fluoroelastomer	Fluorosilicone	
100°F			200°F			300°F		400°F	450°F

Oil Resistance

A material's ability to maintain its physical properties when it comes in contact with petroleum-based fluids and to resist absorption/swelling.

Excellent	Good
Aflas, ECH, Fluorosilicone, Polyethylene, Viton® Fluoroelastomer	Buna-N, Buna-N/Vinyl, Neoprene, Polyurethane, Santoprene, Vinyl

Abrasion Resistance

The extent to which a material resists wear ordinarily caused by rubbing/scraping other surfaces.

Excellent	Good	Fair
Polyurethane	Aflas, Fluorosilicone, Polyethylene, Latex, Neoprene, Santoprene, SBR, Viton® Fluoroelastomer	Buna-N, Buna-N/Vinyl, ECH, EPDM, Vinyl

Weather Resistance

How well a material withstands exposure to sunlight, oxygen, and ozone without breaking down.

Excellent	Good	Fair
Aflas, EPDM, Fluorosilicone, Polyethylene, Silicone, Viton® Fluoroelastomer	Butyl, ECH, Polyurethane, Santoprene, Vinyl	Buna-N/Vinyl, Gum, Neoprene, SBR

Chemical Resistance

Indicates that a material can be used in a wide range of chemical environments while still retaining its physical properties.

Excellent	Good	Fair
Aflas, Butyl, Fluorosilicone, Polyethylene	Buna-N/Vinyl, ECH, Polyurethane, Santoprene, Viton® Fluoroelastomer	Buna-N, EPDM, Latex, Neoprene, Silicone, Vinyl

RUBBER PROPERTY COMPARISON CHART

MARKS: E= EXCELLENT

G= GOOD

F= FAIR

P= POOR

PROPERTY/MATERIAL	BUNA-N NITRILE	EPDM	HNBR	HYPALON	NATURAL RUBBER	NEOPRENE	PVC/NBR	PURE SILICONE	SILICONE BLEND	URETHANE	XNBR
Tensile Strength	F	F	E	G	G-E	G-E	G	P	E	E	E
Hardness Range	20-100	25-90	45-98	45-85	30-100	10-95	20-80	35-95	40-90	10-100	45-95
Relative Cost	E	E	P	G	E	G	E	F	G	F	G
Max. Service Temp °F	250	350	350	300	212	250	250	500+	400	212	275
Ozone Resistance	P	E	E	E	P	F-G	G	E	E	E	P
Cut Resistance	F	F	E	F-G	G	G	F	P	E	E	E
Abrasion Resistance	F-G	F	E	G	G-E	G-E	G-E	P	E	E	E
Tear Strength	F	F	E	G	G	G	G	P	E	E	E

Material Comparison Chart

Ratings: E—Excellent G—Good F—Fair P—Poor

Property/Material	Neoprene	Nitrile	Hypalon	EPDM	Silicone	Urethane	Hydrin	Natural Rubber	SBR	Fluorosilicone	Viton
Tensile Strength	G / E	F	G	F	E	E	G	G / E	F	P*	F
Hardness Range	35-95	25-100	40-90	25-90	35-95	10-95	50-90	30-100	30-100	50-80	60-80
Max. Service Temp. °F.	250	250	300	350	500 +	212	275 +	212	250	500 +	500 +
Ozone Resistance	F / G	P	E	E	E	E	F / G	P	P	E	E
Cut Resistance	G	F	F / G	F	E	E	F / G	G	F	P*	F
Tear Strength	G	F	G	F	E	E	F	G	F	P*	F
Abrasion Resistance	G / E	F	G	F	E	E	F	G / E	F / G	P*	F
Resistance To											
Heat Build Up	E	P	P / F	F / G	G / E	E	F / G	E	F	G / E	F