



# GLOBAL O-RING AND SEAL, LLC

## Compound U70 (Polyether Urethane-Type)

### Polyurethane (PU, AU, EU)

#### Material Description

The millable Polyurethane (PU) rubbers are distinguished into two types; the first is polyester urethane (AU) and the other is polyether urethane (EU). AU type urethanes have outstanding oil, fuel and solvent resistance but can be attacked by hydrolysis. EU type urethanes are not attacked by hydrolysis and still offer a fuel and oil resistance comparable to low ACN (18 to 22% ACN) Nitriles or HNBRs. Any type polyurethane has excellent wear resistance, high tensile strength and high elasticity in comparison with any other elastomers. We can also offer any type thermoplastic urethane (TPU).

#### Cure system: Peroxide-cured

Standard PU compounds are peroxide-cured.

#### Other Common Variations

- Polyurethane usually is applied in the mechanical industry, especially in places where material must have higher wear resistance and strength.
- In some applying environments, moisture condensing will happen on the surface of the rubber seal; this will cause hydrolysis of AU so choosing EU is better in these cases. However, EU does not resist oil very well, thus higher aniline point oil must be used for lubricant application.
- TPU will be better than millable polyurethane when applied in hydraulic systems.

#### GENERAL INFORMATION

ASTM D1418 Designation	AU, EU
ISO/DIN 1629 Designation	AU, EU
ASTM D2000/SAE J 200 Codes	BG
Standard Color	Trans-parent
Hardness Range	60 to 93 Shore A
Relative Cost	Medium to high

#### SERVICE TEMPERATURES

Standard Low Temperature	-40°C (-40°F)
Standard High Temperature	80°C (176°F)
Special Compound Low Temperature	-55°C (-67°F)
Special Compound High Temperature	100°C (212°F)

#### PERFORMS WELL IN:

- Aliphatic hydrocarbon
- Mineral oil and grease
- Silicone oil and grease
- Ozone
- Water up to 50°C (122°F) EU type

#### DOESN'T PERFORM WELL IN:

- Ketones
- Alcohols
- Esters
- Ethers
- Hot water and steam
- Alkalis, amines
- Acids
- Glycols

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<b>TEST REPORT FOR COMPOUND U70</b> <b>MATERIAL: POLYURETHANE RUBBER</b> <b>DUROMETER: 70</b> <b>COLOR: TRANSPARENT</b> <b>ASTM* D2000 M3BG714 B14 EA14 EO14 Z1 Z2</b>				
SECTION OF	PROPERTIES	REQUIREMENTS	RESULTS	ASTM TEST
	<b>ORIGINAL PHYSICAL PROPERTIES</b>			
	Hardness, Shore A	70±5	69	D2240-05
	Tensile Strength, psi (MPa)	2031 (min.)	2922 (20.15)	D412-06a
	Elongation, percent	250 (min.)	458	D412-06a
	Modulus at 100%, psi (MPa)		310 (2.14)	D412-06a
	Specific Gravity (g/cm <sup>3</sup> )		1.147	
B14	<b>COMPRESSION SET</b>			D395-03, Method B
	<b>22 hours at 100°C (212°F), percent</b>	50 (button) (max.)	45.6	
EA14	<b>WATER RESISTANCE</b>			
	<b>70 hours at 100°C (212°F)</b>			
	Hardness Change, points	±10	-5	D471-06
	Tensile Strength Change, percent		-27	
	Elongation Change, percent		-16	
	Volume Change, percent	±15	+5	
EO14	<b>NO. 1 OIL RESISTANCE</b>			
	<b>70 hours at 100°C (212°F)</b>			
	Hardness Change, points	-7 to +5	-4	D471-06
	Tensile Strength Change, percent	-20 (max.)	-6	
	Elongation Change, percent	-40 (max.)	-8	
	Volume Change, percent	-5 to +10	+6.4	
Z2	<b>NO. 3 OIL RESISTANCE</b>			
	<b>70 hours at 100°C (212°F)</b>			
	Hardness Change, points		-30	D471-06
	Tensile Strength Change, percent		-46	
	Elongation Change, percent		-32	
	Volume Change, percent		+56.1	

\*American Society for Testing and Materials



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