Common Polymers

- Butyl - for liquid, lyophilized or dry products
- Neoprene - oil or glycol based products
- Natural Rubber - for aqueous solutions
- Silicone - resists high heat or multiple steam sterilization

Butyl Rubber

Butyl rubber is impermeable to most common gases and has good resistance to sunlight and ozone. Butyl is normally satisfactory when exposed to animal and vegetable oils and oxidizing chemicals. Butyl is not recommended for use with petroleum solvent, coal tar and aromatic hydrocarbons.

**Common Names**
- Neoprene®

**General Characteristics**
- Durometer Range (Shore A): 20 - 95
- Tensile Range (PSI): 500 - 3000
- Elongation (Max %): 600
- Compression Set: Good
- Resistance - Rebound: Fair
- Abrasion Resistance: Excellent
- Tear Resistance: Good
- Solvent Resistance: Fair
- Oil Resistance: Fair
- Low Temp. Usage (°F): +10° to -50°
- High Temp. Usage (°F): to 250°
- Aging Weather - Sunlight: Excellent
- Adhesion to Metals: Good

Neoprene Rubber

Neoprene is an all purpose polymer with many desirable characteristics. It has additional features: high resilience with low compression set; flame resistant; compounds free of sulfur are easily made; and animal and vegetable oil resistant. Generally not affected by moderate chemicals, fats, greases and many oils and solvents. Generally attacked by strong oxidizing acids, esters, ketones, chlorinated aromatic and nitro hydrocarbons.

**Common Names**
- Neoprene®

**General Characteristics**
- Durometer Range (Shore A): 20 - 95
- Tensile Range (PSI): 500 - 3000
- Elongation (Max %): 600
- Compression Set: Good
- Resistance - Rebound: Fair
- Abrasion Resistance: Excellent
- Tear Resistance: Good
- Solvent Resistance: Fair
- Oil Resistance: Fair
- Low Temp. Usage (°F): +10° to -50°
- High Temp. Usage (°F): to 250°
- Aging Weather - Sunlight: Excellent
- Adhesion to Metals: Good

Natural Rubber

Natural Rubber has many good characteristics. It has high resilience, good compression set, food roll building behavior, and molding properties; very good friction surface, but not a fine smooth surface when ground; high tear strength, low crack growth, usable for ketones and alcohol, and good low temperature properties. Natural Rubber is not recommended for oil and solvent resistance and ozone attacks it.

**Common Names**
- Natural Rubber

**General Characteristics**
- Durometer Range (Shore A): 20 - 100
- Tensile Range (PSI): 500 - 3500
- Elongation (Max %): 700
- Compression Set: Excellent
- Resistance - Rebound: Excellent
- Abrasion Resistance: Excellent
- Tear Resistance: Excellent
- Solvent Resistance: Poor
- Oil Resistance: Poor
- Low Temp. Usage (°F): -20° to -60°
- High Temp. Usage (°F): to 175°
- Aging Weather - Sunlight: Poor
- Adhesion to Metals: Excellent

Silicone Rubber

Silicone Rubber has a great many variations and can be compounded to meet any number of applications. Silicone can be compounded to have tensile in the area of 1500 PSI and tear up to 200 lbs.; low compression set and good resilience; moderate solvent resistance, excellent heat resistance and good release characteristics; extreme low temperature properties; and can be highly resistant to oxidation and ozone attack. Generally attacked by most concentrated solvents, oils, concentrated acids and dilute sodium hydroxide.

**Common Names**
- Silicone

**General Characteristics**
- Durometer Range (Shore A): 30 - 90
- Tensile Range (PSI): 200 - 1500
- Elongation (Max %): 700
- Compression Set: Good
- Resistance - Rebound: Good
- Abrasion Resistance: Fair to Poor
- Tear Resistance: Poor
- Solvent Resistance: Poor
- Oil Resistance: Poor
- Low Temp. Usage (°F): -60° to -150°
- High Temp. Usage (°F): to 450°
- Aging Weather - Sunlight: Excellent
- Adhesion to Metals: Good
Common Polymers

- EPDM: used with high pH aqueous solutions
- Buna-N: good solvent oil and water resistance
- SBR: low cost, water resistant material for moderate chemical products
- Urethane: for castable type needs and high wearable needs

EPDM Polymer

Ethylene Propylene is a polymer with outstanding properties. It has exceptionally good weather aging and ozone resistance, excellent water and chemical resistance, excellent resistance to gas permeability, excellent resistance to aging due to exposure to steam, and heat resistance excellent up to 350º F. Ethylene Propylene is a polymer where oil and solvent resistance is poor, however it is fairly good in ketones and alcohols. Ethylene Propylene is not recommended for food applications or exposure to aromatic hydrocarbons.

General Characteristics

<table>
<thead>
<tr>
<th>Common Names</th>
<th>General Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene Propylene</td>
<td>Tear Resistance: Fair, Elongation: 600</td>
</tr>
<tr>
<td>Buna-N</td>
<td>Excellent, SBR</td>
</tr>
<tr>
<td>SBR</td>
<td>Oil Resistance: Poor</td>
</tr>
<tr>
<td>Urethane</td>
<td>Low Temp. Usage: -20º to -60º, High Temp. Usage: 350º</td>
</tr>
</tbody>
</table>

Buna-N Polymer

Buna-N is a general purpose oil resistant polymer which has a good solvent, oil, water and hydraulic fluid resistance, good compression set, abrasion resistance and tensile strength. Buna-N should not be used in highly polar solvents such as acetone and MEK, ozone, chlorinated hydrocarbons and nitro hydrocarbons.

General Characteristics

<table>
<thead>
<tr>
<th>Common Names</th>
<th>General Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buna-N, Nitrile, NBR</td>
<td>Tear Resistance: Good, Elongation: 600</td>
</tr>
<tr>
<td>Buna-N</td>
<td>Solvent Resistance: Good/Excel.</td>
</tr>
<tr>
<td>SBR</td>
<td>Oil Resistance: Poor</td>
</tr>
<tr>
<td>Urethane</td>
<td>Low Temp. Usage: 0º to -50º, High Temp. Usage: 225º</td>
</tr>
</tbody>
</table>

SBR Polymer

SBR is a low cost non-oil resistant material. It has a good water resistance and resilience up to 70 durometer, compression set becomes poorer with higher durometer, generally satisfactory for most moderate chemicals and wet or dry organic acids. SBR is not recommended for ozone, strong acids, oils, greases, fats and most hydrocarbons.

General Characteristics

<table>
<thead>
<tr>
<th>Common Names</th>
<th>General Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBR, GRS</td>
<td>Tear Resistance: Fair, Elongation: 600</td>
</tr>
<tr>
<td>Buna-N</td>
<td>Solvent Resistance: Poor</td>
</tr>
<tr>
<td>SBR</td>
<td>Oil Resistance: Poor</td>
</tr>
<tr>
<td>Urethane</td>
<td>Low Temp. Usage: 0º to -50º, High Temp. Usage: 225º</td>
</tr>
</tbody>
</table>

Urethane Polymer

The castable types have excellent abrasion resistance, good compression set at high hardness levels: low friction surface, tensile strengths up to 6000 PSI; good ozone, oil and solvent resistance. Poor heat and hot water resistance. Wear resistance is excellent and greatly superior to most other polymers. Urethane is not normally attacked by moderate chemicals and hydrocarbons. It is generally attacked by concentrated acids, ketones, chlorinated and nitro hydrocarbons.

General Characteristics

<table>
<thead>
<tr>
<th>Common Names</th>
<th>General Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urethane, Polyurethane</td>
<td>Tear Resistance: Excellent, Elongation: 750</td>
</tr>
<tr>
<td>Buna-N</td>
<td>Solvent Resistance: Poor</td>
</tr>
<tr>
<td>SBR</td>
<td>Oil Resistance: Good</td>
</tr>
<tr>
<td>Urethane</td>
<td>Low Temp. Usage: -10º to -30º, High Temp. Usage: 175º</td>
</tr>
</tbody>
</table>

www.allisonmedical.com  |  8160 Blakeland Dr., Unit C, Littleton, CO  80125
Phone: 303-795-1618     Toll Free: 800-866-1618     Fax: 303-795-9982