The demands by the medical and pharmaceutical sectors on elastomers and their compounds and vulcanizates are extremely high. Halogenated X_Butyl® is widely used in pharmaceutical rubber products, such as closures for infusion containers, injection vials, lyophilization and blood collection tubes.

Manufactured to stringent requirements, pharmaceutical closures often come into direct contact with pharmaceutical products, either dissolved or in other forms. Therefore, they must comply with existing standards and regulations relating to the contact of rubber articles with pharmaceuticals. Halogenated X_Butyl® is generally preferred, because they ensure adequate protection of sterile pharmaceutical products against external contamination during storage and use. Halogenated X_Butyl® grades are also found as O-rings and gaskets in a variety of aerosol containers, personal care and cosmetic spray pumps and inhalers. In addition, they are used in plungers for applications such as infusion pumps, pre-filled syringes, insulin injectors and dental anesthetics.

### PRODUCT PROPERTIES

<table>
<thead>
<tr>
<th>Grade</th>
<th>X_Butyl® BB 2030</th>
<th>X_Butyl® BB X2</th>
<th>X_Butyl® CB 1240</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mooney Viscosity (ML(1+ 8) @ 125 °C, MU)</td>
<td>32</td>
<td>46</td>
<td>38</td>
</tr>
<tr>
<td>Halogen (wt%)</td>
<td>1.8</td>
<td>1.8</td>
<td>1.25</td>
</tr>
<tr>
<td>Stabilizer (wt%)</td>
<td>1.3</td>
<td>1.3</td>
<td>n/a</td>
</tr>
</tbody>
</table>

### TYPICAL COMPOUND FORMULATION: S-CURE

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>phr</th>
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</thead>
<tbody>
<tr>
<td>X_Butyl® BB 2030</td>
<td>100</td>
</tr>
<tr>
<td>Calcined Clay</td>
<td>85</td>
</tr>
<tr>
<td>Stearic Acid</td>
<td>1.5</td>
</tr>
<tr>
<td>Process Aid</td>
<td>2</td>
</tr>
<tr>
<td>Phenolic Resin</td>
<td>3</td>
</tr>
<tr>
<td>Zinc Oxide</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mechanical Properties</th>
<th>Unit</th>
<th>Typical Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness</td>
<td>(ShA)</td>
<td>50</td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>(MPa)</td>
<td>5.8</td>
</tr>
<tr>
<td>Modulus 100%</td>
<td>(MPa)</td>
<td>1.5</td>
</tr>
<tr>
<td>Modulus 300%</td>
<td>(MPa)</td>
<td>2.0</td>
</tr>
<tr>
<td>Elongation at break</td>
<td>(%)</td>
<td>700</td>
</tr>
<tr>
<td>Compression Set (24 h/70 °C)</td>
<td>(%)</td>
<td>30</td>
</tr>
</tbody>
</table>

*These items are provided as general information only. They are approximate values and are not considered part of the product specifications. Please contact your regional representative for additional information.
WE ARE HAPPY TO SUPPORT YOUR BUSINESS

NORAM
Technical Service
Sharon Guo
E-mail: sharon.guo@arlanxeo.com
Phone: +1 519 953 1728

Sales
Jay Capelli
E-mail: jay.capelli@arlanxeo.com
Phone: +1 412 809 2237

APAC
Technical Service
Esther Han
E-mail: esther.han@arlanxeo.com
Phone: +65 6725 5709

Sales
JooSang Kim
E-mail: joosang.kim@arlanxeo.com
Phone: +65 6725 5872

EMEA
Technical Service
Wilfried Braubach
E-mail: wilfried.braubach@arlanxeo.com
Phone: +49 221 8885 1085

Sales
Marco Eira
E-mail: marco.eira@arlanxeo.com
Phone: +41 26 422 8354

LATAM
Technical Service
Marcus Moutinho
E-mail: marcus.moutinho@arlanxeo.com
Phone: +55 21 2677 1219

Sales
Sergio Botafogo
E-mail: sergio.botafogo@arlanxeo.com
Phone: +55 21 2677 1344

Please contact us for additional information or visit us at www.tsr.arlanxeo.com

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