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>
</tr>
</thead>
<tbody>
<tr>
<td>Mooney Viscosity (ML(1+ 8) @ 125 °C, MU)</td>
<td>32</td>
<td>46</td>
</tr>
<tr>
<td>Halogen (wt%)</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Stabilizer (wt%)</td>
<td>1.3</td>
<td>1.3</td>
</tr>
</tbody>
</table>

### TYPICAL COMPOUND FORMULATION: S-CURE

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>phr</th>
</tr>
</thead>
<tbody>
<tr>
<td>X_Butyl® BB 2030</td>
<td>100</td>
</tr>
<tr>
<td>Calcined Clay</td>
<td>85</td>
</tr>
<tr>
<td>Process Aide</td>
<td>5</td>
</tr>
<tr>
<td>Hexamethylene Diamine Carbamate</td>
<td>0.6</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>45</td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>(MPa)</td>
<td>4.8</td>
</tr>
<tr>
<td>Modulus 100%</td>
<td>(MPa)</td>
<td>2.3</td>
</tr>
<tr>
<td>Modulus 300%</td>
<td>(MPa)</td>
<td>4.7</td>
</tr>
<tr>
<td>Elongation at break</td>
<td>(%)</td>
<td>400</td>
</tr>
<tr>
<td>Compression Set (24 h/70 °C)</td>
<td>(%)</td>
<td>25</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.
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