BUTYL ZIMATE®

Rubber Accelerator and Antioxidant
Made in the U.S.A at Vanderbilt Chemicals, Murray, KY

Chemical Composition:
Zinc dibutyldithiocarbamate (CAS No. 136-23-2)

Use:
An accelerator for EPDM and natural and synthetic latexes. Functions as a non-discoloring antioxidant in non-curing applications and a stabilizer in IIR. Also used as an antioxidant in thermoplastics rubbers and hot melts.

Physical Properties (BUTYL ZIMATE):
- Physical State: Powder
- Color: White-Cream
- Density: 1.21 Mg/m³
- Fineness (<100 Mesh): 99.9% Minimum
- Zinc Content: 13.0-15.0%
- Melting Range: 104 to 112°C
- Solubility: Practically insoluble in water, and dilute caustic. Slightly soluble in toluene, carbon disulfide, gasoline.

Available Forms:
Powder, Dustless Powder, SG (unground crystalline powder) and 50% Assay Slurry.

Applications:
EPDM Rubber
Rubbers with low unsaturation such as EPDM require very active accelerators. BUTYL ZIMATE promotes fast cures with good aging and is the least blooming of the zinc dithiocarbamates. Up to 3 phr can be used in many compounds without bloom problems.

Ingredients (phr)
- Zinc Oxide: 5.0
- Sulfur: 2.0
- METHYL TUADS® (TMTD): 0.6
- BUTYL ZIMATE®: 2.0
- ALTAX® (MBTS): 1.0
- METHYL ZIMATE: --
- DTD: --

Fast-Curing & Non-Blooming  Heat & Comp. Set Resistant
- 5.0  0.5
- 3.0  --
- 3.0  3.0
- 2.0  --

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Adhesive

For non-curing applications, BUTYL ZIMATE may be used alone as an antioxidant from 1 to 4 phr. Combinations of antioxidant may be more effective than either component alone. BUTYL ZIMATE is used in combination with Songnox® 3114 to provide enhanced protection through synergistic action. However, careful evaluations are required to determine optimum systems and concentrations. Generally a 60:40 ratio of BUTYL ZIMATE and secondary antioxidant is a good starting level.

Latex

As an accelerator, used at level of 1 to 2 phr, BUTYL ZIMATE ® Accelerator provides fast flat cures in NR, SBR, nitrile and Neoprene latexes. For applications, where thin films will be made, dispersions or slurries should be prepared to assure a uniform film.

Preparation for addition to Latex:

<table>
<thead>
<tr>
<th>Part A</th>
<th>Dry</th>
<th>Wet</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUTYL ZIMATE® Accelerator</td>
<td>50.0</td>
<td>50.0</td>
</tr>
<tr>
<td>DARVAN® No.1 Spray Dried</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>10% Igepal CO-630</td>
<td>0.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Water</td>
<td>---</td>
<td>26.6</td>
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</table>

Part B for Slurries

<table>
<thead>
<tr>
<th>15% Sodium Caseinate</th>
<th>3.02</th>
<th>20.4</th>
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<tbody>
<tr>
<td></td>
<td>55.12</td>
<td>100.0</td>
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Part B for Dispersions

<table>
<thead>
<tr>
<th>VANGEL® B Magnesium Aluminum Silicate</th>
<th>0.5</th>
<th>0.5</th>
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<tbody>
<tr>
<td>Water</td>
<td>--</td>
<td>19.9</td>
</tr>
<tr>
<td></td>
<td>52.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Advantages:

- Provides fast cures with good heat aging
- Non-discoloring and non-staining
- Complies with FDA regulations:
  - 175.105 - Adhesive – No limitations
  - 175.300 - Resinous and Polymeric Coatings – Can End cements only
  - 177.1210 - Closures with Sealing Gaskets for Food Containers at levels not to exceed 0.8%
  - 177.2600 - As Accelerator, not to exceed 1.5% by weight of Rubber Product
  - 178.2010 - Antioxidant and/or Stabilizer for Polymers – Limitations for certain polymers not to exceed 0.2%

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