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BICAT® 8210

Technical Specifications

Bismuth	27.7 - 28.3%
Nonvolatiles @ 105°C	85% min
Color (Gardner)	8 max.
Specific Gravity @ 25°C	1.28 - 1.34
Viscosity (Brookfield) @25°C	30 Pse

Product Number

1426

Description:

Brown colored liquid with a slight hydrocarbon odor.

Application:

Polyurethanes

Packaging:

550 lb - 55 gallon steel closed head drum

Chemical Formula:

Manufactured under ISO 9001 registered quality management systems.

Description

Bismuth carboxylates accelerate the reaction between isocyanates and polyols (the urethane reaction) without promotion of any detrimental side-reactions (e.g. water-isocyanate reaction, hydrolysis of esters). As expected, the rate of the urethane catalysis is directly proportional to the concentration of bismuth in the system. We offer a range of bismuth carboxylate catalysts, with varying bismuth concentrations (from 16 wt% – 28 wt%) and varying ligands (2-ethylhexanoic acid, neodecanoic acid). Our bismuth carboxylate catalysts are environmentally benign options to industry standard lead, tin, mercury and tertiary amine catalysts. BiCAT® 8210 is our highest concentration bismuth carboxylate at 28 wt% bismuth. This material has been successfully used in one- and two-component systems for ambient or heat cure systems. Additionally, BiCAT® 8210 has been successfully used in HFO-based polyurethane spray foam systems.

Bismuth carboxylates are also interesting from a structural vantage point. With long-chain carboxylic acids they are often viscous liquids even at high bismuth concentration (e.g. bismuth 2-ethylhexanoate at 28 wt% bismuth is a liquid with a viscosity of ≤ 30 Poise at 25 °C). In 2009, we reported the molecular structure of our viscous bismuth carboxylates as part of a presentation on general metal carboxylate structure at the Spring 2009 Annual Meeting of the American Chemical Society. The structures of bismuth neodecanoate contain clusters, likely $\text{Bi}_2(\text{OOC10H19})_6$ and/or $\text{Bi}_4(\text{OOC10H19})_{12}$, that can reversibly polymerize when the free carboxylic acid concentration is reduced to a minimum (or, as the bismuth concentration is maximized). Bismuth 2-ethylhexanoate (Bi Oct, bismuth octoate) behaves similarly. Interestingly, the bismuth carboxylates show long-range structure (based on X-ray scattering data) that is reminiscent of liquid crystals.

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The management system governing the manufacture of this product is ISO 9001:2015 and RCMS®:2013 certified.