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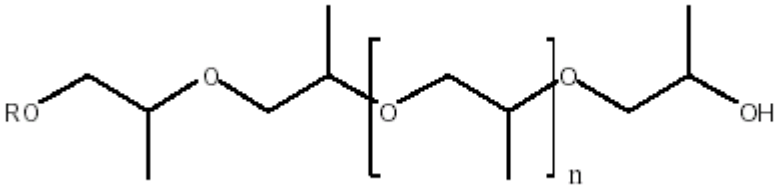
BREOX CAF 39

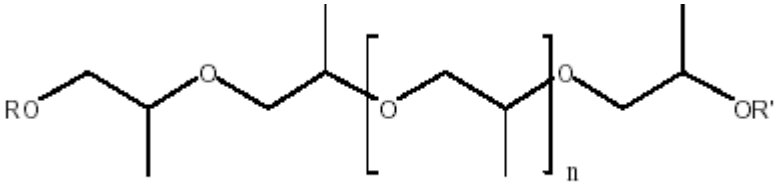
INTRODUCTION

BREOX CAF 39 is a newly developed Polyalkylene Glycol (PAG) Foam Control Concentrate,
designed to offer exceptional defoaming and antifoaming characteristics in aqueous systems over a wide temperature range above 40°C. **BREOX CAF 39** has also been specifically designed to demonstrate superior chemical stability under conditions of extreme acidity and alkalinity. Chemical stability of the polyalkylene glycol polymer chain is achieved through a capping process which replaces the terminating hydroxyl functionality with a terminating alkyl species which is significantly less chemically reactive than a hydroxyl group, and therefore provides greater stability to the polyether chain under acidic or alkaline conditions:

Example of a standard single end-capped PAG:



Example of an asymmetric double end-capped PAG:



Where R, R' = methyl, ethyl, butyl etc

This enhancement of the polyalkylene glycol's chemical stability allows application of PAG technology in aqueous foam control applications where particularly high or low pH conditions may be encountered, often applications where previously silicones may have been the only effective foam control agent available. Examples of typical application areas include

- Powder detergent foam control
- Chemical pulping processes
- Industrial detergents

Powder detergent applications include those where typically the foam control agent is dry-mixed with silica for dosing into the detergent system. Development trials of **BREOX CAF 39** indicate a 6 -7 times greater antifoam efficiency compared with silicones, which results in a significant reduction in the quantity of silica required to carry the antifoam, consequently problems associated with high levels of silica, such as markings on dark garments, are avoided. A typical dosage of **BREOX CAF 39** required for a powder detergent system is ~200ppm.

Industrial detergent applications include those where highly alkaline or acidic aqueous solutions are commonly employed, such as may be used in industrial bottle washing. Dosage of **BREOX CAF 39** may vary according to the particular system but typically 50– 300 ppm may be required.

PAG Foam Control Agents have been used for many years in the manufacture of paper but until the introduction of capping technology have not found application in pulping processes due to the demanding temperature and pH conditions under which the antifoams are employed. **BREOX CAF 39** demonstrates superior polymer stability under the high temperature (>80°C) and pH (14) conditions employed in the alkaline chemical pulping process (Kraft process). Capped polyalkylene glycols such as **BREOX CAF 39** therefore offer a cost-effective alternative to silicones as digester additives for Kraft softwood pulping. The latest improvements in Kraft pulping processes relate to an extended delignification stage where at a reduced reaction temperature of 140°C (compared to a standard 170°C) the lignin component is ideally removed in “native” form (ie. uncoloured). Initial screening tests indicate that an increase in pulp brightness may be achieved by the decreased reaction temperature, but that the surfactant requirements differ from those traditionally used as digester additives. It is anticipated that **BREOX CAF 39** can find application with conventional digestor additives to enable pulp brightness to be increased.

BREOX CAF 39 is a 100% active polyalkylene glycol product. Water solubility is demonstrated at temperatures below 39°C, and hence at temperatures below 39° C may be diluted (to form a stable homogeneous solution) for ease of dosing. **BREOX CAF 39** may also be blended with other components commonly used in foam control formulations if required. **BREOX CAF 39** retains excellent antifoaming and defoaming characteristics at temperatures above 39°C up to temperatures approaching the material’s flashpoint. Additionally the product shows maximum anti-foam / defoaming efficiency at very low levels (ppm), excellent water dispersability above the material’s cloudpoint and is both effective and stable under great extremes of pH.

TYPICAL PHYSICAL PROPERTIES

Appearance:	Clear / yellow liquid
Viscosity @ 40°C (cSt):	214
Cloud Point (1% aqueous,°C):	39
Flash point COC (°C):	230
Pourpoint (°C):	-20
Density @ 20ºC (kg/m^3):	1041
Capping Efficiency (%):	>95

Remarks

Handling & Safety: BREOX antifoams contain polyglycol components which are described under international standards to be either low order of acute toxicity or practically non-toxic. For all relevant health and safety data and handling information, reference is made to the Material Safety Data Sheet (MSDS) for this product, additional copies of which are available upon request.

Storage:

Revision-No. 1.1-03.2004 Effective March 8, 2004

The product can be stored for at least 1 year at ambient storage conditions and temperature without any deterioration.

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