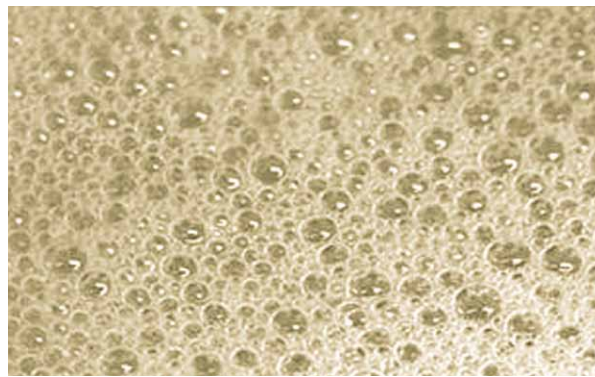# Celanese

MIBC

METHYL ISOBUTYL CARBINOL

THE PREFERRED FROTHER CHOICE

FOR MANY SULFIDE ORES AND COALS

Froth flotation is used in the mining industry to selectively separate valuable hydrophobic minerals from hydrophilic waste gangue. This technique is especially useful for separating a wide range of sulfides, carbonates, and oxides prior to further refinement.

MIBC is used as a frother in the flotation process. MIBC absorbs at the water-air interface, aids in the production of bubbles, and stabilizes the flotation froths. Two major types of frothers in commercial use today are short chain aliphatic alcohols and polyglycols. MIBC is the most commonly used alcohol frother due to its many advantages:

- Fast kinetics
- Forms dry but easy-to-break froths
- Preferred choice for many sulfide ores and coals
- Produces high-grade concentrates with excellent selectivity
- Especially suitable for fine particles (<10 μm)
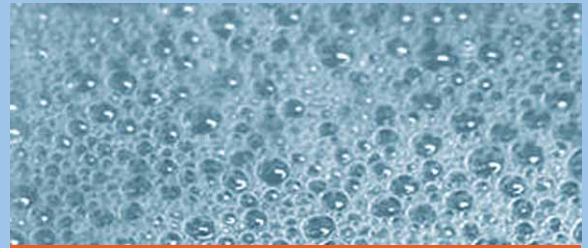
MIBC frother guiding rules

ATTRIBUTE	MIBC
Suitable Ores	Sulfide Ores and Coal (Cu, Cu-Mo, Cu-Au, polymetallic, Au, Ni)
Kinetics	Fast
Frothing power	Weak
Bubble size	Large
Bubble persistence	Low
Addition	Stage addition
Dosage	10-100 g/ton
pH	8-10 (recommended)
Coarse particle recovery	Low

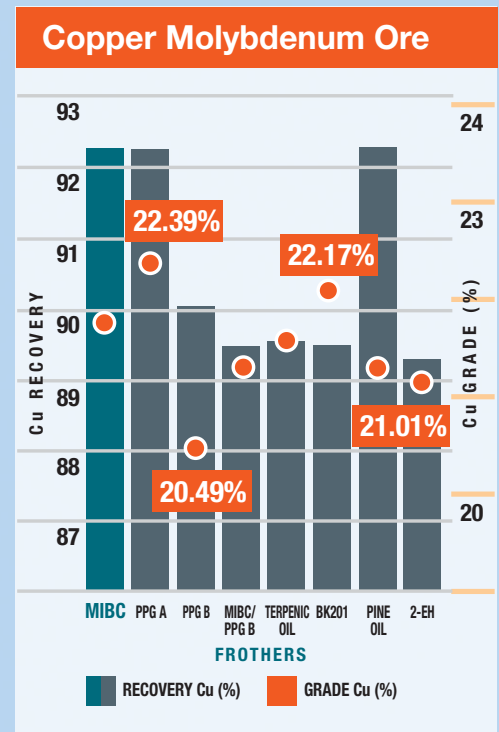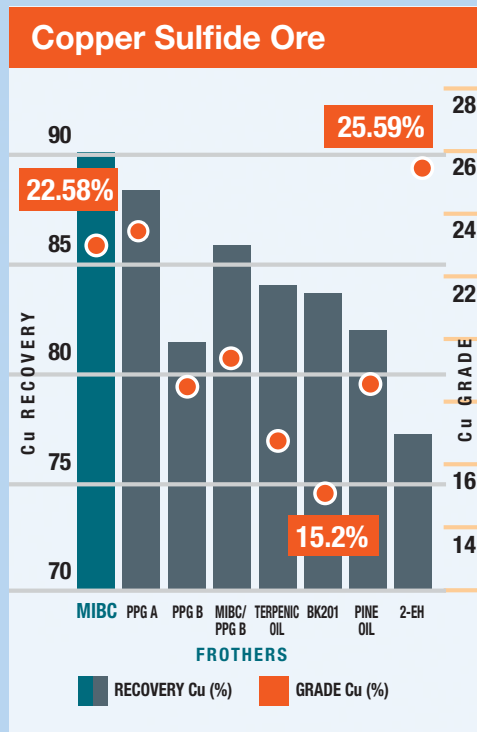MIBC offers fast kinetics and excellent selectivity, and it forms dry but easy-to-break froths
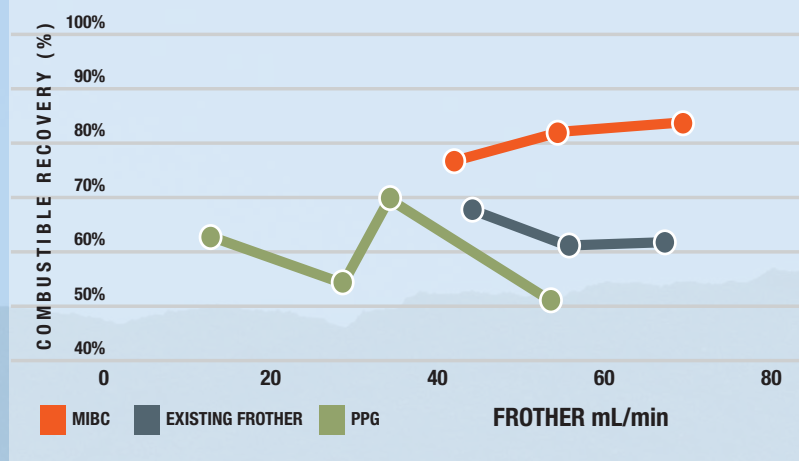
MIBC outperforms other frothers

● **Background:** In China, there are many frother agents used in mining flotation processes. Celanese, in collaboration with Central South University in China, conducted a research program comparing the performance of different frother agents.

● **Approach:** Two copper ore samples from Yunnan and Inner-Mongolia China were prepared and characterized by their physical properties. MIBC and other frother agents were tested measuring copper recovery rate and copper concentrate grade.

● **Results:** For both copper ores, MIBC outperforms other frothers in terms of copper recovery rate and copper concentrate grade.

Copper Sulfide Ore

Cu RECOVERY — Cu GRADE

25.59%
22.58%
15.2%

FROTHERS: MIBC PPG A PPG B MIBC/PPG B TERPENIC OIL BK201 PINE OIL 2-EH

■ RECOVERY Cu (%) ■ GRADE Cu (%)

Copper Molybdenum Ore

Cu RECOVERY — Cu GRADE

22.39%
22.17%
20.49%
21.01%

FROTHERS: MIBC PPG A PPG B MIBC/PPG B TERPENIC OIL BK201 PINE OIL 2-EH

■ RECOVERY Cu (%) ■ GRADE Cu (%)

MIBC improves productivity at a coal mine

COMBUSTIBLE RECOVERY (%)

FROTHER mL/min

■ MIBC ■ EXISTING FROTHER ■ PPG

MIBC improves productivity at a coal mine

● **Background:** A coal mine was using a commercial frother in its flotation process to recover combustible particles. It experienced low combustible recovery due to inconsistent feed compositions (Ash %).

● **Approach:** MIBC and a PPG were tested in the field and all other flotation parameters (such as feed, collector, air flow and etc.) were kept at the same level.

● **Results:** MIBC gave consistent recovery yields of 70-80% (orange), well above 60-70% of the existing frother (blue). Trial results are summarized in the graphic at left. This simple frother change translates to a 1.5% increase of mine yield.

MIBC is a preferred choice of frother because it can significantly contribute to the overall recovery rate and concentration grade in flotation processes.

Celanese Corporation is a global technology leader in the production of differentiated chemistry solutions and specialty materials used in most major industries and consumer applications. With sales almost equally divided between North America, Europe and Asia, the company uses the full breadth of its global chemistry, technology and business expertise to create value for customers and the corporation. Celanese partners with customers to solve their most critical needs while making a positive impact on its communities and the world. Based in Dallas, Texas, Celanese employs approximately 7,600 employees worldwide and had 2012 net sales of $6.4 billion. For more information about Celanese Corporation and its product offerings, visit **www.celanese.com** or our blog at **www.celaneseblog.com**.

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