Nasaco International Ltd

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PRODUCT DATA SHEET

NASFROTH™ 301

Nasfroth 301 flotation frother is a mixture of propylene glycol normal butyl ethers. It is the medium molecular weight product in the Nasfroth range of frothers, as such it is a broad band frother with good selectivity. The structural formula of Nasfroth 301 is:

$$C_4H_9 (C_3H_7O)_n OH$$ where n = 3 - 5 moles of propylene oxide

Nasfroth 301 is recommended in situations where a high degree of selectivity is required together with high recovery; being a stronger frother it is recommended for a broad range of particle flotation from medium to coarse particles. Although most commonly used in alkaline flotation, Nasfroth 301 is being used in both acid and alkaline flotation systems from pH 3.5 to pH 12.3

Nasfroth 301 is slightly soluble in water. The product is stable under normal storage conditions.

PHYSICAL PROPERTIES

Flash Point	140°C	(PMCC)
Appearance	Brown liquid	
Odour	Slight	
Specific Gravity	0.97	(25/25°C)
Water Solubility	<5g/100g	
Freezing Point	-50°C	
Boiling Point	>274°C	

Safety and Handling

Nasaco International Limited encourages its customers to use their products in ways which promote safe handling and good industrial practise. Before handling this product, ALWAYS carefully read and understand the instructions and hazard warnings on the container label. Further information may be obtained from the Material Safety Data Sheet for Nasfroth 301.

Normal safe handling will not result in health or industrial hygiene hazard. If Nasfroth 301 comes into contact with the eye it may cause moderate eye irritation and corneal injury. The following guidelines should be followed:

- Wear Chemical Workers goggles, clean body covering clothing and rubber gloves when handling Nasfroth 301
- Contaminated clothing should be thoroughly washed before re-use
- If eye contact occurs the eyes should be flushed with water for 15 minutes and medical advice sought.

Application

The three variables in the application of Nasfroth 301 are dosage, point of addition and frequency of addition.

Dosage rates of frother vary from operation to operation, they are largely dependent of ore type, grind size and water chemistry. Whilst dosages vary from 5 to 50 g/t, normal rates are from 15 - 30g/t.

Because of the hydrophobic nature of Nasfroth 301, the addition of the frother at the head of the flotation circuit with short conditioning is normally sufficient for most operations. In some cases, stage addition of frother can lead to improved economics by reducing overall frother dosage, often addition at the head of the roughers and in the scavengers is sufficient. Testwork will define the optimum.

The chemical nature of Nasfroth 301 means that is best suited to operations with a medium to coarse particle size in flotation. It is a selective frother and will tend to give improved concentrate grades. In plants where a wide range of particle sizes exists, consideration should be given to the blending of frothers, combining a 'fine' and 'coarse' particle frother can lead to better metallurgical performance.

Protective Clothing

Personnel handling chemicals should wear clean body covering clothing, gloves and chemical workers goggles.

Contamination incidental to normal handling is unlikely to occur, if however skin or eye contact does occur, the following first aid guidelines should be followed.

First Aid

Skin - If skin contact occurs, wash the effected area with plenty of water and a neutral soap for a minimum of five minutes.

Eye - If eye contact occurs, wash with plenty of clean water for a minimum of fifteen minutes, holding the eye open. Medical advice should be sought.

Ingestion - In the case of ingestion, induce vomiting and immediately seek medical attention.

Storage and Handling

Recommended materials of construction for storage and distribution systems of Nasfroth 301 include: Black iron, mild and stainless steel, brass and copper. Nasfroth 301 has a shelf life of at least three years, the low freezing point allows outside storage - out of direct sunlight.
Extensive evaluation has shown that Nasfroth frothers are compatible with various types of distribution systems.

Toxicity and Environmental Impact

Nasfroth frothers exist at low concentrations in flotation cells. A majority of the frother is present in the concentrate and is incinerated in smelting operations. The remainder is usually transferred to the tailings pond or recycled.

The LC_{50} for Daphnia is > 10,000 mg/l. The product is regarded as Practically non-toxic.

The recommended method of disposal is by burning under controlled conditions. Customers are advised to check with local, state or national legislation governing disposal of waste material.

Fire

In the case of fire, types A and B extinguishers should be used.

Packaging and Shipping

Nasfroth 301 is packed in 212 liter mild steel drums or bulk containers. Net and gross weights are:

Net Weight: 195kg
Gross Weight: 213kg

Nasfroth 301 is classified according to the Commission of the European Communities (Directive 88/379/EEC) as Irritant - **X_i**

Notice
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