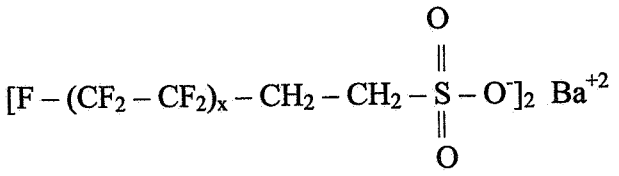
HASKELL LABORATORY

Common Name: Barium Telomer B Sulfonic Acid (Barium TBS)

Chemical Name: Poly(difluoromethylene), alpha-fluoro-omega-(2-sulfoethyl)-, barium salt

CAS Registry No.: None

Chemical Structure:



where x = 1-10 (average of 4)

Physical Properties:

Form:	Dusty White Powder
Molecular Weight:	Variable
Boiling Point:	-----
Melting Point:	-----
Specific Gravity:	-----
Vapor Pressure:	-----

Recommended AEL

1 mg/m^3 (8- and 12-hour TWA), skin

General Toxicity

Barium TBS has slight acute oral toxicity with an ALD in the rat of 2300 mg/kg (DuPont, 1988c). When administered to the skin of rabbits, Barium TBS did not produce irritation (DuPont, 1988b). Instillation of the powder into the rabbit eye also did not produce irritation (DuPont, 1988a).

The toxicity of Barium TBS was compared with that of Telomer B Sulfonic Acid (Zonyl® TBS). Zonyl® TBS has a 1 mg/m^3 AEL based primarily on results of a 2-week, subchronic inhalation study in rats. At 480 mg/m^3, Zonyl® TBS produced fatty liver changes and nephrosis. The liver changes had not completely disappeared 84 days after exposure. Blood fluoride was elevated in these rats and in rats exposed to a lower concentration of 58 mg/m^3. No clinical signs of toxicity were noted in the rats exposed at 58 mg/m^3 and no effects of any kind were seen in another group of rats exposed to 7.6 mg/m^3 of Zonyl® TBS (DuPont, 1985).

Rats were exposed for 4 hours to 1100 or 2400 mg/m^3 of an aerosol of a mixture of 15% Barium TBS and 85% Teflon® FEP. At 2400 mg/m^3, 3/6 rats died; no deaths occurred at 1100 mg/m^3 [for comparison purposes, the ALC of Teflon® FEP is 4900 mg/m^3 with deaths caused by suffocation (DuPont, 1968). Other rats were exposed to 1100 mg/m^3 of the Barium TBS/ Teflon® FEP mixture and their lungs examined at 2, 7, or 30 days post-exposure. No gross pathological changes were noted. Microscopic examination revealed accumulation of the test material within the alveoli and alveolar ducts. Also noted was subacute inflammation, consisting of small, focal interstitial and alveolar infiltrates of macrophages and neutrophils associated with alveoli and alveolar ducts. Although test material was still evident in the lungs at 30 days, these other pulmonary changes were transient, of minimal severity, and had resolved within 7 days of exposure (DuPont, 1989). Similar accumulation in the lungs was noted 56 days after exposure to Teflon® FEP (DuPont, 1968).

Carcinogenic Potential

No information was available.

Mutagenic Potential

No information was available.

Developmental/Reproductive Toxicity

No information was available.

Basis for AEL

An AEL was first established for Barium TBS in 1989. Based on the NOEL of 7.6 mg/m^3 and the absence of clinical signs of toxicity at 58 mg/m^3, an AEL of 1 mg/m^3 was recommended for Zonyl® TBS. Barium TBS appears to be less toxic than Zonyl® TBS based on results of the acute tests. Accordingly, the Committee recommended that the 1 mg/m^3 AEL also be used for Barium TBS; a skin notation was also recommended.

Barium TBS was updated in 1995 and 2000. No additional information was found.

References

DuPont Co., Haskell Laboratory Data:

1968. MR-1052-1, HL-211-68
1985. MR-4775-1, HL-182-85
1988a. MR-8617-1, HL-784-88
1988b. MR-8617-1, HL-801-88
1988c. MR-8617-1, HL-805-88
1989. MR-8686-1, HL-651-89

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April 13, 1989 and December 13, 1989

Updated by:

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October 2, 1995

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