1,4-DIOXANE

PRODUCT IDENTIFICATION

CAS NO.	123-91-1
EINECS NO.	204-661-8
FORMULA	$C_4H_8O_2$
MOL WT.	88.11
H.S. CODE	2932.90
TOXICITY	
SYNONYMS	p-Dioxane; 1,4-Dioxacyclohexane; Diethylene dioxide; 1,4-diethylene dioxide; diethylene ether; Dioxyethylene ether; Diox; Dioxane; Tetrahydro-p-dioxin; Tetrahydro-para-dioxin; Tetrahydro-1,4-dioxin; Diokan; 1,4-Diethyleneoxide; Diethylene Oxide; Ethylene Glycol Ethylene Ether; Glycol Ethylene Ether 8; 1,4-Dioxano (Spanish); 1,4-Dioxanne (French);
DERIVATION	
CLASSIFICATION	SOLVENT

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	clear liquid, ether-like odor
MELTING POINT	11 - 12 C
BOILING POINT	102 C
SPECIFIC GRAVITY	1.035 ± 0.001
SOLUBILITY IN WATER	miscible
pH	
VAPOR DENSITY	3.03
AUTOIGNITION	180 C
NFPA RATINGS	Health: 2; Flammability: 3; Reactivity: 1
REFRACTIVE INDEX	1.417
FLASH POINT	12 C
STABILITY	Stable under ordinary and under nitrogen conditions

APPLICATIONS

Cyclic ethers have ring structure where the oxygen has become part of the ring. The term of epoxide indicate three membered cyclic ether (also called oxirane) in which an oxygen atom is joined to each of two carbon atoms that are already bonded to each other; four-membered cyclic ether is called oxetane; five-membered cyclic ether, furan (or oxolane); six-membered cyclic ether, pyran (also called oxane) respectively. Their unhindered oxygen atom carries two unshared pairs of electrons - a structure which favors the formation of coordination complexes and the solvation of cations. Cyclic ethers are used as important solvents, as chemical intermediate and as monomer for ring-opening polymerization. 1,4-Dioxane is a cyclic ether which has four carbon atoms and two oxygen atoms, resulting in two ether functional groups in the same molecule. It is more polar and more hygroscopic than diethyl ether, the C4 linear ether. It has higher polarity higher boiling point than diethyl ether. 1,4-Dioxane is used in;

- Solvent for celluloses, resins, lacquers, synthetic rubbers, adhesives, sealants, fats, oils, dyes and protective coatings
- Stabilizer for chlorinated solvents, printing inks
- Wetting and dispersing agent in textile processing agrochemicals and pharmaceuticals
- Solvent-extraction processes
- Detergent preparations

There are two other dioxanes, 1,2-dioxane (CAS RN: 5703-46-8) and 1,3-dioxane (CAS RN: 505-22-6) indicating oxygen positions in the cycle. 1,3-Dioxane structure is the moiety of bronidox, an effective bactericide, antiseptic and preservative which can be used in cosmetics and household goods. Morpholine is the form which an oxygen atom is replaced by a nitrogen atom. Morpholine has both a secondary amine and an ether functional group in the same cyclic molecule.

SALES SPECIFICATION	
APPEARANCE	clear liquid
PURITY	99.5% min
MOISTURE	0.2% max
COLOR, HAZEN	15 max

TRANSPORTATION	
PACKING	200kgs in drum
HAZARD CLASS	3 (Packing Group: II)
UN NO.	1165

OTHER INFORMATION

Cancer suspect, investigated as a mutagen
Hazard Symbols: XN F, Risk Phrases:11/19/36/37/40, Safety Phrases:16/36/37