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Query: Records containing the term 50 70 4

1
NAME: D-SORBITOL

HSN: 801

RN: 50-70-4

HUMAN HEALTH EFFECTS:

HUMAN TOXICITY EXCERPTS:

SIDE EFFECTS OCCUR RARELY FOLLOWING RECTAL ADMIN OF GLYCERIN OR SORBITOL. ... RECTAL DISCOMFORT, IRRITATION, BURNING OR GRIPING, CRAMPING PAIN & TENESMUS. HYPEREMIA OF RECTAL MUCOSA WITH MINIMAL AMT OF HEMORRHAGE & MUCUS DISCHARGE... THESE SIDE EFFECTS OCCUR LESS FREQUENTLY FOLLOWING RECTAL ADMIN OF SORBITOL. [American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984., p. 56:12]**PEER REVIEWED**

DIARRHEA FREQUENTLY OCCURS WITH DOSAGES OF SORBITOL USED AS ADJUNCTS TO SODIUM POLYSTYRENE SULFONATE THERAPY. [American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984., p. 56:12]**PEER REVIEWED**

SUMMARY TOXICITY STATEMENT; ACUTE...= LOW. LOW= CAUSES READILY REVERSIBLE TISSUE CHANGES WHICH DISAPPEAR AFTER EXPOSURE STOPS; CAUSES SOME DISCOMFORT. [Sax, N.I. Dangerous Properties of Industrial Materials. 5th ed. New York: Van Nostrand Rheinhold, 1979., p. 992]**PEER REVIEWED**

DRUG WARNINGS:

IT IS NOT TO BE INJECTED. /SORBITOL SOLN USP/ [Osol, A. and J.E. Hoover, et al. (eds.). Remington's Pharmaceutical Sciences. 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975., p. 1235]**PEER REVIEWED**

PROBABLE ROUTES OF HUMAN EXPOSURE:

NIOSH (NOES Survey 1981-1983) has statistically estimated that 403,671 workers (268,345 of these are female) are potentially exposed to sorbitol in the US(1). Occupational exposure to sorbitol may occur through inhalation of dust particles and dermal contact with this compound at workplaces where sorbitol is produced or used(SRC). The general population

may be exposed to sorbitol through the ingestion of fruits and foods that contain this compound(SRC). [(1) NIOSH; National Occupational Exposure Survey (NOES) (1983)]**PEER REVIEWED**

EMERGENCY MEDICAL TREATMENT:

EMERGENCY MEDICAL TREATMENT:

EMT COPYRIGHT DISCLAIMER:

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LIFE SUPPORT:

- o This overview assumes that basic life support measures have been instituted.

CLINICAL EFFECTS:

0.2.1 SUMMARY OF EXPOSURE

A) WITH THERAPEUTIC USE

- 1) Abdominal cramping and diarrhea are the most common effects from use of sorbitol. Emesis may also occur, but less commonly. Fluid and electrolyte imbalance may result from excessive catharsis.
- 2) Other adverse effects are secondary to fluid and electrolyte imbalance resulting from excessive catharsis (dehydration, electrolyte abnormalities, hypotension, elevated serum osmolality) or possibly absorption.
- 3) Death has occurred in patients with a rare autosomal recessive genetic intolerance to fructose, following the parenteral administration of sorbitol.
- 4) Vital signs should not be affected following the therapeutic or inadvertent excessive use of sorbitol. Only in extreme cases where excessive diarrhea has produced fluid and electrolyte imbalance can

aberrations in vital signs be anticipated.

B) WITH POISONING/EXPOSURE

- 1) Abdominal cramping and diarrhea are the most common effects from overuse or use of sorbitol. Emesis may also occur, but less commonly. Fluid and electrolyte imbalance may result from excessive catharsis.
- 2) Other adverse effects are secondary to fluid and electrolyte imbalance resulting from excessive catharsis (dehydration, electrolyte abnormalities, hypotension, elevated serum osmolality) or possibly absorption.
- 3) SEVERE HYPERNATREMIC DEHYDRATION has been described in a 3-month-old receiving 220 mL of a 70% w/w sorbitol/charcoal combination (89.7% w/v). The use of multiple dose cathartics including sorbitol is not recommended.
- 4) Vital signs should not be affected following inadvertent excessive use of sorbitol. Only in extreme cases where excessive diarrhea has produced fluid and electrolyte imbalance can aberrations in vital signs be anticipated.

0.2.5 CARDIOVASCULAR

A) WITH THERAPEUTIC USE

- 1) Cardiac dysrhythmias and hypotension may occur in conjunction with electrolyte imbalance.

0.2.8 GASTROINTESTINAL

A) WITH THERAPEUTIC USE

- 1) Emesis occurs occasionally following ingestion of sorbitol/activated charcoal mixtures.
- 2) Catharsis may persist for 8 to 12 hours or longer.

B) WITH POISONING/EXPOSURE

- 1) Dose-related osmotic catharsis, abdominal cramping, and diarrhea may occur within 24 minutes of ingestion.

0.2.12 FLUID-ELECTROLYTE

A) WITH THERAPEUTIC USE

- 1) Excessive catharsis may result in dehydration and electrolyte imbalance. Elevations of serum glucose and serum osmolality are theoretically possible after administration of sorbitol.

0.2.20 REPRODUCTIVE

- A) No teratogenic effects have been observed in either rabbits or rats, although duration of gestation was increase and litter sized decreased in rats.

LABORATORY:

- A) The diagnosis of sorbitol induced toxicity is clinical and historical. Qualitative confirmation in feces can be made but is not readily available. Breath hydrogen analysis resulting in expired breath hydrogen of greater than 10 ppm may help substantiate, but not confirm

diagnosis.

- B) Monitor fluid, electrolyte and serum osmolarity as indicated by clinical chemistry to confirm the adverse effects associated with sorbitol.

TREATMENT OVERVIEW:

0.4.2 ORAL/PARENTERAL EXPOSURE

- A) Catharsis may occur before the onset of ipecac-induced emesis, making its use a questionable practice after accidental ingestion of sorbitol.
- B) **ACTIVATED CHARCOAL:** Activated charcoal does not inhibit the cathartic effect of sorbitol and is not recommended after accidental ingestion of sorbitol. Activated charcoal will not render sorbitol ineffective since it does not compromise its gastrointestinal osmotic effects.
- C) Oral rehydration and electrolyte replacement is usually sufficient. In severe intoxication aggressive parenteral fluid/electrolyte replacement may be necessary.
- D) Serum electrolytes and osmolality should be assessed frequently.
- E) Severe cases may mandate cardiovascular monitoring.

RANGE OF TOXICITY:

- A) The threshold of laxative effect appears to be around 0.5 gram/kg in children. Abdominal cramping may occur with as little as 0.3 g/kg.
- B) Ingestions of as little as 10 g may cause flatulence and bloating; 20 g can cause abdominal cramping, and at least 50 grams appears to be necessary to produce purgative effects in most adults.
- C) In a small study, 3 adults were able to tolerate doses of up to 110 grams/day.

ANIMAL TOXICITY STUDIES:

NON-HUMAN TOXICITY EXCERPTS:

RATS FED A DIET ENRICHED IN SORBITOL PRESENTED A READILY DETECTABLE DECREASE OF LIVER HEXOKINASE. AT THE SAME TIME THE GLYCOGEN CONTENT OF LIVER INCREASED. [ZANOBINI A ET AL; PHARMACOL RES COMMUN 11 (4): 357 (1979)]**PEER REVIEWED**

No abnormalities of the adrenal medulla were seen grossly in any generation or microscopically in the high-dose and control F3a rats. It is concluded that sorbitol administered in the diet to three successive generations of rats at levels up to 10% had no adverse effect on growth or reproductive performance in either sex. [Mackenzie KM et al; Food Chem Toxicol 24 (3): 191-200 (1986)]**PEER REVIEWED**

NON-HUMAN TOXICITY VALUES:

LD50 Rat sc 29,600 mg/kg [Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996., p. 3006]**PEER REVIEWED**

LD50 Rat iv 7100 mg/kg [Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996., p. 3006]**PEER REVIEWED**

LD50 Mouse oral 17,800 mg/kg [Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996., p. 3006]**PEER REVIEWED**

LD50 Mouse iv 9480 mg/kg [Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996., p. 3007]**PEER REVIEWED**

METABOLISM/PHARMACOKINETICS:

METABOLISM/METABOLITES:

70% OF ORALLY INGESTED SORBITOL IS CONVERTED TO CARBON DIOXIDE WITHOUT APPEARING AS GLUCOSE IN THE BLOOD... [The Merck Index. 9th ed. Rahway, New Jersey: Merck & Co., Inc., 1976., p. 1127]**PEER REVIEWED**

ABSORPTION, DISTRIBUTION & EXCRETION:

RECTALLY ADMIN...SORBITOL...POORLY ABSORBED. [American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984., p. 56:12]**PEER REVIEWED**

... Has the shortest gastrointestinal transit time /compared to other osmotically active drugs/. [Gossel, T.A., J.D. Bricker. Principles of Clinical Toxicology. 3rd ed. New York, NY: Raven Press, Ltd., 1994., p. 56]**PEER REVIEWED**

MECHANISM OF ACTION:

...SORBITOL EXERT HYGROSCOPIC & /OR LOCAL IRRITANT ACTION, DRAWING WATER FROM TISSUES INTO FECES & REFLEXLY STIMULATING EVACUATION. [American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984., p. 56:12]**PEER REVIEWED**

PHARMACOLOGY:

THERAPEUTIC USES:

Cathartics; Diuretics, Osmotic; Indicators and Reagents; Pharmaceutic Aids

[National Library of Medicine's Medical Subject Headings online file (MeSH, 1999)]**QC REVIEWED**

OSMOTIC DIURETIC GIVEN IV IN 50% (WT/VOL) SOLN TO DIMINISH EDEMA, TO LOWER CEREBROSPINAL PRESSURE, OR TO REDUCE INTRAOCULAR PRESSURE IN GLAUCOMA. ... DOSE--50 TO 100 ML OF 50% SOLN; AS LAXATIVE, ORAL, 30 TO 50 G. [Osol, A. and J.E. Hoover, et al. (eds.). Remington's Pharmaceutical Sciences. 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975., p. 1235]**PEER REVIEWED**

SORBITOL IS USED ORALLY OR RECTALLY TO FACILITATE PASSAGE OF SODIUM POLYSTYRENE SULFONATE THROUGH INTESTINAL TRACT, TO PREVENT CONSTIPATION CAUSED BY RESIN &, BY ACTING AS HYPEROSMOTIC LAXATIVE, TO AID IN POTASSIUM REMOVAL; SORBITOL ALSO IMPROVES PALATABILITY OF RESIN. [American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984., p. 56:12]**PEER REVIEWED**

...25-30% SOLN OF SORBITOL ARE USUALLY ADMIN RECTALLY. HYPEROSMOTIC LAXATIVES SHOULD BE ADMIN ONLY @ INFREQUENT INTERVALS IN SINGLE DOSES. ... USUAL RECTAL DOSE...120 ML FOR ADULTS OR 30-60 ML FOR CHILDREN 2 YR OF AGE OR YOUNGER, ADMIN AS ENEMAS. [American Hospital Formulary Service. Volumes I and II. Washington, DC: American Society of Hospital Pharmacists, to 1984., p. 56:12]**PEER REVIEWED**

MEDICATION (VET): IN RUMINANT KETOSIS, OSMOTIC DIURETIC, LAXATIVE [The Merck Index. 9th ed. Rahway, New Jersey: Merck & Co., Inc., 1976., p. 1127]**PEER REVIEWED**

The administration of a cathartic alone has no role in the management of the poisoned patient and is not recommended as a method of gut decontamination. Experimental data are conflicting regarding the use of cathartics in combination with activated charcoal. No clinical studies have been published to investigate the ability of a cathartic, with or without activated charcoal, to reduce the bioavailability of drugs or to improve the outcome of poisoned patients. Based on available data, the routine use of a cathartic in combination with activated charcoal is not endorsed. If a cathartic is used, it should be limited to a single dose in order to minimize adverse effects. [Barceloux D et al; J Toxicol Clin Toxicol 7: 743-52 (1997)]**PEER REVIEWED**

DRUG WARNINGS:

IT IS NOT TO BE INJECTED. /SORBITOL SOLN USP/ [Osol, A. and J.E. Hoover, et al. (eds.). Remington's Pharmaceutical Sciences. 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975., p. 1235]**PEER REVIEWED**

ENVIRONMENTAL FATE & EXPOSURE:

ENVIRONMENTAL FATE/EXPOSURE SUMMARY:

Sorbitol's production and use as a non-nutritive sweetener and as a starting material in the synthesis of sorbose and vitamin C may result in its release to the environment through various waste streams. Sorbitol is found naturally in apples, plums, pears, cherries, dates, peaches, apricots and other fruits. If released to air, an estimated vapor pressure of 4.9×10^{-9} mm Hg at 25 deg C indicates sorbitol will exist in the particulate phase. Particulate-phase sorbitol will be removed from the atmosphere by wet and dry deposition. If released to soil, sorbitol is expected to have very high mobility based upon an estimated Koc of 2. Volatilization from moist soil surfaces is not expected to be an important fate process based upon an estimated Henry's Law constant of 7.3×10^{-13} atm-cu m/mole. Sorbitol is a simple sugar alcohol and should be readily biodegraded in the environment. If released into water, sorbitol is not expected to adsorb to suspended solids and sediment in the water column based upon the estimated Koc. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's estimated Henry's Law constant. An estimated BCF of 1 suggests bioconcentration in aquatic organisms is low. Occupational exposure to sorbitol may occur through inhalation of dust particles and dermal contact with this compound at workplaces where sorbitol is produced or used. The general population may be exposed to sorbitol through the ingestion of fruits and foods that contain this compound. (SRC) **PEER REVIEWED**

PROBABLE ROUTES OF HUMAN EXPOSURE:

NIOSH (NOES Survey 1981-1983) has statistically estimated that 403,671 workers (268,345 of these are female) are potentially exposed to sorbitol in the US(1). Occupational exposure to sorbitol may occur through inhalation of dust particles and dermal contact with this compound at workplaces where sorbitol is produced or used(SRC). The general population may be exposed to sorbitol through the ingestion of fruits and foods that contain this compound(SRC). [(1) NIOSH; National Occupational Exposure Survey (NOES) (1983)]**PEER REVIEWED**

NATURAL POLLUTION SOURCES:

Sorbitol is found naturally in apples, plums, pears, cherries, dates, peaches, apricots and other fruits(1). [(1) Lawson ME; Kirk-Othmer's Encycl Chem Tech 4th ed. Kroschwitz JI ed. NY,NY: John Wiley & Sons 23: 96 (1997)]**PEER REVIEWED**

ARTIFICIAL POLLUTION SOURCES:

Sorbitol's production and use as a non- nutritive sweetener and as a starting material in the synthesis of sorbose and vitamin C(1) may result in its release to the environment through various waste streams(SRC). [(1) Budvari S; Merck Index, 12th ed, Whitehouse Station, NJ Merck & Co. p 1490 (1996)]**PEER REVIEWED**

ENVIRONMENTAL FATE:

TERRESTRIAL FATE: Based on a classification scheme(1), an estimated Koc

value of 2(SRC), determined from a log Kow of -2.2(2) and a regression-derived equation(3), indicates that sorbitol is expected to have very high mobility in soil(SRC). Volatilization of sorbitol from moist soil surfaces is not expected to be an important fate process(SRC) given an estimated Henry's Law constant of 7.3×10^{-13} atm-cu m/mole(SRC), using a fragment constant estimation method(4). Sorbitol is not expected to volatilize from dry soil surfaces(SRC) based upon an estimated vapor pressure of 4.9×10^{-9} mm Hg(SRC), determined from a fragment constant method(5). Sorbitol is a simple sugar alcohol and should be readily biodegraded in the environment(SRC). [(1) Swann RL et al; Res Rev 85: 23 (1983) (2) Sangster J; LOGKOW Databank. Sangster Res. Lab., Montreal Quebec, Canada (1994) (3) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington,DC: Amer Chem Soc pp. 4-9 (1990) (4) Meylan WM, Howard PH; Environ Toxicol Chem 10: 1283-93 (1991) (5) Lyman WJ; p. 31 in Environmental Exposure From Chemicals Vol I, Neely WB, Blau GE (eds), Boca Raton,FL: CRC Press (1985)]**PEER REVIEWED**

AQUATIC FATE: Based on a classification scheme(1), an estimated Koc value of 2(SRC), determined from a log Kow of -2.2(2) and a regression-derived equation(3), indicates that sorbitol is not expected to adsorb to suspended solids and sediment in water(SRC). Volatilization from water surfaces is not expected(3) based upon an estimated Henry's Law constant of 7.3×10^{-13} atm-cu m/mole(SRC), developed using a fragment constant estimation method(4). According to a classification scheme(5), an estimated BCF of 1(SRC), determined from its log Kow(2) and a regression-derived equations(3), suggests the potential for bioconcentration in aquatic organisms is low(SRC). Sorbitol is a simple sugar alcohol and should be readily biodegraded in the environment(SRC). [(1) Swann RL et al; Res Rev 85: 23 (1983) (2) Sangster J; LOGKOW Databank. Sangster Res. Lab., Montreal Quebec, Canada (1994) (3) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington,DC: Amer Chem Soc pp. 4-9, 5-4, 5-10, 15-1 to 15-29 (1990) (4) Meylan WM, Howard PH; Environ Toxicol Chem 10: 1283-93 (1991) (5) Franke C et al; Chemosphere 29: 1501-14 (1994)]**PEER REVIEWED**

ATMOSPHERIC FATE: According to a model of gas/particle partitioning of semivolatile organic compounds in the atmosphere(1), sorbitol, which has an estimated vapor pressure of 4.3×10^{-9} mm Hg at 25 deg C(2), is expected to exist in the particulate phase in the ambient atmosphere. Particulate-phase sorbitol may be removed from the air by wet and dry deposition(SRC). [(1) Bidleman TF; Environ Sci Technol 22: 361-367 (1988) (2) Lyman WJ; p. 31 in Environmental Exposure From Chemicals Vol I, Neely WB, Blau GE (eds), Boca Raton,FL: CRC Press (1985)]**PEER REVIEWED**

ENVIRONMENTAL BIODEGRADATION:

Sorbitol is a simple sugar alcohol and should be readily biodegraded in the environment. (SRC) **PEER REVIEWED**

ENVIRONMENTAL ABIOTIC DEGRADATION:

Sorbitol is not expected to undergo hydrolysis in the environment due to the lack of hydrolyzable functional groups(1) nor to directly photolyze due to the lack of absorption in the environmental UV spectrum. [(1) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington,DC: Amer Chem Soc pp. 7-4, 7-5 (1990)]**PEER REVIEWED**

ENVIRONMENTAL BIOCONCENTRATION:

An estimated BCF of 1 was calculated for sorbitol(SRC), using a log Kow of -2.2(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC). [(1) Sangster J; LOGKOW Databank. Sangster Res. Lab., Montreal Quebec, Canada (1994) (2) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington,DC: Amer Chem Soc pp. 5-4, 5-10 (1990) (3) Franke C et al; Chemosphere 29: 1501-14 (1994)]**PEER REVIEWED**

SOIL ADSORPTION/MOBILITY:

The Koc of sorbitol is estimated as approximately 2(SRC), using a log Kow of -2.2(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that sorbitol is expected to have very high mobility in soil(SRC). [(1) Sangster J; LOGKOW Databank. Sangster Res. Lab., Montreal Quebec, Canada (1994) (2) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington,DC: Amer Chem Soc pp. 4-9 (1990) (3) Swann RL et al; Res Rev 85: 23 (1983)]**PEER REVIEWED**

VOLATILIZATION FROM WATER/SOIL:

The Henry's Law constant for sorbitol is estimated as 7.3×10^{-13} atm-cu m/mole(SRC) using a fragment constant estimation method(1). This Henry's Law constant indicates that sorbitol is expected to be essentially nonvolatile from water surfaces(2). Sorbitol's Henry's Law constant(1) indicates that volatilization from moist soil surfaces is not expected(SRC). Sorbitol is not expected to volatilize from dry soil surfaces(SRC) based upon an estimated vapor pressure of 4.9×10^{-9} mm Hg(SRC), determined from a fragment constant method(3). [(1) Meylan WM, Howard PH; Environ Toxicol Chem 10: 1283-93 (1991) (2) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington DC: Amer Chem Soc pp. 15-1 to 15-29 (1990) (3) Lyman WJ; p. 31 in Environmental Exposure From Chemicals Vol I, Neely WB, Blau GE (eds), Boca Raton,FL: CRC Press (1985)]**PEER REVIEWED**

PLANT CONCENTRATIONS:

Sorbitol is found naturally in apples, plums, pears, cherries, dates, peaches, apricots and other fruits(1). [(1) Lawson ME; Kirk-Othmer's Encycl Chem Tech 4th ed. Kroschwitz JI ed. NY,NY: John Wiley & Sons 23: 96 (1997)]**PEER REVIEWED**

ENVIRONMENTAL STANDARDS & REGULATIONS:

FIFRA REQUIREMENTS:

Residues of sorbitol are exempted from the requirement of a tolerance when used as an antidusting agent in accordance with good agricultural practices as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. [40 CFR 180.1001(c) (7/1/97)]**PEER REVIEWED**

Sorbitol is exempted from the requirement of a tolerance when used as a antidusting agent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals. [40 CFR 180.1001(e) (7/1/97)]**PEER REVIEWED**

FDA REQUIREMENTS:

Substance added directly to human food affirmed as generally recognized as safe (GRAS). [21 CFR 184.1835 (4/1/97)]**PEER REVIEWED**

Sorbitol used as a nutrient and/or dietary supplement in animal drugs, feeds, and related products is generally recognized as safe when used in accordance with good manufacturing or feeding practice. [21 CFR 582.5835 (4/1/97)]**PEER REVIEWED**

Substances migrating to food from paper and paperboard products used in food packaging that are generally recognized as safe for their intended use, within section 409 of the Act. Sorbitol is included on this list. [21 CFR 182.90 (4/1/97)]**PEER REVIEWED**

ALLOWABLE TOLERANCES:

Residues of sorbitol are exempted from the requirement of a tolerance when used as an antidusting agent in accordance with good agricultural practices as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. [40 CFR 180.1001(c) (7/1/97)]**PEER REVIEWED**

Sorbitol is exempted from the requirement of a tolerance when used as a antidusting agent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals. [40 CFR 180.1001(e) (7/1/97)]**PEER REVIEWED**

CHEMICAL/PHYSICAL PROPERTIES:

MOLECULAR FORMULA:

C6-H14-O6 **PEER REVIEWED**

MOLECULAR WEIGHT:

182.17 [Budavari, S. (ed.). The Merck Index - An Encyclopedia of

Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996., p. 1490]**PEER REVIEWED**

COLOR/Form:

WHITE CRYSTALLINE POWDER [Sax, N.I. Dangerous Properties of Industrial Materials. 5th ed. New York: Van Nostrand Reinhold, 1979., p. 992]**PEER REVIEWED**

WHITE POWDER, GRANULES, OR FLAKES [Osol, A. and J.E. Hoover, et al. (eds.). Remington's Pharmaceutical Sciences. 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975., p. 1235]**PEER REVIEWED**

ODOR:

Odorless [Lewis, R.J., Sr (Ed.). Hawley's Condensed Chemical Dictionary. 12th ed. New York, NY: Van Nostrand Rheinhold Co., 1993, p. 1077]**PEER REVIEWED**

TASTE:

Sweet taste, approx 60% as sweet as sugar (wt/wt) [Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996., p. 1490]**PEER REVIEWED**

BOILING POINT:

295 DEG C @ 3.5 MM HG [Weast, R.C. (ed.). Handbook of Chemistry and Physics. 60th ed. Boca Raton, Florida: CRC Press Inc., 1979., p. C-497]**PEER REVIEWED**

MELTING POINT:

110-112 deg C (anhyd) [Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996., p. 1490]**PEER REVIEWED**

DENSITY/SPECIFIC GRAVITY:

1.489 @ 20 deg C/4 deg C [Lide, D.R. (ed.). CRC Handbook of Chemistry and Physics. 76th ed. Boca Raton, FL: CRC Press Inc., 1995-1996., p. 3-172]**PEER REVIEWED**

DISSOCIATION CONSTANTS:

Ka: 2.5X10⁻¹⁴ @ 17.5 deg C [Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996., p. 1490]**PEER REVIEWED**

pKa = 13.57 [Benson FR; Alcohols, Polyhydric; In: Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed. Volume 1: 754-78. New York, NY: John Wiley and Sons (1978)]**PEER REVIEWED**

HEAT OF COMBUSTION:

-3025.5 kJ.mol [Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed.

Volumes 1: New York, NY. John Wiley and Sons, 1991-Present., p. V23
95]**PEER REVIEWED**

OCTANOL/WATER PARTITION COEFFICIENT:

log Kow = -2.20 [Sangster J; LOGKOW Databank. Sangster Res Lab Montreal
Quebec, Canada (1994)]**PEER REVIEWED**

PH:

about 7.0 [Budavari, S. (ed.). The Merck Index - An Encyclopedia of
Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co.,
Inc., 1996., p. 1490]**PEER REVIEWED**

SOLUBILITIES:

Freely sol in water (up to 83%); sol in methanol, isopropanol, butanol,
cyclohexanol, phenol, acetone, acetic acid, dimethylformamide, pyridine,
acetamide soln; practically insol in most other org solvents; quite sol in
hot alc, sparingly sol in cold alc [Budavari, S. (ed.). The Merck Index -
An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station,
NJ: Merck and Co., Inc., 1996., p. 1490]**PEER REVIEWED**

In water, 2.2×10^{-6} mg/l @ 20 deg C [Yalkowsky SH, Dannenfelser RM; The
AQUASOL dATABASE of Aqueous Solubility. Fifth ed, Tucson, AZ: Univ Az,
College of Pharmacy (1992)]**PEER REVIEWED**

SPECTRAL PROPERTIES:

Index of refraction: 1.3330 @ 20 deg C; Max absorption (water): less than
220 nm; Sadtler ref number: 991 (IR, Prism) [Lide, D.R. (ed.). CRC
Handbook of Chemistry and Physics. 76th ed. Boca Raton, FL: CRC Press
Inc., 1995-1996., p. 3-172]**PEER REVIEWED**

Specific optical rotation: -2.1 deg @ 20 deg C/D (water) [Budavari, S.
(ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and
Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996., p.
1490]**PEER REVIEWED**

IR: 200 (Sadtler Research Laboratories IR Grating Collection) [Weast, R.C.
and M.J. Astle. CRC Handbook of Data on Organic Compounds. Volumes I and
II. Boca Raton, FL: CRC Press Inc. 1985., p. V2 293]**PEER REVIEWED**

NMR: 9664 (Sadtler Research Laboratories Spectral Collection) [Weast, R.C.
and M.J. Astle. CRC Handbook of Data on Organic Compounds. Volumes I and
II. Boca Raton, FL: CRC Press Inc. 1985., p. V2 293]**PEER REVIEWED**

OTHER CHEMICAL/PHYSICAL PROPERTIES:

Hydrated crystals melt somewhat below 100 deg C; in healthy human organism
1 g = 3.994 cal; RF value: 0.124 (Water-butanol) [Budavari, S. (ed.). The
Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals.
Whitehouse Station, NJ: Merck and Co., Inc., 1996., p. 1490]**PEER
REVIEWED**

Not attacked in the cold when mixed with dilute acids, alkalies or mild oxidizing substances [Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996., p. 1490]**PEER REVIEWED**

Commercial 70% aq soln: Density: 1.2879 @ 20 deg C/20 deg C; Index of refraction: 1.45831 @ 25 deg C/D; Specific optical rotation: -2.10 deg @ 20 deg C/D; BP: 105 deg C @ 760 mm Hg; pH: 6-7; Viscosity @ 25 deg C: 110 centipoises (cP) [Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996., p. 1490]**PEER REVIEWED**

OPTICAL CRYSTALLOGRAPHIC PROPERTIES: ENLONGATION +; EXTINCTION PARALLEL [Sunshine, I. (ed.). CRC Handbook of Analytical Toxicology. Cleveland: The Chemical Rubber Co., 1969., p. 324]**PEER REVIEWED**

HYGROSCOPICITY: MEDIUM-LOW; SOLVENCY (FOR OILS): POOR; HIGH TEMP RESISTANCE: STABLE [Furia, T.E. (ed.). CRC Handbook of Food Additives. 2nd ed. Cleveland: The Chemical Rubber Co., 1972., p. 434]**PEER REVIEWED**

High % sorbitol soln are much more viscous than corresponding glycerol soln [Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996., p. 1490]**PEER REVIEWED**

CHEMICAL SAFETY & HANDLING:

HAZARDOUS DECOMPOSITION:

When heated to decomposition it emits acrid smoke and irritating fumes. [Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996., p. 3007]**PEER REVIEWED**

DISPOSAL METHODS:

SRP: At the time of review, criteria for land treatment or burial (sanitary landfill) disposal practices are subject to significant revision. Prior to implementing land disposal of waste residue (including waste sludge), consult with environmental regulatory agencies for guidance on acceptable disposal practices. **PEER REVIEWED**

OCCUPATIONAL EXPOSURE STANDARDS:

MANUFACTURING/USE INFORMATION:

MAJOR USES:

In mfr of sorbose, ascorbic acid, propylene glycol, synthetic plasticizers & resins; as humectant (moisture conditioner) on printing rolls; in leather; in writing inks; in candy mfr; in antifreeze mixt with glycerol or glycols incr absorption of pharmaceutical prepn; pharmaceutic aid (sweetening agent; tablet excipient); Vet: in ruminant ketosis, osmotic diuretic, laxative; sugar substitute for diabetics [Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996., p. 1490]**PEER REVIEWED**

BULKING AGENT; REHYDRATION; BODYING AGENT; CRYSTALLIZATION MODIFIER; AS FLAVOR CARRIER, ENHANCERS; IN MEAT CURING; FLAVOR ADDITIVES [Furia, T.E. (ed.). CRC Handbook of Food Additives. 2nd ed. Cleveland: The Chemical Rubber Co., 1972., p. 440-2]**PEER REVIEWED**

Surfactant; urethane resins & rigid foams; stabilizer for vinyl resins; varnishes & lacquers [Lewis, R.J., Sr (Ed.). Hawley's Condensed Chemical Dictionary. 12th ed. New York, NY: Van Nostrand Rheinhold Co., 1993, p. 1077]**PEER REVIEWED**

Sorbitol is used in industrial applications as a sequesterant for certain multivalent metals, or as a viscosity control agent [CHEMICAL PRODUCTS SYNOPSIS: Sorbitol, 1985]**PEER REVIEWED**

Trays containing 100g of mushrooms overwrapped with PVC film were held at 12~C. Two 3 mm holes were made on top of the overwrap for ventilation and a Tyvek pouch containing sorbitol was placed at the bottom of the tray before storage. Surface moisture content of mushrooms decreased in the presence of sorbitol. Mushrooms packaged with 10g sorbitol had a constant surface moisture content and those packaged with 15 g sorbitol had the best overall color. Principal component analysis of Vis-NIR spectra revealed that surface moisture content affected the scattering of incident light and mushroom color. Lowering of the in-package relative humidity did not affect the maturation rate of mushrooms, but reduced bacterial growth, suggesting that improvement in color was probably due to reduced bacterial activity. [Roy S et al;J Of Food Science 60 (6): 1254-9 (1995)]**PEER REVIEWED**

MANUFACTURERS:

Archer Daniels Midland Co., P.O. Box 1470, Decatur, IL 62525 (217) 424-5200. Production site: Decatur, IL 62525 [SRI. 1997 Directory of Chemical Producers -United States of America. Menlo Park, CA: SRI International 1997., p. 899]**PEER REVIEWED**

Ethichem Corporation, Hq, 150 Grand St, Carlstadt, NJ 07072, (201) 933-7880 [SRI. 1997 Directory of Chemical Producers -United States of

America. Menlo Park, CA: SRI International 1997., p. 899]**PEER REVIEWED**

Hoffmann-La Roche Inc, Hq, 340 Kingsland St, Nutley, NJ 07110, (201) 235-5000; Production site: Belvidere, NJ 07823 [SRI. 1997 Directory of Chemical Producers -United States of America. Menlo Park, CA: SRI International 1997., p. 899]**PEER REVIEWED**

Lonza Inc, Hq, 17-17 Route 208, Fair Lawn, NJ 07410, (201) 794-2400; Specialty Chemicals Division; Production site: Route 24, Mapleton, IL 61547 [SRI. 1997 Directory of Chemical Producers -United States of America. Menlo Park, CA: SRI International 1997., p. 900]**PEER REVIEWED**

Roquette Corporation, Hq, 1550 Northwestern Ave, Gurnee, IL 60031, (312) 249-5950 [SRI. 1997 Directory of Chemical Producers -United States of America. Menlo Park, CA: SRI International 1997., p. 900]**PEER REVIEWED**

SPI Polyols, Inc., 321 Cherry Lane, New Castle, DE 19720-2780 (800) 789-9755. Production site: New Castle 19720 [SRI. 1997 Directory of Chemical Producers -United States of America. Menlo Park, CA: SRI International 1997., p. 900]**PEER REVIEWED**

METHODS OF MANUFACTURING:

CATALYTIC HYDROGENATION OF DEXTROSE **PEER REVIEWED**

Prepd industrially from glucose by high pressure hydrogenation or by electrolytic reduction ... [Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996., p. 1490]**PEER REVIEWED**

GENERAL MANUFACTURING INFORMATION:

D-SORBITOL, A HEXITOL, IS MOST WIDELY DISTRIBUTED POLYOL IN NATURE. IT IS MAINLY FOUND IN FRUITS OF ROSACEA. ...USED AS SWEETENING AGENT FOR DIABETICS BECAUSE INSULIN IS NOT REQUIRED FOR ITS METAB IN BODY. ...USED IN FOODSTUFF INDUSTRY AS AGENT FOR PRESERVING MOISTURE & AS SOFTENER. [Bergmeyer, H.W. (ed.). Methods of Enzymatic Analysis. 2nd English ed. New York City: Academic Press, 1974., p. 1323]**PEER REVIEWED**

REPORT ON GRAS FOOD INGREDIENTS. [INFORMATICS INC; GRAS (GENERALLY RECOGNIZED AS SAFE) FOOD INGREDIENTS: SORBITOL; USNTIS PB REPORT, (PB-221 210):88 (1972)]**PEER REVIEWED**

FOOD USES OF POLYHYDRIC ALC, /SORBITOL IS USED IN FLAVOR CONCENTRATE; CONFECTIONS; CHEWING GUM; DRIED ROASTED NUTS; MEAT PRODUCTS; PET FOODS; ICINGS & TOPPINGS; COCONUT; BEVERAGES; SPECIAL DIETARY FOODS/. [Furia, T.E. (ed.). CRC Handbook of Food Additives. 2nd ed. Cleveland: The Chemical Rubber Co., 1972., p. 442]**PEER REVIEWED**

Corn sugar, hydrolyzed starch, and other sources of glucose may be used to produce sorbitol [Kirk-Othmer Encyclopedia of Chemical Technology. 4th ed.

Volumes 1: New York, NY. John Wiley and Sons, 1991-Present., p. V23
96]**PEER REVIEWED**

The sorbitol solution is purified in two steps: (1) by passing through an ion exchange resin bed to remove gluconate as well as other ions, and, (2) by treatment with activated carbon to remove trace organic impurities [Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984., p. V1 765]**PEER REVIEWED**

All sorbitol is produced by the catalytic hydrogenation of sugars with most material made from dextrose (also called glucose or corn sugar) [CHEMICAL PRODUCTS SYNOPSIS: Sorbitol, 1985]**PEER REVIEWED**

Needles with 1/2 or 1 H₂O [Budavari, S. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996., p. 1490]**PEER REVIEWED**

FORMULATIONS/PREPARATIONS:

SORBITOL SOLN USP IS WATER SOLN CONTAINING, IN EACH 100 G, 69-71 G OF TOTAL SOLIDS CONSISTING ESSENTIALLY OF D-SORBITOL & SMALL AMT OF MANNITOL & OTHER ISOMERIC POLYHYDRIC ALC. ... IT HAS BEEN USED AS REPLACEMENT FOR PROPYLENE GLYCOL & GLYCERIN. [Osol, A. and J.E. Hoover, et al. (eds.). Remington's Pharmaceutical Sciences. 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975., p. 1235]**PEER REVIEWED**

Grades: Crystals; Technical; 70% aq soln (USP); Resin; Powder; FCC (solid & soln). [Lewis, R.J., Sr (Ed.). Hawley's Condensed Chemical Dictionary. 12th ed. New York, NY: Van Nostrand Rheinhold Co., 1993, p. 1079]**PEER REVIEWED**

CONSUMPTION PATTERNS:

24% AS A CHEM INT FOR VITAMIN C; 24% AS A HUMECTANT IN TOOTH PASTE & AS A GEL BASE FOR PHARMACEUTICALS; 16% AS A HUMECTANT & SUGAR-LESS ADDITIVE TO FOODS; 15% AS A CHEM INT FOR INDUSTRIAL SURFACTANTS, DERIVS USED IN COSMETICS & FOODS, & DISPERSANTS & STABILIZERS IN PHARMACEUTICALS; 7% AS A LIQUID VEHICLE, STABILIZER & SWEETENER IN PHARMACEUTICALS; 2% AS A CHEM INT FOR POLYETHERS; 12% IN MISC APPLICATIONS, INCL AS A SUBSTITUTE FOR GLYCERIN, CHEM INT FOR GLYCERIN SUBSTITUTES, & HUMECTANT IN TOBACCO, PASTE POLISHES, & PET FOODS (1974) **PEER REVIEWED**

Toothpaste, 35%; Foods, Candy & confections, 30%; Ascorbic acid & salts, 20%; Surfactants, 5%; Cosmetics & toiletries, 3%; Pharmaceuticals, 2%; Miscellaneous, 5% (1984) [CHEMICAL PRODUCTS SYNOPSIS: Sorbitol, 1985]**PEER REVIEWED**

CHEMICAL PROFILE: Sorbitol. Toothpaste, toiletries and cosmetics, 37%; confections and foods, 27%; ascorbic acid, 12%; industrial surfactants,

12%; pharmaceuticals, 9%; polyethers, exports and others, 3%. [Kavaler AR; Chemical Marketing Reporter 231 (4): 62 (1987)]**PEER REVIEWED**

CHEMICAL PROFILE: Sorbitol. Demand: 1986: 295 million lb; 1987: 303 million lb; 1991 /projected/: 335 million lb. [Kavaler AR; Chemical Marketing Reporter 231 (4): 62 (1987)]**PEER REVIEWED**

CHEMICAL PROFILE: Sorbitol. Toothpaste, toiletries and cosmetics, 34%; confections and foods, 30%; ascorbic acid, 12%; industrial surfactants, 11%; pharmaceuticals, 8%; exports and miscellaneous, 5%. [Kavaler AR; Chemical Marketing Reporter 237 (12): 58 (1990)]**PEER REVIEWED**

CHEMICAL PROFILE: Sorbitol. Demand: 1989: 320 million lb; 1990: 330 million lb; 1994 /projected/: 370 million lb. (Includes exports, but not imports, which totaled about 20 million lb last yr.) [Kavaler AR; Chemical Marketing Reporter 237 (12): 58 (1990)]**PEER REVIEWED**

Demand: (1994) 440 million lbs; (1995) 460 million lbs; (1999) 540 million lbs. Includes exports which were 40 million lbs in 1994, but not imports which were 20 million lbs. [Kavalar AR; Chemical Marketing Reporter. October 20, 1995]**PEER REVIEWED**

U. S. PRODUCTION:

(1972) 6.31X10+10 GRAMS **PEER REVIEWED**

(1975) 6.07X10+10 GRAMS **PEER REVIEWED**

(1984) 8.68X10+10 g /70% by wt/ [USITC. SYN ORG CHEM-U.S. PROD/SALES 1984 p.257]**PEER REVIEWED**

(1993) 1.40566X10+8 kg [United States International Trade Commission. Synthetic Organic Chemicals - United States Production and Sales, 1993. USITC Publication 2810, Nov. 1994. Washington, D.C., p. 3-34]**PEER REVIEWED**

U. S. IMPORTS:

(1975) 2.87X10+9 GRAMS **PEER REVIEWED**

(1984) 8.17X10+9 g /70% basis/ [CHEMICAL PRODUCTS SYNOPSIS: Sorbitol, 1985]**PEER REVIEWED**

U. S. EXPORTS:

(1973) 4.54X10+9 GRAMS (EST) **PEER REVIEWED**

(1984) 6.61X10+9 g [BUREAU OF THE CENSUS. U.S. EXPORTS, SCHEDULE E, 1984 p.2-76]**PEER REVIEWED**

LABORATORY METHODS:

ANALYTIC LABORATORY METHODS:

SPECTROPHOTOMETER OR SPECTRUM-LINE PHOTOMETER FOR DETERMINATION OF D-SORBITOL IN FOODSTUFF CHEMISTRY & CLINICAL CHEMISTRY. [Bergmeyer, H.W. (ed.). Methods of Enzymatic Analysis. 2nd English ed. New York City: Academic Press, 1974., p. 1323]**PEER REVIEWED**

AOAC 973.28. Sorbitol in food. Gas chromatographic method. [Association of Official Analytical Chemists. Official Methods of Analysis. 15th ed. and Supplements. Washington, DC: Association of Analytical Chemists, 1990, p. 1167]**PEER REVIEWED**

SORBITOL DETECTED IN HUMECTANTS BY GAS CHROMATOGRAPHY WITH N CARRIER & FLAME IONIZATION DETECTION. [CHAMBERS N ET AL; INT J COSMET SCI 1 (3): 187 (1979)]**PEER REVIEWED**

SORBITOL, GLUCOSE, FRUCTOSE, & XYLITOL WERE SEPARATED WITHOUT DERIVATIZATION BY HIGH-PRESSURE LIQ CHROMATOGRAPHY. [MESSERSCHMIDT W; KRANKENHAUS-APOTHEKE 29 (6): 49 (1979)]**PEER REVIEWED**

SORBITOL WAS DETECTED 1ST MIXTURE OF ARTIFICIAL SWEETENERS BY COMPLEXOMETRIC TITRATION OF ITS CUPRAMMONIUM SALT WITH EDTA. [AMER MM ET AL; PHARMAZIE 33 (7): 435 (1978)]**PEER REVIEWED**

SPECIAL REFERENCES:

SYNONYMS AND IDENTIFIERS:

SYNONYMS:

CHOLAXINE **PEER REVIEWED**

DIAKARMON **PEER REVIEWED**

ESASORB **PEER REVIEWED**

GLUCITOL [U.S. Department of Health, Education & Welfare, Public Health Service. Center for Disease Control, National Institute for Occupational Safety & Health. Registry of Toxic Effects of Chemical Substances. 1977 edition. Washington, D. C.: U.S. Government Printing Office, 1977., p. 439]**PEER REVIEWED**

D-GLUCITOL **PEER REVIEWED**

GULITOL [U.S. Department of Health, Education & Welfare, Public Health

Service. Center for Disease Control, National Institute for Occupational Safety & Health. Registry of Toxic Effects of Chemical Substances. 1977 edition. Washington, D. C.: U.S. Government Printing Office, 1977., p. 439]**PEER REVIEWED**

L-GULITOL **PEER REVIEWED**

HEXAHYDRIC ALCOHOL [Sax, N.I. Dangerous Properties of Industrial Materials. 5th ed. New York: Van Nostrand Rheinhold, 1979., p. 992]**PEER REVIEWED**

KARION [The Merck Index. 9th ed. Rahway, New Jersey: Merck & Co., Inc., 1976., p. 1127]**PEER REVIEWED**

NEOSORB **PEER REVIEWED**

NIVITIN **PEER REVIEWED**

SIONIT **PEER REVIEWED**

SIONITE **PEER REVIEWED**

SIONON **PEER REVIEWED**

SIOSAN **PEER REVIEWED**

SORBEX M **PEER REVIEWED**

SORBEX R **PEER REVIEWED**

SORBEX S **PEER REVIEWED**

SORBEX X **PEER REVIEWED**

SORBEX RP **PEER REVIEWED**

SORBICOLAN [The Merck Index. 9th ed. Rahway, New Jersey: Merck & Co., Inc., 1976., p. 1126]**PEER REVIEWED**

SORBILANDE **PEER REVIEWED**

SORBIT **PEER REVIEWED**

SORBITE [U.S. Department of Health, Education & Welfare, Public Health Service. Center for Disease Control, National Institute for Occupational Safety & Health. Registry of Toxic Effects of Chemical Substances. 1977 edition. Washington, D. C.: U.S. Government Printing Office, 1977., p. 439]**PEER REVIEWED**

D-SORBITE [Weast, R.C. (ed.). Handbook of Chemistry and Physics. 60th ed. Boca Raton, Florida: CRC Press Inc., 1979., p. C-497]**PEER REVIEWED**

SORBITOL **PEER REVIEWED**

SORBITOL SYRUP C **PEER REVIEWED**

SORBO **PEER REVIEWED**

SORBOL **PEER REVIEWED**

D-SORBOL **PEER REVIEWED**

SORBOSTYL **PEER REVIEWED**

SORVILANDE [U.S. Department of Health, Education & Welfare, Public Health Service. Center for Disease Control, National Institute for Occupational Safety & Health. Registry of Toxic Effects of Chemical Substances. 1977 edition. Washington, D. C.: U.S. Government Printing Office, 1977., p. 439]**PEER REVIEWED**

FORMULATIONS/PREPARATIONS:

SORBITOL SOLN USP IS WATER SOLN CONTAINING, IN EACH 100 G, 69-71 G OF TOTAL SOLIDS CONSISTING ESSENTIALLY OF D-SORBITOL & SMALL AMT OF MANNITOL & OTHER ISOMERIC POLYHYDRIC ALC. ... IT HAS BEEN USED AS REPLACEMENT FOR PROPYLENE GLYCOL & GLYCERIN. [Osol, A. and J.E. Hoover, et al. (eds.). Remington's Pharmaceutical Sciences. 15th ed. Easton, Pennsylvania: Mack Publishing Co., 1975., p. 1235]**PEER REVIEWED**

Grades: Crystals; Technical; 70% aq soln (USP); Resin; Powder; FCC (solid & soln). [Lewis, R.J., Sr (Ed.). Hawley's Condensed Chemical Dictionary. 12th ed. New York, NY: Van Nostrand Rheinhold Co., 1993, p. 1079]**PEER REVIEWED**

ADMINISTRATIVE INFORMATION:

HAZARDOUS SUBSTANCES DATABANK NUMBER: 801

LAST REVISION DATE: 20030305

LAST REVIEW DATE: Reviewed by SRP on 1/31/1999

UPDATE HISTORY:

Complete Update on 03/05/2003, 1 field added/edited/deleted.

Field Update on 08/06/2002, 1 field added/edited/deleted.

Field Update on 05/16/2001, 1 field added/edited/deleted.

Complete Update on 06/12/2000, 1 field added/edited/deleted.

Complete Update on 06/03/1999, 1 field added/edited/deleted.

Complete Update on 04/28/1999, 46 fields added/edited/deleted.

Complete Update on 10/17/1997, 1 field added/edited/deleted.

Complete Update on 09/16/1997, 3 fields added/edited/deleted.

Complete Update on 04/01/1997, 1 field added/edited/deleted.

Complete Update on 03/11/1997, 2 fields added/edited/deleted.

Complete Update on 01/19/1996, 1 field added/edited/deleted.

Complete Update on 12/22/1994, 1 field added/edited/deleted.

Complete Update on 03/25/1994, 1 field added/edited/deleted.

Complete Update on 01/20/1993, 1 field added/edited/deleted.

Field update on 12/15/1992, 1 field added/edited/deleted.

Complete Update on 10/22/1990, 4 fields added/edited/deleted.

Field Update on 05/04/1990, 1 field added/edited/deleted.

Complete Update on 04/22/1988, 3 fields added/edited/deleted.

Complete Update on 10/14/1986

SORBIC ACID MSDS

Sorbic Acid

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

PRODUCT NAME	Sorbic Acid
SYNONYMS, TRADE NAMES	2, 4-hexadienoic acid
APPLICATION	Food / Feed additive
SUPPLIER	Abbey Chemicals 27-30 North River Road Great Yarmouth Norfolk NR30 1SH Tel: +44 1493 850303 Fax: +44 1493 330909 www.abbey-chemicals.co.uk
Emergency Contact Number (Office Hours)	+44 1493 850303
SDS No.	S045

2 HAZARDS IDENTIFICATION

Irritating to eyes and respiratory system.

CLASSIFICATION Xi:R36/37.

3 COMPOSITION/INFORMATION ON INGREDIENTS

EC No. 203-768-7
CAS-No. 110-44-1

4 FIRST-AID MEASURES

INHALATION

Move the exposed person to fresh air at once. Rinse nose and mouth with water. Get medical attention if any discomfort continues.

INGESTION

Immediately rinse mouth and provide fresh air. Get medical attention if any discomfort continues.

SKIN CONTACT

Wash the skin immediately with soap and water. Get medical attention if any discomfort continues.

EYE CONTACT

Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Use fire-extinguishing media appropriate for surrounding materials. Extinguish with foam, carbon dioxide, dry powder or water fog.

UNUSUAL FIRE & EXPLOSION HAZARDS

Dust may form explosive mixture with air. Avoid heat, flames and other sources of ignition.

REVISION DATE: 23.04.2009

Sorbic Acid

SPECIFIC HAZARDS

By heating and fire, toxic vapours/gases may be formed. Carbon monoxide (CO). Carbon dioxide (CO₂).

PROTECTIVE MEASURES IN FIRE

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Wear protective clothing as described in Section 8 of this safety data sheet.

ENVIRONMENTAL PRECAUTIONS

Do not discharge onto the ground or into water courses.

SPILL CLEAN UP METHODS

Avoid generation and spreading of dust. Shovel into dry containers. Cover and move the containers. Flush the area with water.

7 HANDLING AND STORAGE

USAGE PRECAUTIONS

Avoid spilling, skin and eye contact. Avoid handling which leads to dust formation. Provide good ventilation.

Avoid inhalation of dust.

STORAGE PRECAUTIONS

Store in tightly closed original container in a dry, cool and well-ventilated place. Keep in original container.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

PROTECTIVE EQUIPMENT



ENGINEERING MEASURES

Provide adequate ventilation. Observe Workplace Exposure Limits and minimise the risk of inhalation of dust.

RESPIRATORY EQUIPMENT

No specific recommendation made, but protection against nuisance dust must be used when the general level exceeds 10 mg/m³.

HAND PROTECTION

Use suitable protective gloves if risk of skin contact.

EYE PROTECTION

Wear approved safety goggles.

HYGIENE MEASURES

DO NOT SMOKE IN WORK AREA! Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes contaminated. Promptly remove any clothing that becomes contaminated.

When using do not eat, drink or smoke.

9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Crystalline powder		
COLOUR	White		
SOLUBILITY	Slightly soluble in water.		
MOL. WEIGHT	112.13	BOILING POINT (°C)	>200
MELTING POINT (°C)	134.5	RELATIVE DENSITY	1.204
BULK DENSITY	650 kg/m ³	VAPOUR PRESSURE	0.01 mm Hg @ 20°C
pH-VALUE, CONC. SOLUTION	3.3 (0.2% solution)	AUTO IGNITION	>130
		TEMPERATURE (°C)	

REVISION DATE: 23.04.2009

Sorbic Acid

10 STABILITY AND REACTIVITY**STABILITY**

Stable under normal temperature conditions.

CONDITIONS TO AVOID

Avoid heat, flames and other sources of ignition.

HAZARDOUS POLYMERISATION

Will not polymerise.

MATERIALS TO AVOID

Strong oxidising substances.

HAZARDOUS DECOMPOSITION PRODUCTSFire creates: Carbon monoxide (CO). Carbon dioxide (CO₂).**11 TOXICOLOGICAL INFORMATION**

TOXIC DOSE 1 - LD 50 >10000 mg/kg (oral rat)

INHALATION

Irritating to respiratory system.

INGESTION

No specific health warnings noted.

SKIN CONTACT

Powder may irritate skin.

EYE CONTACT

Particles in the eyes may cause irritation and smarting.

12 ECOLOGICAL INFORMATION**ECOTOXICITY**

Not regarded as dangerous for the environment.

MOBILITY

The product has poor water-solubility.

13 DISPOSAL CONSIDERATIONS**GENERAL INFORMATION**

Waste to be treated as controlled waste. Disposal to licensed waste disposal site in accordance with local Waste

Disposal Authority.

DISPOSAL METHODS

Dispose of waste and residues in accordance with local authority requirements.

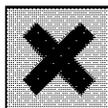
14 TRANSPORT INFORMATION

ROAD TRANSPORT NOTES Not Classified

RAIL TRANSPORT NOTES Not Classified.

SEA TRANSPORT NOTES Not Classified.

AIR TRANSPORT NOTES Not Classified.

15 REGULATORY INFORMATION**LABELLING**

Irritant

REVISION DATE: 23.04.2009

Sorbic Acid

RISK PHRASES

R36/37	Irritating to eyes and respiratory system.
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SAFETY PHRASES

S22	Do not breathe dust.
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STATUTORY INSTRUMENTS

Chemicals (Hazard Information and Packaging) Regulations.

APPROVED CODE OF PRACTICE

Classification and Labelling of Substances and Preparations Dangerous for Supply. Safety Data Sheets for Substances and Preparations.

GUIDANCE NOTES

Workplace Exposure Limits EH40. CHIP for everyone HSG(108).

16. OTHER INFORMATION

ISSUED BY

Abbey Chemicals

REVISION DATE	23.04.2009
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REV. NO./REPL. SDS	04
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GENERATED

SDS NO.	S045
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SAFETY DATA SHEET STATUS

Approved.

DATE	23.04.2009
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SIGNATURE	Thomas Tailford
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