

SAFETY DATA SHEET

1. Identification

Product Identifier: Lactulose Solution, USP for Oral Administration

Synonyms: Fructofuranose, 4-O-beta-D-galactopyranosyl-, D-; D-Lactulose

National Drug Code (NDC): 50383-779-08
50383-779-16
50383-779-17
50383-779-31
50383-779-32
50383-779-33

Recommended Use: Pharmaceutical.

Company: Akorn, Inc.
1925 West Field Court, Suite 300
Lake Forest, Illinois 60045

Contact Telephone: 1-800-932-5676

E mail: customer.service@akorn.com

Emergency Phone Number: CHEMTREC 1-800-424-9300 (U.S. and Canada)

2. Hazard(s) Identification

Physical Hazards: Combustible liquid Category 4

Health Hazards: Not classifiable.
Symbol(s): None.

Signal Word: Warning.

Hazard Statement(s): H227 Combustible liquid.

Precautionary Statement(s): P210 Keep away from flames and hot surfaces. No smoking.

P280 Wear protective gloves/eye protection/ face protection.

P370 In case of fire: Use water, carbon dioxide, dry chemical or foam as necessary to extinguish.
+
P378

P403 Store in a well-ventilated place. Keep cool.
+
P235

P501 Dispose of contents/container in accordance with local/regional/national/ international regulations.

Hazards Not Otherwise Classified: Not classifiable.
Supplementary Information: None.

3. Composition/Information on Ingredients

Chemical Name	CAS Number	Synonyms	Chemical Formula	Molecular Weight	Percentage
Lactulose	4618-18-2	Fructofuranose, 4-O-beta-D-galactopyranosyl-, D-; D-Lactulose	C ₁₂ H ₂₂ O ₁₁	342.30	67%

*The formula also contains less than 1.6 g Galactose, less than 1.2 g Lactose, 1.2 g or less of other Sugars and Water.

4. First Aid Measures

Ingestion:

If a person vomits place them in the recovery position so that vomit will not reenter the mouth and throat. Rinse mouth with water. If swallowed, seek medical advice immediately and show the container or label. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Eye Contact:

Remove from source of exposure. Flush with copious amounts of water for at least 15 minutes. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary. Ensure that medical personnel are aware of the material(s) involved and are aware of precautions to protect themselves.

Skin Contact:

Remove from source of exposure. Remove and isolate contaminated clothing and shoes. Flush with copious amounts of water for at least 20 minutes. Use soap. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary. Ensure that medical personnel are aware of the material(s) involved and are aware of precautions to protect themselves.

Inhalation:

Remove from source of exposure. Move individual(s) to fresh air. Give artificial respiration if individual(s) are not breathing and call emergency medical service. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary. Ensure that medical personnel are aware of the material(s) involved and are aware of precautions to protect themselves.

Protection of First-Aiders:

Use personal protective equipment (see section 8).

SDS: Lactulose Solution, USP for Oral Administration

Signs and Symptoms: WARNING: A theoretical hazard may exist for patients being treated with lactulose solution who may be required to undergo electrocautery procedures during proctoscopy or colonoscopy.

Medical Conditions Aggravated by Exposure: Material is a liquid drug dosage form intended for human use. Always follow prudent laboratory practices. Consult the package insert for further information.

Other Health Warnings: OVERDOSAGE: There have been no reports of accidental overdosage. In the event of overdosage, it is expected that diarrhea and abdominal cramps would be the major symptoms. Medication should be terminated.

Notes to Physician: Treat supportively and symptomatically.

5. Firefighting Measures

Suitable Extinguishing Media: Use water, carbon dioxide, dry chemical or foam as necessary.

Unsuitable Extinguishing Media: With small quantities use carbon dioxide extinguisher. For large fires use ample quantities of water with dry chemicals or foam as necessary.

Specific Hazards Arising from the Chemical:

Hazardous Combustion Products: Not determined.

Other Specific Hazards: Not determined.

Special Protective Equipment/Precautions for Firefighters: Wear self-contained breathing apparatus and full and protective gear.

6. Accidental Release Measures

Personal Precautions: Use personal protective equipment recommended in Section 8 of this document and isolate the hazard area.

Personal Protective Equipment: For personal protection see section 8.

Methods for Cleaning Up: Pick up in the most efficient manner. Soak up with sawdust, sand oil dry or other absorbent material.

Environmental Precautions: No data available.

Reference to Other Sections: Refer to Sections 8, 12 and 13 for further information.

7. Handling and Storage

- Precautions for Safe Handling:** Keep container tightly closed. Handle in accordance with product label and/or product insert information. Handle in accordance with good industrial hygiene and safety practices.
- Conditions for Safe Storage, Including Any Incompatibilities:** Store between 59°F – 86°F. Do not freeze. Store according to label and/or product insert information. Store away from oxidizing agents and acids.
- Specific End Use:** Pharmaceuticals.
- Other Precautions:** Under recommended storage conditions, a normal darkening of color may occur. Such darkening is characteristic of sugar solutions and does not affect therapeutic action. Prolonged exposure to temperatures above 86°F or to direct light may cause extreme darkening and turbidity which may be pharmaceutically objectionable. If this condition develops, do not use. Prolonged exposure to freezing temperatures may cause change to a semi-solid, too viscous to pour. Viscosity will return to normal upon warming to room temperature.

8. Exposure Controls/Personal Protection**Occupational Exposure Guidelines:**

Common or Chemical Name	Employee Exposure Limits
Lactulose	10 mg/m ³ TWA

- Engineering Controls:** Engineering controls should be used as the primary means to control exposures.
- Respiratory Protection:** Where respirators are deemed necessary to reduce or control occupational exposures, use NIOSH-approved respiratory protection and have an effective respirator program in place (applicable U.S. regulation OSHA 29 CFR 1910.134).
- Eyes Protection:** Safety glasses with side shields are recommended. Face shields or goggles may be required if splash potential exists or if corrosive materials are present. Approved eye protection (e.g., bearing the ANSI Z87 or CSA stamp) is preferred. Maintain eyewash facilities in the work area.
- Hand Protection:** Chemically compatible gloves are recommended. For handling solutions, ensure that the glove material is protective against the solvent being used. Use handling practices that minimize direct hand contact. Employees who are sensitive to natural rubber (latex) should use nitrile or other synthetic non-latex gloves. Use of powdered latex gloves should be avoided due to the risk of latex allergy.

Skin Protection: Wear protective laboratory coat, apron, or disposable garment when working with large quantities.

9. Physical and Chemical Properties

Physical State/Color: Colorless to slightly yellow solution.
Odor: No data available.
Odor Threshold: No data available.
pH: 4.8 – 6.0.
Melting Point: No data available.
Freezing Point: No data available.
Boiling Point: No data available.
Flash Point: >140°F.
Evaporation Rate: Same as water.
Flammability (solid, gas): No data available.
Flammability Limit - Lower: No data available.
Flammability Limit - Upper: No data available.
Vapor Pressure: No data available.
Vapor Density: >1.
Relative Density: No data available.
Solubility(ies): Soluble in water.
Partition Coefficient (n-octanol/water): No data available.
Auto-Ignition Temperature: No data available.
Decomposition Temperature: No data available.
Viscosity: No data available.
Specific Gravity: 1.33000.

10. Stability and Reactivity

Reactivity: No data available.

Chemical Stability: Stable under recommended storage conditions. Avoid sources of ignition.

Possibility of Hazardous Reactions: No data available.

Conditions to Avoid (e.g., static discharge, shock, or vibration): No data available.

Incompatible Materials: Strong oxidizer.

Hazardous Decomposition Products: Does not undergo explosive decomposition.

Hazardous Polymerization: Will not occur.

11. Toxicological Information

Information on the Likely Routes of Exposure:

Inhalation: No data available.
Ingestion: No data available.
Skin Contact: No data available.
Eye Contact: No data available.

Symptoms Related to the Physical, Chemical and Toxicological Characteristics:

See Section 4. To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

Delayed and Immediate Effects of Exposure:

No data available.

Acute Toxicity – Oral:

No data available.

Acute Toxicity – Dermal:

No data available.

Acute Toxicity – Inhalation:

No data available.

Corrosivity:

No data available.

Dermal Irritation:

No data available.

Eye Irritation:

No data available.

Sensitization:

No data available.

Toxicokinetics/Metabolism:

No data available.

Target Organ Effects:

No data available.

Reproductive Effects:

No data available.

Carcinogenicity:

No data available.

National Toxicology Program (NTP):

Not considered to be a carcinogen.

International Agency for Research on Cancer (IARC):

Not considered to be a carcinogen.

Occupational Safety and Health Administration (OSHA):

Not considered to be a carcinogen.

Mutagenicity:

No data available.

Aspiration Hazard:

No data available.

12. Ecological Information**Ecotoxicity****Aquatic:**

No data available.

Terrestrial:

No data available.

Persistence and Degradability:

No data available.

Bioaccumulative Potential:

No data available.

Mobility in Soil:

No data available.

Mobility in Environment:

No data available.

Other Adverse Effects:

No data available.

13. Disposal Considerations

Dispose of all waste in accordance with Federal, State and Local regulations.

14. Transport Information**UN Number:**

Not applicable.

UN Proper Shipping Name:

Not applicable.

Transport Hazard Class(es):

Not applicable.

Packing Group:

Not applicable.

Department of Transportation:

Not regulated as a hazardous material.

International Air Transport Association (IATA): Not regulated as a dangerous good.

International Maritime Dangerous Good (IMDG): Not regulated as a dangerous good.

15. Regulatory Information

US Federal Regulations:

Toxic Substance Control Act (TSCA): Not listed.

CERCLA Hazardous Substance and Reportable Quantity: Not listed.

SARA 313: Not listed.
SARA 302: Not listed.

State Regulations

California Proposition 65: Not listed.

16. Other Information

NFPA Rating:
Health: 0
Flammability: 2
Reactivity: 0

Revision Date: 05/27/2015

Revision Number: 1

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