



AMERICAN CRYSTAL SUGAR COMPANY

GHS SAFETY DATA SHEET

Prepared to U.S. OSHA Standards in compliance with the GHS system (29 CFR 1910.1200(g), rev. 2012)

<p>Section 1</p>	<p>Identification</p>	<p style="text-align: center;"><u>LIGHT (or DARK) BROWN GRANULATED SUGAR</u></p> <p>Manufacturer's Name American Crystal Sugar Co. 101 North 3rd Street Moorhead, MN 56560</p> <p>Emergency Telephone Number: (218) 236-4400</p> <p>Telephone Number for Information (218) 236-4324</p>	<p>food additive, flavor enhancer, baking ingredient, intended for human consumption</p> <p>No restrictions on use</p> <p>Preparation Date: 21 November 2014</p> <p>Revised: New</p>
<p>Section 2</p>	<p>Hazard(s) Identification</p>	<p>No Hazardous Components</p> <p>Sugar itself supports combustion only poorly and is not by itself a hazard. Brown sugars are supplied moist and unless extremely dry, would be only a secondary fuel in an existing fire.</p>	<p>The dust generated by the transportation and handling of sugar is an explosion hazard; however, brown sugars are supplied moist and are not potentially dust-forming.</p>
<p>Section 3</p>	<p>Composition / Information on Ingredients</p>	<p>Sucrose, sugar, saccharose; C₁₂ H₂₂ O₁₁ : 92%</p> <p>IUPAC: (2<i>R</i>,3<i>R</i>,4<i>S</i>,5<i>S</i>,6<i>R</i>)-2-[(2<i>S</i>,3<i>S</i>,4<i>S</i>,5<i>R</i>)-3,4-dihydroxy-2,5-bis(hydroxymethyl)oxolan-2-yl]oxy-6-(hydroxymethyl)oxane-3,4,5-triol]</p> <p>Sugar cane molasses: 8%</p>	<p>Table sugar, beet sugar, natural sweetener</p> <p>CAS 57-50-1 EINECS 200-334-9 Pure product (organic compound)</p> <p>Highly variable, innocuous composition of saccharides, amino and carboxylic acids, minerals, and salts from the processing of sugar cane.</p>
<p>Section 4</p>	<p>First Aid Measures</p>	<p>INHALED: not expected to require first aid.</p>	<p>EYES: Possible mechanical irritant. Flush granular material with running water, holding eyelids open. Get medical help if symptoms persist.</p>

Section 5	Fire-Fighting Measures	<p>Use water or other approved media.</p> <p>Thermal decomposition or burning will produce carbon dioxide, carbon monoxide.</p> <p>Normal fire dept SOP for precautions and PPE.</p>	<p>Though brown sugars are moist due to molasses content, it is conceivable that large amounts of brown sugar could dry out due to improper storage and handling; the dust of the dried sugar is explosive, similar to flour and grain products.</p>
Section 5			
Section 6	Accidental Release Measures	<p>Sweep or scoop up spill for recovery or disposal and place into a closed container. Non-toxic and biodegradable. Whatever cannot be saved for recovery may be discarded as permitted by applicable regulations.</p>	<p>Clean-up personnel should wear non-slip footwear.</p>
Section 7	Handling and Storage	<p>No special handling is required.</p> <p>In cases of plugged material-handling piping or enclosed scrolls, avoid using steam to loosen material in plugged piping (please see §16, Other Information).</p>	<p>Store in-doors in temperature and humidity controlled areas between 40 – 85°F (5 - 30°C) and 40 – 65 % relative humidity to avoid caking.</p> <p>In case of caking in large capacity storage vessels, personnel working inside the vessel should not stand under large cakes of sugar which could break loose and fall on those personnel.</p>
Section 8	Exposure Controls / Personal Protection	<p>None normally required. Dust is not normally a consideration with brown sugars.</p> <p>Wearing of contact lenses when handling product should be avoided.</p>	<p>In cases of water being used to flush spilled material, floors and steps may become sticky; wear non-slip footwear and use caution when negotiating floors and steps.</p>

Section 9	Physical and Chemical Properties	Melting Point	160 - 186°C (320 - 367°F)	Flash Point	N/A
		Boiling Point	N/A	Flammable Limits	N/A
		Specific Gravity (H₂O = 1)	1.587	LEL	N/A
		Solubility in Water:	greater than 67% @ 25°C	UEL	N/A
		Vapor Pressure (mm Hg)	N/A	Appearance and Odor: Light or dark brown, slightly moist, crystalline solid; molasses odor.	
		Vapor Density (Air = 1)	N/A		
		Evaporation Rate (Butyl Acetate = 1)	N/A		
Section 10	Stability and Reactivity	<p>Stable under ordinary conditions of use and storage. Hazardous polymerization will NOT occur.</p> <p>Avoid temperatures above 160°F (70°C); heat, flames, ignition sources, and incompatibles.</p>	<p>Avoid strong oxidizers (e.g. nitric acid or sulfuric acid).</p> <p>Thermal decomposition or burning dried material will produce carbon dioxide, carbon monoxide.</p>		
Section 11	Toxicological Information	Non-toxic	Product contains no ingredients currently classified as carcinogenic by NTP, IARC, or OSHA.		
Section 12	Ecological Information (non-mandatory)	Non-toxic and biodegradable.			
Section 13	Disposal Considerations (non-mandatory)	Whatever cannot be saved for recovery may be discarded as permitted by applicable regulations.			
Section 14	Transport Information (non-mandatory)	Not applicable			
Section 15	Regulatory Information (non-mandatory)	Not ordinarily regulated. (Note some countries do have import quotas which restrict total amount of sugar entering their borders.)			

<p>Section 16</p>	<p>Other Information</p>	<p>Note: though brown sugars are moist due to molasses content, it is conceivable that large amounts of brown sugar could dry out due to improper storage and handling; the dust of the dried sugar is explosive, similar to flour and grain products.</p> <table border="1"> <tr> <td>Ignition temperature of dust cloud</td> <td>350 °C</td> </tr> <tr> <td>Minimum igniting energy</td> <td>< 10mJ</td> </tr> <tr> <td>Minimum explosion concentration</td> <td>0.035 oz / cu ft</td> </tr> <tr> <td>Maximum explosion pressure</td> <td>9 bar</td> </tr> <tr> <td>Maximum rate of pressure rise</td> <td>5,000 psi / sec</td> </tr> <tr> <td>Minimum exposable concentration in air:</td> <td>0.045 g/L</td> </tr> </table> <p>Very rarely, hot sugar products and their syrups have been known to exhibit “runaway behavior” under the <u>combined conditions</u> of (1) presence of amino acids; (2) enclosed space including piping where pressure can build up; (3) temperatures above 110 °C; (4) extended periods of time (generally less than 5 hours); (5) lowered pH; (6) increased viscosity; (7) lack of adequate thermal transfer. Though extremely rare, explosions have been known to occur under these <u>combined conditions</u>. See Platje, T. et al. (2006): “Study of the ‘Runaway Behavior’ of Technical Sucrose Solutions.” <i>Zuckerindustrie</i> 131, 231 – 238. Avoid using steam to loosen material in plugged piping.</p>	Ignition temperature of dust cloud	350 °C	Minimum igniting energy	< 10mJ	Minimum explosion concentration	0.035 oz / cu ft	Maximum explosion pressure	9 bar	Maximum rate of pressure rise	5,000 psi / sec	Minimum exposable concentration in air:	0.045 g/L
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