



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><b>Section 1</b></p>	<p><b>Identification</b></p>	<p style="text-align: center;"><b><u>LIGHT (or DARK) BROWN GRANULATED SUGAR</u></b></p> <p>Manufacturer's Name  <b>American Crystal Sugar Co.</b>  <b>101 North 3rd Street</b>  <b>Moorhead, MN 56560</b></p> <p>Emergency Telephone Number:  <b>(218) 236-4400</b></p> <p>Telephone Number for Information  <b>(218) 236-4324</b></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: <b>5 December 2014</b></p>
<p><b>Section 2</b></p>	<p><b>Hazard(s) Identification</b></p>	<p><b>No Hazardous Components</b></p> <p>Sugar itself <b>supports combustion only poorly</b> and is not by itself a hazard. Brown sugars are supplied moist and unless extremely dry, would be only a <b>secondary fuel</b> in an existing fire.</p>	<p>The <b>dust</b> generated by the <b>transportation and handling</b> of sugar is an <b>explosion hazard</b>; however, brown sugars are supplied moist and are not potentially dust-forming.</p>
<p><b>Section 3</b></p>	<p><b>Composition / Information on Ingredients</b></p>	<p><b>Sucrose, sugar, saccharose;</b>  <b>C<sub>12</sub> H<sub>22</sub> O<sub>11</sub> : 92%</b></p> <p>IUPAC: (2R,3R,4S,5S,6R)-2-[(2S,3S,4S,5R)-3,4-dihydroxy-2,5-bis(hydroxymethyl)oxolan-2-yl]oxy-6-(hydroxymethyl)oxane-3,4,5-triol ]</p> <p><b>Sugar cane molasses: 8%</b></p>	<p>Table sugar, beet sugar, natural sweetener</p> <p><b>CAS 57-50-1</b>  <b>EINECS 200-334-9</b>          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><b>Section 4</b></p>	<p><b>First Aid Measures</b></p>	<p><b>INHALED:</b> not expected to require first aid.</p>	<p><b>EYES:</b> Possible mechanical irritant. Flush granular material with running water, holding eyelids open. Get medical help if symptoms persist.</p>

<p><b>Section 5</b></p> <p><b>Section 5</b></p>	<p><b>Fire-Fighting Measures</b></p>	<p><b>Use water or other approved media.</b></p> <p><b>Thermal decomposition or burning will produce carbon dioxide, carbon monoxide.</b></p> <p><b>Normal fire dept SOP for precautions and PPE.</b></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>
<p><b>Section 6</b></p>	<p><b>Accidental Release Measures</b></p>	<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>
<p><b>Section 7</b></p>	<p><b>Handling and Storage</b></p>	<p>No special handling is required.</p> <p>In cases of plugged material-handling piping or enclosed scrolls, <b>avoid using steam to loosen material in plugged piping under those conditions listed in <u>§16, Other Information</u> without proper pressure relief devices.</b></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>
<p><b>Section 8</b></p>	<p><b>Exposure Controls / Personal Protection</b></p>	<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>

<b>Section 9</b>	<b>Physical and Chemical Properties</b>	<b>Melting Point</b>	<b>160 - 186°C (320 - 367°F)</b>	<b>Flash Point</b>	N/A
		<b>Boiling Point</b>	N/A	<b>Flammable Limits</b>	N/A
		<b>Specific Gravity (H<sub>2</sub>O = 1)</b>	<b>1.587</b>	<b>LEL</b>	N/A
		<b>Solubility in Water:</b>	<b>greater than 67% @ 25°C (77°F)</b>	<b>UEL</b>	N/A
		<b>Vapor Pressure (mm Hg)</b>	N/A	<b>Appearance and Odor:</b> Light or dark brown, slightly moist, crystalline solid; molasses odor.	
		<b>Vapor Density (Air = 1)</b>	N/A		
		<b>Evaporation Rate (Butyl Acetate = 1)</b>	N/A		
<b>Section 10</b>	<b>Stability and Reactivity</b>	<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>		
<b>Section 11</b>	<b>Toxicological Information</b>	Non-toxic	Product contains no ingredients currently classified as carcinogenic by NTP, IARC, or OSHA.		
<b>Section 12</b>	<b>Ecological Information (non-mandatory)</b>	Non-toxic and biodegradable.			
<b>Section 13</b>	<b>Disposal Considerations (non-mandatory)</b>	Whatever cannot be saved for recovery may be discarded as permitted by applicable regulations.			
<b>Section 14</b>	<b>Transport Information (non-mandatory)</b>	Not applicable			
<b>Section 15</b>	<b>Regulatory Information (non-mandatory)</b>	Not ordinarily regulated. (Note some countries do have import quotas which restrict total amount of sugar entering their borders.)			

<p><b>Section 16</b></p>	<p><b>Other Information</b></p>	<p><b>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.</b></p> <table border="1"> <tr> <td><b>Ignition temperature of dust cloud</b></td> <td><b>350 °C (662°F)</b></td> </tr> <tr> <td><b>Minimum igniting energy</b></td> <td><b>&lt; 10mJ</b></td> </tr> <tr> <td><b>Minimum explosion concentration</b></td> <td><b>0.035 oz / cu ft</b></td> </tr> <tr> <td><b>Maximum explosion pressure</b></td> <td><b>9 bar</b></td> </tr> <tr> <td><b>Maximum rate of pressure rise</b></td> <td><b>5,000 psi / sec</b></td> </tr> <tr> <td><b>Minimum exposable concentration in air:</b></td> <td><b>0.045 g/L</b></td> </tr> </table> <p>Very rarely, hot sugar products and their syrups have been known to exhibit <b>“runaway behavior”</b> 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.</p> <p><b>Avoid using steam to loosen material in plugged piping under those conditions listed above without proper pressure relief devices.</b></p>	<b>Ignition temperature of dust cloud</b>	<b>350 °C (662°F)</b>	<b>Minimum igniting energy</b>	<b>&lt; 10mJ</b>	<b>Minimum explosion concentration</b>	<b>0.035 oz / cu ft</b>	<b>Maximum explosion pressure</b>	<b>9 bar</b>	<b>Maximum rate of pressure rise</b>	<b>5,000 psi / sec</b>	<b>Minimum exposable concentration in air:</b>	<b>0.045 g/L</b>
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