





# Safety Data Sheet

Section 1. Identification	
<b>Product Identification and Item Numbers:</b>	Modified Jessner's Solution (MJS/1, MJS, MJS/4, MJS/PT)
<b>Product Description:</b>	Alcoholic solution of salicylic acid, lactic acid, and citric acid
<b>Recommended use and restrictions on use:</b>	N/A
<b>Supplier:</b>	Delasco 608 13 <sup>th</sup> Avenue Council Bluffs, IA 51501 1-712-323-3269 <a href="http://www.delasco.com">www.delasco.com</a> <a href="mailto:questions@delasco.com">questions@delasco.com</a>
<b>In Case of Emergency, Contact:</b>	Chemtrec (24 hour) 1-800-424-9300

Section 2. Hazard(s) Identification	
<b>Classification:</b>	
Flammable Liquid (Category 2) Eye Irritant (Category 2) Eye Damage (Category 1) Acute Tox. (Category 4) Skin Irritant (Category 2) Skin Corrosion (Category 1B) Skin Sens. (Category 1B) Aquatic Acute (Category 1) Aquatic Chronic (Category 3)	
<b>Labeling:</b>	
<b>Hazard symbol(s):</b>	   
	GHS09: environment      GHS02: flame      GHS07: exclamation mark      GHS05: corrosive
<b>Signal word:</b> <span style="float: right;"><b>Danger!</b></span>	
<b>Hazard statements:</b>	
H225: Highly flammable liquid and vapor. H301: Toxic if swallowed. H302: Harmful if swallowed. H311: Toxic in contact with skin. H315: Causes skin irritation. H317: May cause an allergic skin reaction. H318: Causes serious eye damage. H319: Causes serious eye irritation. H331: Toxic if inhaled. H370: Causes damage to organs. Affected organs: CNS and blood effects. Route of exposure: Oral H371: May cause damage to the respiratory system, via oral bolus dosing. Affected organs: Respiratory effects. Route of exposure: Oral H400: Very toxic to aquatic life. H412: Harmful to aquatic life with long lasting effects.	
<b>Precautionary statements:</b>	
P210: Keep away from heat/sparks/open flames/.../hot surfaces. ... No smoking. P233: Keep container tightly closed. P240: Ground/bond container and receiving equipment. P241: Use explosion-proof electrical/ventilating/lighting/.../ equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P260: Do not breathe dust/fume/gas/mist/vapours/spray. P264: Wash hands thoroughly after handling.	

P270: Do not eat, drink or smoke when using this product.  
P272: Contaminated work clothing should not be allowed out of the workplace.  
P273: Avoid release to the environment.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.  
P301+P312: IF SWALLOWED: Call a POISON CENTER/doctor/...if you feel unwell.  
P302+P352: IF ON SKIN: Wash with plenty of water/...  
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P307+P311: IF exposed: Call a POISON CENTER or doctor/physician.  
P333+P313: If skin irritation or rash occurs: Get medical advice/attention.  
P337+P313: If eye irritation persists: Get medical advice/attention.  
P362: Take off contaminated clothing.  
P370+P378: In case of fire: Use dry chemical, alcohol foam, all purpose AFFF, carbon dioxide or water spray for extinction.  
P391: Collect spillage.  
P403+P235: Store in a well-ventilated place. Keep cool.

### Section 3. Composition/Information on Ingredients

<b>Chemical Name and Concentration:</b>	Ethyl Alcohol, anhydrous, 49% w/v Salicylic Acid, 17% w/v Lactic Acid, 17% w/v Citric Acid, 17% w/v
<b>Other Names, Common Names, Synonyms:</b>	N/A
<b>CAS Number, other unique identifiers:</b>	Mixture: Ethyl Alcohol, anhydrous CAS# 64-17-5 Salicylic Acid CAS# 69-72-7 Lactic Acid CAS# 50-21-5 Citric Acid CAS# 77-92-9
<b>Other classified impurities or stabilizers:</b>	N/A
<b>Other ingredients posing health hazards:</b>	N/A
<b>Concentration of other hazardous ingredients:</b>	N/A

### Section 4. First-aid Measures

<b>Inhalation exposure:</b>	Move the exposed person to fresh air at once. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
<b>Skin exposure:</b>	Flush the contaminated skin with water promptly. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Get medical attention.
<b>Eye contact:</b>	Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
<b>Ingestion:</b>	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing, such as a collar, tie, belt or waistband. Get medical attention immediately.

<b>Section 5. Fire Fighting Measures</b>	
<b>Suitable / unsuitable extinguishing media:</b>	SMALL FIRE: Dry chemical, CO2, water spray or alcohol-resistant foam. LARGE FIRE: Water spray, fog or alcohol-resistant foam. Do not use straight streams.
<b>Specific hazards / combustion products:</b>	HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. <ul style="list-style-type: none"> <li>• Carbon monoxide is produced during combustion.</li> <li>• Vapors may travel to source of ignition and flash back.</li> <li>• Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).</li> <li>• Vapor explosion hazard indoors, outdoors or in sewers.</li> <li>• Containers may explode when heated.</li> <li>• May produce a floating fire hazard.</li> <li>• Static ignition hazard can results from handling and use.</li> </ul>
<b>Special protective equipment and precautions for fire-fighters:</b>	CAUTION: Very low flash point: Use of water spray when fighting fire may be inefficient. <ul style="list-style-type: none"> <li>• Wear positive pressure self-contained breathing apparatus (SCBA).</li> <li>• Wear protective clothing to prevent contact with skin and eyes.</li> <li>• Keep unopened containers cool by spraying with water.</li> <li>• Inhalation or contact with material may irritate or burn skin and eyes.</li> <li>• Fire may produce irritating, corrosive and/or toxic gases.</li> <li>• Vapors may cause dizziness or suffocation.</li> </ul>
<b>NFPA Hazard Classification</b>	Health – 3 Flammability – 3 Instability – 0
	0-Minimal 1-Slight 2-Moderate 3-Serious 4-Severe

<b>Section 6. Accidental Release Measures</b>	
<b>Personal precautions and protective equipment:</b>	<ul style="list-style-type: none"> <li>• Do not inhale vapors, mist or gas. Ensure adequate ventilation.</li> <li>• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).</li> <li>• Evacuate personnel to safe areas.</li> <li>• Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.</li> </ul>
<b>Environmental Precautions:</b>	<ul style="list-style-type: none"> <li>• Stop leak if you can do it without risk.</li> <li>• Prevent entry into drains, waterways, sewers, basements or confined areas.</li> </ul>
<b>Containment / clean up methods:</b>	<ul style="list-style-type: none"> <li>• Highly flammable. Eliminate all sources of ignition.</li> <li>• All equipment used when handling the product must be grounded.</li> <li>• A vapor suppressing foam may be used to reduce vapors.</li> <li>• Do not touch or walk through spilled material.</li> <li>• Contain spillage, and then collect with non-combustible absorbent material (e.g., sand, earth, diatomaceous earth, vermiculite), and place in container for disposal according to local / national regulations.</li> <li>• Use clean non-sparking tools to collect absorbed material.</li> </ul>

<b>Section 7. Handling and Storage</b>	
<b>Precautions for safe handling:</b>	Do not get on skin or in eyes. Do not inhale vapor or mist. Keep away from sources of ignition. No smoking. Take measures to prevent the buildup of electrostatic charge. Open and handle container with care. Metal containers involved in the transfer of this material should be grounded and bonded.
<b>Conditions for safe storage:</b>	Keep tightly closed in a cool, dry, well ventilated place. Keep upright to prevent leakage. Keep away from flame. Protect containers against physical damage.
<b>Incompatibilities to avoid:</b>	Do not store with oxidizing agents.

<b>Section 8. Exposure Controls and Personal Protection</b>	
<b>OSHA Permissible Exposure Limit (PEL):</b>	<u>Ethanol:</u> 1000 ppm / 1,900 mg/m <sup>3</sup> (TWA) 3300 ppm (IDHL)
<b>Threshold Limit Value (TLV):</b>	<u>Ethanol:</u> 1000 ppm (STEL)
<b>Other exposure limits:</b>	<u>Ethanol:</u> NIOSH REL: 1000 ppm (1,900 mg/m <sup>3</sup> ) TWA (Ethanol) LEL: 3.3% (10% LEL: 3,300 ppm) (Ethanol) Original (SCP) IDLH: 15,000 ppm (Ethanol) Revised IDLH: 3,300 ppm [LEL] (Ethanol)
<b>Engineering controls:</b>	Use local exhaust ventilation, fume hood or other means of adequate ventilation.
<b>Personal protective equipment:</b>	<p><b>Respiratory Protection</b> When necessary, use an approved/certified respirator for respiratory protection. Multi-purpose combination respirator cartridges may be used as a backup to engineering controls (ventilation).</p> <p><b>Eye Protection</b> Wear appropriate eye protection to prevent eye contact. Splash goggles recommended.</p> <p><b>Skin Protection</b> Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Wear other appropriate personal protective clothing to prevent skin contact. Immediately wash the skin when it becomes contaminated. Work clothing that becomes wet should be immediately removed due to its flammability hazard.</p>
<b>Other personal protection measures:</b>	Provide nearby eyewash station and safety shower.

<b>Section 9. Physical and Chemical Properties</b>	
<b>Appearance (physical state, color, etc.):</b>	Thin, clear, peach colored liquid.
<b>Odor:</b>	Ethanol odor.
<b>Odor threshold:</b>	Data not available
<b>pH:</b>	Acidic
<b>Melting point / freezing point:</b>	Data not available for this mixture.
<b>Initial boiling point and boiling range:</b>	Data not available for this mixture.
<b>Flash point:</b>	12°C (Ethanol)
<b>Evaporation rate:</b>	Data not available for this mixture.
<b>Flammability</b>	Data not available for this mixture.
<b>Upper / lower flammability or explosive limits:</b>	Lower explosion limit: 3.3% Upper explosion limit: 19% (Ethanol)
<b>Vapor Pressure:</b>	Data not available for this mixture.
<b>Vapor density:</b>	Data not available for this mixture.
<b>Relative density:</b>	Data not available for this mixture.
<b>Solubility:</b>	Data not available for this mixture.
<b>Partition coefficient: n-octanol/water:</b>	Data not available for this mixture.
<b>Auto-ignition temperature:</b>	363-426 °C / 685.4-798.8 °F (Ethanol)
<b>Decomposition temperature:</b>	Data not available for this mixture.
<b>Viscosity:</b>	Data not available for this mixture.

<b>Section 10. Stability and Reactivity</b>	
<b>Chemical stability:</b>	The product is stable.
<b>Possibility of hazardous reactions:</b>	<u>Ethanol:</u> Vapors may form explosive mixtures with air. <u>Lactic Acid:</u> Reactive with oxidizing agents, alkalis. <u>Salicylic Acid:</u> Reactive with oxidizing agents.
<b>Conditions to avoid (static, shock, vibration...)</b>	Protect containers against physical damage, heat, ignition sources.
<b>Incompatible materials:</b>	Should not be stored with oxidizing agents, alkalis.
<b>Hazardous decomposition products:</b>	Carbon oxides. Carbon dioxide. When heated to decomposition it emits acrid smoke and irritating fumes (Ethanol).

<b>Section 11. Toxicological Information</b>	
<b>Routes of exposure:</b>	Ingestion, inhalation, skin and/or eye contact.
<b>Acute Symptoms (acute):</b>	<ul style="list-style-type: none"> <li>• <b>Inhalation:</b> <u>Ethanol:</u> May cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. May cause narcotic effects in high concentration. Vapors may cause dizziness or suffocation. <u>Salicylic Acid:</u> Inhalation of dust can cause respiratory tract irritation, coughing, sneezing, and shortness of breath/rapid breathing. <u>Lactic Acid:</u> Not available <u>Citric Acid:</u> Not available</li> <li>• <b>Eye Contact</b> <u>Ethanol:</u> Transient pain, irritation, and reflex lid closure. A foreign-body sensation may persist for one to two days. Vapors produce transient stinging and tearing, but no apparent adverse effects. Causes eye irritation and temporary injury. <u>Salicylic Acid:</u> Causes eye irritation, temporary injury. <u>Lactic Acid:</u> Causes severe irritation and possible burns. May cause chemical conjunctivitis and corneal damage. Inhalation: Causes severe respiratory tract and mucous membrane irritation with possible burns. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Aspiration may lead to pulmonary edema. Other symptoms may include shortness of breath, coughing, and sore throat. <u>Citric Acid:</u> Not available</li> <li>• <b>Skin Contact:</b> <u>Ethanol:</u> Irritating to skin. May cause dermatitis by de-fatting the skin from prolonged or repeated contact. <u>Salicylic Acid:</u> Can cause mild skin irritation. It may be absorbed through the skin. If absorbed through the skin, it may affect the cardiovascular system (increase in pulse rate), liver, and metabolism (body temperature increase), and cause other symptoms similar to those from ingestion. <u>Lactic Acid:</u> Causes severe skin irritation. Possible burns or ulcerations upon prolonged overexposure. May cause skin rash (in milder cases). It may be absorbed by the skin. <u>Citric Acid:</u> Not available</li> <li>• <b>Ingestion:</b> <u>Ethanol:</u> May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause systemic toxicity with acidosis. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. <u>Salicylic Acid:</u> May be harmful if swallowed in large amounts. Causes irritation of the gastrointestinal tract (nausea, vomiting abdominal pains). Ingestion of a sizable amount can cause "Salicylism" as evidenced by nausea, abdominal pain,</li> </ul>

	<p>vomiting, hyperpnea (increased deep breathing) ro tachypnea (rapid shallow breaths), ringing in the ears/difficulty hearing, dimness of vision, sweating, thirst, skin eruptions, and alteration in the acid-base balance (metabolic acidosis). Severe salicylate intoxication may also affect behavior/central nervous system with symptoms such as muscle weakness, general depressed activity (somnolence), sleepiness, tremor, confusion, dizziness, agitation, irritability, disorientation, slurred speech, ataxia, restlessness, hyperactivity, hallucinations, convulsions, central nervous system depression, coma. It may also affect the cardiovascular system (hypotension, increased or decreased heart rate, dysrhythmias), liver. Fatalities resulting from respiratory.</p> <p><u>Lactic Acid</u>: May cause gastrointestinal tract irritation with nausea, vomiting, diarrhea, and possible burns (in the throat, mouth, and stomach). May cause severe and permanent damage to the digestive tract. May cause perforation of the digestive tract. May also cause shortness of breath and in severe cases may produce cyanosis and vascular collapse.</p> <p><u>Citric Acid</u>: Not available</p>
<p><b>Symptoms (chronic):</b>  <b>Chronic effects from short and long term exposure:</b></p>	<ul style="list-style-type: none"> <li>• Ingestion:  <u>Salicylic Acid</u>: May cause kidney damage, liver damage, damage to stomach, involuntary shaking, anemia, internal bleeding, and other symptoms similar to acute ingestions. The pancreas may also be affected by prolonged ingestion of salicylic acid.  <u>Lactic Acid</u>:  <u>Citric Acid</u>: Not available</li> <li>• Inhalation: Not available</li> <li>• Skin:  <u>Lactic Acid</u>: Prolonged or repeated skin contact/absorption may affect the brain, urinary system and blood.</li> <li>• Eyes: Not available.</li> <li>• Ethanol (general): May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects. Animal studies have reported the development of tumors. Prolonged exposure may cause liver, kidney, and heart damage. Long term exposure can cause loss of appetite, weight loss, nervousness, memory loss, mental retardation.</li> <li>• Salicylic Acid (general): Possible hypersensitization.</li> </ul>

<b>Numerical measures of toxicity (e.g., acute toxicity estimates):</b>	<b>Lethal concentration data (Ethanol):</b>						
	<b>Species</b>	<b>Reference</b>	<b>LC<sub>50</sub> (ppm)</b>	<b>LC<sub>Lo</sub> (ppm)</b>	<b>Time</b>	<b>Adjusted 0.5-hr LC (CF)</b>	<b>Derived value</b>
	Rat	NPIRI 1974	20,000	-----	10 hr	54,200 ppm (2.71)	5,420 ppm
	Mouse	Tiunov et al. 1982	20,363	-----	4 hr	40,727 ppm (2.0)	4,073 ppm
	<b>Lethal dose data (Ethanol):</b>						
	<b>Species</b>	<b>Reference</b>	<b>Route</b>	<b>LD<sub>50</sub> (mg/kg)</b>	<b>LD<sub>Lo</sub> (mg/kg)</b>	<b>Adjusted LD</b>	<b>Derived value</b>
	Mouse	Savchenkov 1967	oral	3,450	-----	12,611 ppm	1,261 ppm
	Rat	Wiberg et al. 1970	oral	7,060	-----	25,807 ppm	2,581 ppm
	<b>Other animal data (Ethanol):</b> RD <sub>50</sub> (mouse), 27,314 ppm [Alarie 1981].						
	<b>Toxicity to animals:</b> <u>Salicylic Acid:</u> Acute oral toxicity (LD50): 480 mg/kg [Mouse]. Acute toxicity of the dust (LC50): 900 mg/m <sup>3</sup> 1 hours [Rat].  <u>Lactic Acid:</u> Acute oral toxicity (LD50): 3543 mg/kg [Rat]. Acute dermal toxicity (LD50): >2000 mg/kg [Rabbit].						
<b>NTP carcinogen:</b>	<u>Ethanol:</u> Not classifiable as a human carcinogen. <u>Salicylic Acid:</u> Not available <u>Lactic Acid:</u> Not available <u>Citric Acid:</u> Not available						
<b>EPA carcinogen:</b>	<u>Ethanol:</u> Not available <u>Salicylic Acid:</u> Not available <u>Lactic Acid:</u> Not available <u>Citric Acid:</u> Not available						
<b>ACGIH carcinogen:</b>	<u>Ethanol:</u> Not classifiable as a human carcinogen. <u>Salicylic Acid:</u> Not available <u>Lactic Acid:</u> Not available <u>Citric Acid:</u> Not available						
<b>IARC potential carcinogen:</b>	<u>Ethanol:</u> Not classifiable as a human carcinogen. <u>Salicylic Acid:</u> Not available <u>Lactic Acid:</u> Not available <u>Citric Acid:</u> Not available						
<b>OSHA carcinogen:</b>	<u>Ethanol:</u> Not classifiable as a human carcinogen. <u>Salicylic Acid:</u> Not available <u>Lactic Acid:</u> Not available <u>Citric Acid:</u> Not available						

<b>Section 12. Ecological Information (Non-mandatory)</b>	
<b>Ecotoxicity (aquatic and terrestrial, where available):</b>	<p><u>Ethanol</u>:            Acute Fish Toxicity (Ethanol)            LC50 / 96 HOUR Oncorhynchus mykiss (rainbow trout) &gt; 10,000 mg/l            LC50 / 96 HOUR Pimephales promelas (fathead minnow) &gt; 13,400 mg/l            Toxicity to aquatic plants (Ethanol)            Growth inhibition / 96 HOURS Chlorella vulgaris (Fresh water algae) 1,000 mg/l            Toxicity to microorganisms (Ethanol)            Toxicity Threshold / Pseudomonas putida 6,500 mg/l            Summary: Inhibition of cell multiplication begins.</p> <p><u>Salicylic Acid</u>: Not available</p> <p><u>Lactic Acid</u>: Not available</p> <p><u>Citric Acid</u>: Not available</p>
<b>Persistence and degradability:</b>	<p><u>Ethanol</u>: Biodegradation is expected.  <u>Salicylic Acid</u>: Not available  <u>Lactic Acid</u>: Not available  <u>Citric Acid</u>: Not available</p>
<b>Bioaccumulative potential:</b>	<p><u>Ethanol</u>: Bioaccumulation is unlikely.  <u>Salicylic Acid</u>: Not available  <u>Lactic Acid</u>: Not available  <u>Citric Acid</u>: Not available</p>
<b>Mobility in soil:</b>	<p><u>Ethanol</u>: Not available  <u>Salicylic Acid</u>: Not available  <u>Lactic Acid</u>: Not available  <u>Citric Acid</u>: Not available</p>
<b>Other adverse effects:</b>	<p><u>Ethanol</u>: Not available  <u>Salicylic Acid</u>: Not available  <u>Lactic Acid</u>: Not available  <u>Citric Acid</u>: Not available</p>

<b>Section 13. Disposal Considerations (Non-mandatory)</b>	
<b>Safe methods of disposal:</b>	Dispose of in accordance with federal, state and local environmental control regulations.

<b>Section 14. Transport Information (Non-mandatory)</b>				
<b>US DOT</b>	UN number:	UN1170	Class: 3	Packing Group: II
<b>UN proper shipping name:</b>		Ethanol solutions		
<b>Packing group, if applicable:</b>		II		
<b>Environmental hazards (marine pollutant, etc...)</b>		Not available		
<b>Special transport precautions:</b>		N/A		

<b>Section 15. Regulatory Information (Non-mandatory)</b>	
<b>Specific safety, health, and environmental regulations:</b>	N/A

<b>Section 16. Other information</b>	
<b>Date of preparation or last revision:</b>	September 18, 2018