

Protective Equipment	TDG	WHMIS
<p>Safety glasses and chemically resistant gloves recommended</p> <p>See SECTION VIII for details</p>	<p>Shipping Name: NOT DANGEROUS GOODS</p> <p>TDG Classification: Not Applicable</p> <p>UN Number (PIN): Not Applicable</p> <p>Packing Group: Not Applicable</p> <p>Emergency Response Guide Number: Not Registered</p> <p>Emergency Phone: (CHEMTREC 1-800-424-9300</p> <p>See SECTION XIV for details</p>	<p>E</p> <p>See SECTION XV for details</p>
	DOT	NFPA
	<p>Shipping Name: NOT HAZMAT GOODS</p> <p>HAZ Classification: Not Applicable</p> <p>UN Number (PIN): Not Applicable</p> <p>Packing Group: Not Applicable</p> <p>Emergency Phone: CHEMTREC 1-800-424-9300</p>	

SECTION I: Chemical Product and Company Identification

Common/Trade Name	DAP-103-1
Synonyms	Not Applicable
Chemical Name	Not Applicable
Chemical Formula	Not Applicable
Chemical Family	Citric Acid Solution
Supplier	Calfrac Well Services Ltd. 411– 8 th Ave SW Calgary, Alberta T2P 1E3
Document Number	MSDS-DAP-103-1 Rev 0
Date of Preparation	March 12, 2010
Prepared By	Calfrac Well Services Ltd
Phone number of Preparer	(403) 266 6000
Material Uses	Fracturing Fluid Additive

SECTION II: Hazards Identification

Routes of Entry	<input checked="" type="checkbox"/> SKIN <input checked="" type="checkbox"/> EYE CONTACT <input type="checkbox"/> INHALATION <input checked="" type="checkbox"/> INGESTION
Threshold Limit Value	Not Applicable
Skin Contact	Causes irritation with discomfort, local redness, and possible swelling. Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Eye Contact	May cause irritation with redness, pain, possible eye burns, conjunctivitis, ulceration and permanent cloudiness.
Ingestion	If large amounts of the product are ingested, symptoms may include gastrointestinal irritation, nausea, vomiting and diarrhea.
Inhalation	May cause mucous membrane irritation with sore throat, coughing and shortness of breath.

SECTION III: Hazardous Ingredients

Name	Percent (%)	CAS#	LD ₅₀ (oral rat)	LC ₅₀ (dermal rabbit)
Citric acid	30 – 60	77-92-9	3000 mg/kg	Not determined

SECTION IV: First Aid Measures

Skin Contact	Remove contaminated clothing and launder before reuse. Flush with copious amounts of water for at least 15 minutes. Get medical attention if irritation persists.
Eye Contact	Flush eyes with water for at least 15 minutes while holding eyelids open. Seek immediate medical attention.
Ingestion	If conscious, wash out mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.
Inhalation	Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.

SECTION V: Fire Fighting Measures

Flash Point	>93°C (TCC)
Flammable Limits	Not determined
Extinguishing Media	Water Spray, foam, dry chemical, and carbon dioxide.
Special Fire Fighting Procedures	Self-contained respirators required for fire fighting personnel.
Unusual Fire and Explosion Hazards	None known

SECTION VI: Accidental Release Measures

Steps to be taken in case the Material is Spilled or Released	(Use appropriate safety equipment.) For small spills, soak up with absorbent material. For large spills, dike to contain spill to prevent water pollution. Recover diked material; return recovered material to plant.
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SECTION VII: Handling and Storage

Precautions to be taken in Handling and Storing	Avoid ingestion. Practice reasonable caution and personal cleanliness. Avoid skin and eye contact. Store in a cool well ventilated area.
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SECTION VIII: Exposure Control/Personal Protection

Special Protection Information	
Respiratory Protection	NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental controls.
Ventilation	General mechanical – approved fume hood
Protective Gloves	Neoprene, Nitrile or equivalent
Eye Protection	Chemical goggles
Other Protective Equipment (Specify)	Acid wet suit, rubber boots

SECTION IX: Physical and Chemical Properties

Appearance	Clear, colourless liquid
Odor	Odorless
Specific Gravity	Not determined
Boiling Point (°C)	Not determined
Melting Point (°C)	Not determined
Solubility in Water	Miscible
Percent Volatile by Volume	Not determined

Evaporation Rate	Not determined
Vapor Pressure (mm Hg)	Not determined
Vapor Density (Air = 1)	Not determined
pH	Not determined

SECTION X: Stability and Reactivity

Stability	<input checked="" type="checkbox"/> STABLE <input type="checkbox"/> UNSTABLE
Incompatibility (Conditions to Avoid)	Metal nitrates (potentially explosive reaction), alkali carbonates and bicarbonates, potassium tartrate. Will corrode copper, zinc, aluminum and their alloys.
Conditions of Reactivity	Not known
Hazardous Decomposition Products	CO _x
Hazardous Polymerization	<input checked="" type="checkbox"/> WILL NOT OCCUR <input type="checkbox"/> MAY OCCUR

SECTION XI: Toxicological Information

Sensitization to Product	Not determined
Carcinogenicity	Not determined
Irritancy to Product	Not determined
Reproductive Toxicity	Not determined
Teratogenicity	Not determined
Mutagenicity	Not determined
Chronic Exposure	Not determined
Name of Toxicological Synergistic Products	Not determined

SECTION XII: Ecological Information

Ecological Information	No data found for product
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SECTION XIII: Disposal Considerations

Waste Disposal Method	Absorb spilled material with absorbent compound, incinerate/dispose to conform to local disposal regulations.
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SECTION XIV: Transportation Information

Proper Shipping Name	Not a Dangerous or Hazardous Good
Class	N/A
TDG Label	N/A
UN Number (PIN)	N/A
TDG Placard	N/A
Packing Group	N/A
Emergency Response Guide Number	N/A
Emergency Telephone	CHEMTREC 1-800-424-9300

SECTION XV: Regulatory Information

WHMIS Classification	Class	E	Division	Subdivision
This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR				

SECTION XVI: Other

Other Information	March 18 th , 2010. New product introduced to Calfrac.
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The information contained herein is offered only as a guide to the handling of this specific product and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied. Calfrac Well Services Ltd. will not be liable for any damages, losses, injuries, or consequential damages, which may result from the use of or reliance on any information contained herein.