

## MATERIAL SAFETY DATA SHEET

Product Trade Name: **CL-41**

Revision Date: 26-May-2015

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: CL-41  
Synonyms: None  
Chemical Family: Blend  
Application: Crosslinker

Manufacturer/Supplier: Halliburton Energy Services, Inc.  
P.O. Box 1431  
Duncan, Oklahoma 73536-0431  
Emergency Telephone: (281) 575-5000

Prepared By: Chemical Stewardship  
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### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT (w/w)	ACGIH TLV-TWA	OSHA PEL-TWA
Lactic acid	50-21-5	10 - 30%	Not applicable	Not applicable
Inorganic salt	Proprietary	10 - 30%	TWA: 2 mg/m <sup>3</sup>	TWA: 2 mg/m <sup>3</sup>

### 3. HAZARDS IDENTIFICATION

Hazard Overview: May cause eye and skin burns. May cause respiratory irritation.

### 4. FIRST AID MEASURES

**Inhalation** If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Skin** In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately.

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Seek immediate medical attention/advice. Suitable emergency eye wash facility should be immediately available

**Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Notes to Physician** Not Applicable

## 5. FIRE FIGHTING MEASURES

Flash Point/Range (F):	Not Determined <b>Min:</b> > 200
Flash Point/Range (C):	Not Determined <b>Min:</b> > 93
Flash Point Method:	Not Determined
Autoignition Temperature (F):	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined

**Fire Extinguishing Media** All standard firefighting media.

**Special Exposure Hazards** Decomposition in fire may produce toxic gases.

**Special Protective Equipment for Fire-Fighters** Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**NFPA Ratings:** Health 2, Flammability 0, Reactivity 0

**HMS Ratings:** Health 2, Flammability 0, Physical Hazard 0, PPE: X

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautionary Measures** Use appropriate protective equipment.

**Environmental Precautionary Measures** Prevent from entering sewers, waterways, or low areas.

**Procedure for Cleaning / Absorption** Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

## 7. HANDLING AND STORAGE

**Handling Precautions** Wash hands after use. Launder contaminated clothing before reuse. Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Avoid breathing mist.

**Storage Information** Store in a cool well ventilated area. Keep container closed when not in use. Store away from alkalis. Store away from direct sunlight. Product has a shelf life of 24 months.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls** Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

**Respiratory Protection** If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.  
Dust/mist respirator. (N95, P2/P3)

<b>Hand Protection</b>	Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Nitrile gloves. (>= 0.4 mm thickness) This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.
<b>Skin Protection</b>	Rubber apron.
<b>Eye Protection</b>	Chemical goggles; also wear a face shield if splashing hazard exists.
<b>Other Precautions</b>	Eyewash fountains and safety showers must be easily accessible.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Liquid
<b>Color:</b>	Clear
<b>Odor:</b>	Odorless
<b>pH:</b>	1.8
<b>Specific Gravity @ 20 C (Water=1):</b>	1.19
<b>Density @ 20 C (lbs./gallon):</b>	9.9
<b>Bulk Density @ 20 C (lbs/ft3):</b>	Not Determined
<b>Boiling Point/Range (F):</b>	Not Determined
<b>Boiling Point/Range (C):</b>	Not Determined
<b>Freezing Point/Range (F):</b>	Not Determined
<b>Freezing Point/Range (C):</b>	Not Determined
<b>Vapor Pressure @ 20 C (mmHg):</b>	Not Determined
<b>Vapor Density (Air=1):</b>	Not Determined
<b>Percent Volatiles:</b>	Not Determined
<b>Evaporation Rate (Butyl Acetate=1):</b>	Not Determined
<b>Solubility in Water (g/100ml):</b>	Soluble
<b>Solubility in Solvents (g/100ml):</b>	Not Determined
<b>VOCs (lbs./gallon):</b>	Not Determined
<b>Viscosity, Dynamic @ 20 C (centipoise):</b>	Not Determined
<b>Viscosity, Kinematic @ 20 C (centistokes):</b>	Not Determined
<b>Partition Coefficient/n-Octanol/Water:</b>	Not Determined
<b>Molecular Weight (g/mole):</b>	Not Determined

## 10. STABILITY AND REACTIVITY

<b>Stability Data:</b>	Stable
<b>Hazardous Polymerization:</b>	Will Not Occur
<b>Conditions to Avoid</b>	None anticipated
<b>Incompatibility (Materials to Avoid)</b>	Strong alkalis.
<b>Hazardous Decomposition Products</b>	Carbon monoxide and carbon dioxide.
<b>Additional Guidelines</b>	Not Applicable

## 11. TOXICOLOGICAL INFORMATION

**Principle Route of Exposure** Eye or skin contact, inhalation.

### Symptoms related to exposure

#### Acute Toxicity

**Inhalation**

May cause respiratory irritation.

**Eye Contact**

Causes severe eye irritation which may damage tissue. May cause eye burns.

**Skin Contact**

Causes severe skin irritation with tissue destruction. May cause skin burns.

**Ingestion**

Irritation of the mouth, throat, and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea.

#### Chronic Effects/Carcinogenicity

No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

### Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Lactic acid	50-21-5	3543 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 7.94 mg/L (Rat, 4h)
Inorganic salt	Proprietary	1930 mg/kg (Rat) 2000 - 5000 mg/kg (Rat)	> 5000 mg/kg (Rabbit)	>6.1 mg/L (Rat, aerosol) 4h (Similar substance)

## 12. ECOLOGICAL INFORMATION

### Ecotoxicological Information

#### Ecotoxicity Product

**Acute Fish Toxicity:** Not determined

**Acute Crustaceans Toxicity:** Not determined

**Acute Algae Toxicity:** Not determined

#### Ecotoxicity Substance

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Lactic acid	50-21-5	EC50 (72h) > 2800 mg/L (Pseudokirchnerella subcapitata) EC50 (72h) > 10000 mg/L (Skeletonema costatum) EC50(72h) 3500 mg/L (Selenastrum capricornutum)	LC50 (96h) 130 mg/L (Oncorhynchus mykiss) LC50 (96h) 195 mg/L (Danio rerio) LC50 (96h) 660 mg/L (Scophthalmus maximus)	No information available	EC50 (48h) 130 mg/L (Daphnia magna) EC50 (48h) 6025 mg/L (Acartia tonsa)
Inorganic salt	Proprietary	EC50 (72h) 14 mg/L (growth rate) (Pseudokirchnerella subcapitata)	LC50 100 mg/L (Carassius auratus) LC50 (96h) 186 mg/L (Danio rerio) LC50 (42d) 15 ug/L (dissolved Aluminium) (Salmo trutta) NOEC (60d) 26 ug/L (mortality in Fry) (Salvelinus fontinalis) LC50 (96h) 104 mg/L (Danio rerio) (similar substance)	EC50 (3d) > 1000 mg/L (activated sludge)	EC50 (48h) 136 mg/L (Daphnia magna) EC50 (48h) > 200 mg/L (Daphnia magna) EC50 (48h) 38 mg/L (similar substance) NOEC (8d) 3.8 mg/L (reproduction) (Ceriodaphnia dubia) (Similar substance)

### 12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Lactic acid	50-21-5	Readily biodegradable (73-84% @ 28d)
Inorganic salt	Proprietary	The methods for determining biodegradability are not applicable to inorganic substances.

### 12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Lactic acid	50-21-5	-0.62
Inorganic salt	Proprietary	No information available

### 12.4. Mobility in soil

### 12.5. Results of PBT and vPvB assessment

No information available.

Substances	PBT and vPvB assessment
Inorganic salt	Not PBT/vPvB

### 12.6. Other adverse effects

No information available

## **13. DISPOSAL CONSIDERATIONS**

**Disposal Method** Disposal should be made in accordance with federal, state, and local regulations.

**Contaminated Packaging** Follow all applicable national or local regulations.

## **14. TRANSPORT INFORMATION**

### US DOT

**UN Number:** UN3265  
**UN Proper Shipping Name:** Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Lactic Acid)  
**Transport Hazard Class(es):** 8  
**Packing Group:** III  
**NAERG:** NAERG 153

### US DOT Bulk

**DOT (Bulk)** Not applicable

### Canadian TDG

**UN Number:** UN3265  
**UN Proper Shipping Name:** Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Lactic Acid)  
**Transport Hazard Class(es):** 8  
**Packing Group:** III

### IMDG/IMO

**UN Number:** UN3265  
**UN Proper Shipping Name:** Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Lactic Acid)  
**Transport Hazard Class(es):** 8  
**Packing Group:** III  
**EMS:** EmS F-A, S-B

### IATA/ICAO

**UN Number:** UN3265  
**UN Proper Shipping Name:** Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Lactic Acid)  
**Transport Hazard Class(es):** 8  
**Packing Group:** III

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:** Not applicable

**Special Precautions for User:** None

## 15. REGULATORY INFORMATION

### US Regulations

<b>US TSCA Inventory</b>	All components listed on inventory or are exempt.
<b>EPA SARA Title III Extremely Hazardous Substances</b>	Not applicable
<b>EPA SARA (311,312) Hazard Class</b>	Acute Health Hazard
<b>EPA SARA (313) Chemicals</b>	This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).
<b>EPA CERCLA/Superfund Reportable Spill Quantity</b>	EPA Reportable Spill Quantity is 2067 Gallons based on Aluminum sulfate (CAS: 10043-01-3).
<b>EPA RCRA Hazardous Waste Classification</b>	If product becomes a waste, it does meet the criteria of a hazardous waste as defined by the US EPA, because of:  Corrosivity D002
<b>California Proposition 65</b>	All components listed do not apply to the California Proposition 65 Regulation.
<b>MA Right-to-Know Law</b>	One or more components listed.
<b>NJ Right-to-Know Law</b>	One or more components listed.
<b>PA Right-to-Know Law</b>	One or more components listed.

### Canadian Regulations

<b>Canadian DSL Inventory</b>	All components listed on inventory or are exempt.
<b>WHMIS Hazard Class</b>	E Corrosive Material

## 16. OTHER INFORMATION

### The following sections have been revised since the last issue of this SDS

Not applicable

**Additional information** For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

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\*\*\*END OF MSDS\*\*\*