SECTION 1  IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

<table>
<thead>
<tr>
<th>Trade name</th>
<th>Ethanol SDA 29H 200 Proof</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms</td>
<td>Denatured Alcohol</td>
</tr>
<tr>
<td>Use</td>
<td>Industrial use, Intermediate, Raw material for chemical processes, Raw material for industry, Solvent</td>
</tr>
<tr>
<td>Company</td>
<td>Sasol Chemicals (USA) LLC</td>
</tr>
<tr>
<td>(an affiliate of Sasol Chemicals North America LLC)</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td>12120 Wickchester Lane</td>
</tr>
<tr>
<td></td>
<td>Houston TX 77079</td>
</tr>
<tr>
<td>Telephone</td>
<td>CHEMTREC North America Transportation Emergency (24-hr) (800) 424-9300</td>
</tr>
<tr>
<td></td>
<td>CHEMTREC World Wide (703) 527-3887</td>
</tr>
<tr>
<td></td>
<td>Other Emergencies (24-hr) (337) 494-5142</td>
</tr>
<tr>
<td></td>
<td>MSDS and Product Information (8:00am-4:30pm CST) (281) 588-3491</td>
</tr>
<tr>
<td></td>
<td>Health and Safety Information (7:30am-4:00pm CST) (281) 588-3492</td>
</tr>
<tr>
<td>E-mail address</td>
<td><a href="mailto:SasolElectronicSDS@us.sasol.com">SasolElectronicSDS@us.sasol.com</a></td>
</tr>
</tbody>
</table>

SECTION 2  HAZARDS IDENTIFICATION

GHS Hazards

<table>
<thead>
<tr>
<th>Flammable liquids</th>
<th>Category 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin sensitisation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Eye irritation</td>
<td>Category 2A</td>
</tr>
</tbody>
</table>

LABEL ELEMENTS

Hazard symbols

Signal word  Danger

Hazard statements

<table>
<thead>
<tr>
<th>H225</th>
<th>Highly flammable liquid and vapour.</th>
</tr>
</thead>
<tbody>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction.</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation.</td>
</tr>
</tbody>
</table>

Precautionary statements

Prevention

<table>
<thead>
<tr>
<th>P210</th>
<th>Keep away from heat/sparks/open flames/hot surfaces. - No smoking.</th>
</tr>
</thead>
<tbody>
<tr>
<td>P233</td>
<td>Keep container tightly closed.</td>
</tr>
<tr>
<td>P240</td>
<td>Ground/bond container and receiving equipment.</td>
</tr>
<tr>
<td>P241</td>
<td>Use explosion-proof electrical/ ventilating/ lighting/ equipment.</td>
</tr>
<tr>
<td>P242</td>
<td>Use only non-sparking tools.</td>
</tr>
<tr>
<td>P243</td>
<td>Take precautionary measures against static discharge.</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

Ethanol SDA 29H 200 Proof

P280 Wear protective gloves/ eye protection/ face protection.
P264 Wash skin thoroughly after handling.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P272 Contaminated work clothing should not be allowed out of the workplace.

Response

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide for extinction.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.

Storage P403 + P235 Store in a well-ventilated place. Keep cool.

Disposal P501 Dispose of contents/ container to an approved waste disposal plant.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>99</td>
</tr>
<tr>
<td>Ethyl methacrylate</td>
<td>97-63-2</td>
<td>1</td>
</tr>
</tbody>
</table>

See Section 8 for Exposure Guidelines and Section 15 for Regulatory Classifications.

SECTION 4 FIRST AID MEASURES

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. When symptoms persist or in all cases of doubt seek medical advice. Wash contaminated clothing before re-use.

Inhalation Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. In case of shortness of breath, give oxygen. Call a physician immediately.

Ingestion If swallowed, call a poison control centre or doctor immediately. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

SECTION 5 FIREFIGHTING MEASURES

FLAMMABLE PROPERTIES

Fire/explosion Flash back possible over considerable distance. NFPA Class IB flammable liquid.
Ethanol SDA 29H 200 Proof

**Suitable extinguishing media**
Water spray, Alcohol-resistant foam, Dry chemical, Carbon dioxide (CO2)

**Protective equipment and precautions for firefighters**
Wear self-contained breathing apparatus and protective suit. Keep containers and surroundings cool with water spray.

**SECTION 6  ACCIDENTAL RELEASE MEASURES**

**Methods and materials for containment and cleaning up**
Evacuate personnel to safe areas. Remove all sources of ignition. 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 (see section 13). Do not flush into surface water or sanitary sewer system.

**Spill precautions**
Material can create slippery conditions.

**SECTION 7  HANDLING AND STORAGE**

**Safe handling advice**
Ensure all equipment is electrically grounded before beginning transfer operations. Keep away from heat and sources of ignition.

**Storage/Transport pressure**
Ambient

**Load/Unload temperature**
Ambient

**SECTION 8  EXPOSURE CONTROLS/PERSONAL PROTECTION**

**ENGINEERING MEASURES**
Ensure adequate ventilation, especially in confined areas.

**PERSONAL PROTECTIVE EQUIPMENT**

- **Eyes**
  Wear as appropriate: Goggles, Face-shield

- **Skin**
  Wear suitable protective clothing, gloves and eye/face protection.

- **Inhalation**
  Respiratory protection is normally not required except in emergencies or when conditions cause excessive airborne levels of mists or vapors. Use NIOSH approved respiratory protection.

**EXPOSURE GUIDELINES**

<table>
<thead>
<tr>
<th>Components</th>
<th>Exposure limit(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>ACGIH STEL 1,000 ppm</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL 1,000 ppm 1,900 mg/m3</td>
</tr>
</tbody>
</table>

PEL= Permissible Exposure Limits
TLV= Threshold Limit Value
EL= Excursion Limit
TWA= Time Weighted Average (8 hr.)
STEL= Short Term Exposure Limit (15 min.)
WEEL= Workplace Environmental Exposure Level
SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance  liquid;

Colour  Clear, colorless

Form  liquid

Odour  alcohol-like

Odour Threshold  no data available

Flash point  13 °C, 55 °F;

Flammability  Upper explosion limit: 20 % (V)

Lower explosion limit: 4 % (V)

Boiling point/boiling range  ca. 74 - 80 °C, 165.2 - 176 °F;

Melting point/range  -114 °C, -173 °F;

Auto-ignition temperature  ca. 400 °C, 752 °C;

Decomposition temperature  no data available

Flammability (solid, gas)  no data available

Vapour pressure  ca. 66.661 hPa @ 20 °C, 68 °F;

Vapour density  no data available

Density  0.794 g/cm³

Specific gravity  no data available

Water solubility  completely soluble

Viscosity  no data available

pH  no data available

Evaporation rate  no data available

Partition coefficient: n-octanol/water  no data available
SAFETY DATA SHEET

Ethanol SDA 29H 200 Proof

SECTION 10  STABILITY AND REACTIVITY

Reactivity  Stable at normal ambient temperature and pressure.
Chemical stability  No decomposition if stored and applied as directed.
Conditions to avoid  Keep away from heat and sources of ignition.
Hazardous decomposition products  Combustion products include carbon dioxide, carbon monoxide and possibly other unidentified organic compounds.
Materials to avoid  Can react with strong oxidizers, inorganic acids, and halogens.
Hazardous polymerisation  None.

SECTION 11  TOXICOLOGICAL INFORMATION

Acute dermal toxicity  LD50 rabbit: > 2,000 mg/kg; OECD Test Guideline 402
Test substance: Ethanol; (literature value)

Acute inhalation toxicity  LC50 mouse (4 hours): > 20 mg/l
Test substance: Ethanol; (literature value)
LC50 rat (4 hours): 55 mg/l
Test substance: Ethyl Methacrylate

Acute oral toxicity  LD50 rat: 2,000 mg/kg; OECD Test Guideline 401
Test substance: Ethanol; (literature value)
LD50 rat: 13,424 mg/kg
Test substance: Ethyl Methacrylate

Skin corrosion/irritation  (rabbit): OECD Test Guideline 404
Test substance: Ethanol
Not irritating, (literature value)
Primary irritation : 3.1 (Max. score is 8.0.)
Test substance: Ethyl Methacrylate irritating

Eye damage/irritation  (rabbit): OECD Test Guideline 405
Test substance: Ethanol
irritating, (literature value)
Test substance: Ethyl Methacrylate
Not irritating
Respiratory or skin sensitization

- guinea pig: not sensitizing; Maximisation Test (literature value)
- Causes sensitisation: Ethyl Methacrylate

Germ cell mutagenicity

**Genotoxicity in vitro:**
- Type: Ames test; OECD Test Guideline 471
- System: Salmonella typhimurium; with and without metabolic activation
- Result: In vitro tests did not show mutagenic effects.
- Test substance: Ethanol (literature value)
- Result: In vitro tests did not show mutagenic effects.
- Test substance: Ethyl Methacrylate

**Genotoxicity in vivo:**
- Result: In vivo tests did not show mutagenic effects
- Test substance: Ethyl Methacrylate

**Assessment Mutagenicity:**
- Based on available data, the classification criteria are not met.

Reproductive toxicity

**Reproductive toxicity:**
- male rat; OECD Test Guideline 422
- NOAEL (parents): 1,000 mg/kg
- NOAEL (F1): 1,000 mg/kg
- Test substance: Ethyl Methacrylate
- female rat; OECD Test Guideline 422
- NOAEL (parents): 300 mg/kg
- Test substance: Ethyl Methacrylate
- male and female rat; OECD Test Guideline 416
- NOAEL (parents): 400 mg/kg
- NOAEL (F1): 400 mg/kg
- NOAEL (F2): 400 mg/kg
- Test substance: Ethyl Methacrylate

**Assessment Reproductive toxicity:**
- Based on available data, the classification criteria are not met.

**Teratogenicity:**
- OECD Test Guideline 414
- NOAEL (teratogen): 450 mg/kg
- NOAEL (maternal): 50 mg/kg
- Test substance: Ethyl Methacrylate

**Assessment teratogenicity:**
- Based on available data, the classification criteria are not met.

**STOT - single exposure**
- The substance or mixture is not classified as specific target organ toxicant, single exposure.

**STOT - repeated exposure**
- rat; Oral; 90-day;
- NOAEL: 1,730 mg/kg
- LOAEL: 3,160 mg/kg
- Test substance: Ethanol
Aspiration toxicity
Based on available data, the classification criteria are not met.

Carcinogenicity
Assessment carcinogenicity:
Contains no ingredient listed as a carcinogen

SECTION 12  ECOLOGICAL INFORMATION

Toxicity to fish
LC50 (Pimephales promelas (fathead minnow)) 96 hours: > 100 mg/l; flow-through test
Test substance: Ethanol
(literature value)
LC50 (Pimephales promelas (fathead minnow)) 96 hours: 15,300 mg/l
LC50 (Carassius auratus (goldfish)) 8 hours: 250 mg/l
Test substance: Ethanol

Toxicity to aquatic invertebrates
EC50 (Ceriodaphnia Dubia (water flea)) 48 hours: > 100 mg/l; static test
Test substance: Ethanol
(literature value)

Toxicity to algae
EC50 (Chlorella vulgaris) 72 hours: > 100 mg/l; static test; OECD Test Guideline 201
Test substance: Ethanol
(literature value)

Chronic toxicity to aquatic invertebrates
NOEC (Ceriodaphnia Dubia (water flea)) 10 d: 9.6 mg/l; semi-static test
Test substance: Ethanol
(literature value)

Biodegradation
Readily biodegradable.
OECD Test Guideline 301B (28 d): > 60 %
Test substance: Ethanol
(literature value)

Bioaccumulation
Test substance: Ethanol
No bioaccumulation is to be expected (log Pow <= 4).

Mobility in soil
no data available

Other adverse effects
no data available
SECTION 13  DISPOSAL CONSIDERATIONS

Waste Code  D001 - Ignitability (RQ 100 LB). This product has the RCRA characteristic of ignitability. Re-evaluation of the product may be required by the user at the time of disposal, since the product uses, transformations, mixtures, contamination, and spillage may change the classification.

Disposal methods  Dispose of only in accordance with local, state, and federal regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

Empty containers.  Empty containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty drums should be completely drained, triple-rinsed, properly bunged and promptly returned to a drum reconditioner, or properly disposed.

SECTION 14  TRANSPORT INFORMATION

DOT  UN 1170, Ethanol solutions, 3, II (RQ Ethyl methacrylate) When shipped in quantities greater than 100,000 lbs, RQ must be added to the shipping description.

IATA  UN 1170, Ethanol solutions, 3, II (RQ Ethyl methacrylate) When shipped in quantities greater than 100,000 lbs, RQ must be added to the shipping description.

IMDG  UN 1170, Ethanol solutions, 3, II (RQ Ethyl methacrylate) When shipped in quantities greater than 100,000 lbs, RQ must be added to the shipping description.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Remarks  no data available

SECTION 15  REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

OSHA Hazards (HCS 1994)
Flammable liquid, Irritant

TSCA Inventory Listing

Components
Ethanol  64-17-5
2-Propenoic acid, 2-methyl-, ethyl ester  97-63-2

SARA 302 Status

Components  CAS-No.  Weight percent
SAFETY DATA SHEET

Ethanol SDA 29H 200 Proof

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 311/312 Classification
"Fire hazard", "Immediate (acute) health hazard"

SARA 313 Chemical Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US. EPA CERCLA Hazardous Substances (40 CFR 302)
Components
2-Propenoic acid, 2-methyl-, ethyl ester

Reportable Quantity
1,000 LB

Weight percent
1 %

INTERNATIONAL REGULATIONS

WHMIS Classification
Flammable liquid
Class D, Division 2, Subdivision B: Toxic material.

European Union
Classification according to Regulation (EU) 1272/2008.

Flammable liquids, Category 2
Eye irritation, Category 2
Skin sensitisation, Category 1

Australia. Inventory of Chemical Substances (AICS) Listed

Japan. Inventory of Existing and New Chemical Substances (ENCS) Listed

Japan. Industrial Safety & Health Law (ISHL) Inventory Listed

Canada. Domestic Substances List (DSL) Inventory Listed

Canadian Non-Domestic Substance Listing (NDSL) Not listed

European Inventory of Existing Commercial Chemical Substances (EINECS) Listing Listed

Philippines. Inventory of Chemicals / Chemical Substances (PICCS) Listed

Korea. Existing Chemicals Inventory (KECI) Listed

China. Inventory of Existing Chemical Substances (IECSC) Listed

Mexico. National Inventory of Chemical Substances (INSQ) Listed

New Zealand. Inventory of Chemicals (NZIoC) Listed

Switzerland. Inventory of Notified New Substances (CHINV) Listed

Taiwan. National Existing Chemical Inventory (NECI) Listed
SAFETY DATA SHEET

Ethanol SDA 29H 200 Proof

Please note: The names and CAS numbers which are used for this product in the stated inventories may deviate from the information which is listed in Section 3.

STATE REGULATIONS

California Prop. 65
Components none

SECTION 16 OTHER INFORMATION

HAZARD RATINGS

<table>
<thead>
<tr>
<th></th>
<th>Health</th>
<th>Flammability</th>
<th>Physical Hazard/ Instability</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS®</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>NFPA</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

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