

1. IDENTIFICATION

1.1 Product identifier

Product Name: Denatured Alcohol
Chemical Name: Denatured Ethyl Alcohol DA-2A (Anhydrous)
Synonyms: 2A Alcohol or solvent, DAG-2A.

1.2 Recommended use of the chemical and restrictions on use

Recommended Use: For the application of metallic pigments on coatings
Other Uses: General purpose organic solvent, printing inks, protective and decorative coatings, resins, Viscosity reducer.
Restricted Uses: No information available

1.3 Details of the Supplier of the Safety Data Sheet

Company: Polymer Science Corporation.
Unit 1133, 6027 – 79 Avenue S.E
Calgary, Alberta. Canada T2C 5P1
Telephone: 403 287 2751
Fax: 403 287 2766
Website: www.polymersciencecorp.com

1.4 Emergency telephone number

24 Hour Emergency Phone Number In case of Emergency call CANUTEC: 613-996-6666

2. HAZARD IDENTIFICATION

2.1 Hazardous Classification of the substance or mixture

Acute toxicity: Oral Category 4
Acute toxicity: Dermal Category 3
Acute toxicity: Inhalation (Dusts/Mists) Category 3
Carcinogenicity: Category 1A
Specific target organ toxicity (single exposure): Category 1

2.2 Label elements

Hazard pictograms



Signal Word:
Hazard statements

Danger
Highly flammable liquid and vapor
May cause respiratory irritation
Causes damage to organs
Toxic in contact with skin
Toxic if inhaled
Harmful if swallowed

Precautionary Statements

Do not handle until all safety precautions have been read and understood
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ ventilating / lighting/ equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/eye protection/face protection

IF ON SKIN (or hair)

Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower

IF INHALED
IF SWALLOWED
In case of fire

Remove person to fresh air and keep comfortable for breathing
Call a POISON CENTER or doctor if you feel unwell. Rinse mouth
Use dry sand, dry chemical or alcohol-resistant foam to extinguish

Storage
Disposal

Store in a well-ventilated place. Keep container tightly closed
Dispose of contents/container to an approved waste disposal plant

Other Information

Unknown acute toxicity No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Not applicable.

3.2 Mixture

Chemical Name	CAS No	Weight-%	Synonyms
Ethanol	64-17-5	80 - 90%	Ethanol
Methanol	67-56-1	10 - 20%	Methanol

Ethyl Acetate	141-78-6	0 - 10%	Ethyl Acetate
Water	7732-18-5	0 - 10%	Water

4. FIRST AID

Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance. Immediate medical attention is required. IF exposed or concerned: Get medical advice/attention.

Inhalation

Remove to fresh air. IF exposed or concerned: Get medical advice/attention.

Eye contact

Get immediate medical advice/attention. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing.

Skin contact

Get immediate medical advice/attention. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

Ingestion

Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.

Self-protection of the first aider

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Wear personal protective clothing (see section 8). Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

Most important symptoms and effects, both acute and delayed:

Causes mild skin irritation Causes moderate to severe irritation, experienced as discomfort or pain, excess blinking and tear production, with marked excess redness and swelling of the conjunctiva. A small amount of methanol (usually two or more ounces) can cause mental sluggishness, nausea and vomiting leading to severe illness, and may produce adverse effects on vision with possible blindness or death if treatment is not received. May cause dermatitis, prolonged or repeated contact may cause skin sensitization. May be absorbed through the skin and contribute to the symptoms listed under ingestion. May cause headache, nausea, abdominal discomfort, vomiting, diarrhea, dizziness, drowsiness, faintness, lack of coordination and unconsciousness. High vapor concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.

Indication of any immediate medical attention and special treatment needed:

Note to physicians

Treatment based on sound judgment of physician and individual reactions of patient. This product contains methanol, a toxic substance having produced blindness and other serious effects on vision, as well as death. However, this product also contains the accepted antidote, ethanol.

5. FIRE-FIGHTING MEASURES

5.1 Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2 Specific hazards arising from the substance or mixture

Vapors from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point. Use water spray to cool fire-exposed containers and structures. Use water spray to disperse vapors; re-ignition is possible.

5.3 Hazardous combustion products

Carbon monoxide. Carbon dioxide. Formaldehyde.

5.4 Special protective equipment for fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so.

6.3 Methods and materials for containment and cleaning up

Prevent further leakage or spillage if safe to do so.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. DO NOT handle or store near an open flame, heat, or other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. DO NOT pressurize, cut, heat, or weld containers. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, away from heat and ignition sources. Place away from incompatible materials. Store in accordance with good industrial practices.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Exposure Limits .

Chemical Name	Alberta OEL	British Columbia OEL	Ontario	Quebec OEL	Exposure Limit - ACGIH	Immediately Dangerous to Life or Health - IDLH
Ethanol 64-17-5	TWA: 1000 ppm TWA: 1880 mg/m ³	STEL: 1000 ppm	STEL: 1000 ppm	TWA: 1000 ppm TWA: 1880 mg/m ³	1000 ppm	STEL 3300 ppm
Methanol 67-56-1	TWA: 200 ppm TWA: 262 mg/m ³ STEL: 250 ppm STEL: 328 mg/m ³ Skin	TWA: 200 ppm STEL: 250 ppm Skin	TWA: 200 ppm STEL: 250 ppm Skin	TWA: 200 ppm TWA: 262 mg/m ³ STEL: 250 ppm STEL: 328 mg/m ³ Skin	250 ppm STEL 200 ppm TLV-TWA	6000 ppm
Ethyl Acetate 141-78-6	TWA: 400 ppm TWA: 1440 mg/m ³	TWA: 150 ppm	TWA: 400 ppm	TWA: 400 ppm TWA: 1440 mg/m ³	400 ppm TLV-TWA	2000 ppm
Water 7732-18-5	Not available	Not available	Not available	Not available	Not available	Not available

8.2 Appropriate engineering controls

Engineering controls

Use process enclosure, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Use explosion proof equipment.

8.3 Individual protection measures, such as personal protective equipment

Eye/face protection

Chemical goggles; also wear a face shield if splashing hazard exists.

Hand protection

Butyl rubber gloves. Neoprene gloves. Rubber gloves.

Skin and body protection

Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.

Respiratory protection

Up to 1000 ppm, an approved organic vapor cartridge respirator can be used. For concentrations above 1000 ppm, an air-supplying respirator is recommended. The user should consult a respirator guide, such as the Canadian Standards Association's guide Z94.4- M1982.

General hygiene considerations

Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Physical state Liquid
Color	Colorless

Odor	Alcohol	
Odor threshold	No information available	
PROPERTIES	Values	Remarks • Method
pH	No data available	none known
Melting point / freezing point	No data available	none known
Initial boiling point/boiling range	75.6 °C / 168 °F	none known
Flash point	12 °C / 54 °F	Tag Closed Cup ASTM D56
Evaporation rate	1.8	
Flammability (solid, gas)	No data available	none known
Flammability Limit in Air		none known
Upper flammability limit:	36	
Lower flammability limit:	2.2	
Vapor pressure	No data available	none known
Relative vapor density	No data available	none known
Relative density	0.7889	
Water solubility	Completely soluble	
Solubility in other solvents	No data available	
Partition coefficient	No data available	none known
Autoignition temperature	385 °C / 725 °F	
Decomposition temperature	No data available	none known
Kinematic viscosity	No data available	none known
Dynamic viscosity	No data available	none known
Explosive properties	No information available.	
Oxidizing properties	No information available.	
Molecular weight	No information available	
VOC Percentage Volatility	No information available	
Liquid Density	No information available	
Bulk density	No information available	

10. STABILITY AND REACTIVITY

Reactivity/Chemical Stability

Stable under normal conditions

Possibility of hazardous reactions

No additional remark.

Conditions to avoid

Avoid excessive heat, open flames and all ignition sources.

Incompatible materials

Oxidizing materials.

Hazardous decomposition products

Carbon monoxide. Carbon dioxide. formaldehyde.

11. TOXICOLOGICAL INFORMATION

11.1 Information on likely routes of exposure

Inhalation

High vapor concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.

Eye contact

Causes moderate to severe irritation, experienced as discomfort or pain, excess blinking and tear production, with marked excess redness and swelling of the conjunctiva.

Skin contact

Causes mild skin irritation. May cause dermatitis, prolonged or repeated contact may cause skin sensitization. May be absorbed through the skin and contribute to the symptoms listed under ingestion.

Ingestion

A small amount of methanol (usually two or more ounces) can cause mental sluggishness, nausea and vomiting leading to severe illness, and may produce adverse effects on vision with possible blindness or death if treatment is not received. May cause headache, nausea, abdominal discomfort, vomiting, diarrhea, dizziness, drowsiness, faintness, lack of coordination and unconsciousness.

11.2 Information on toxicological effects

Symptoms

Repeated exposure by inhalation or absorption of methanol may cause systemic poisoning, brain disorders, impaired vision and blindness. Inhalation may worsen conditions such as emphysema or bronchitis. Repeated skin contact may cause dermal irritation, dryness and cracking. Effects of sub lethal doses may be nausea, headache, abdominal pain, vomiting and visual disturbances ranging from blurred vision to light sensitivity. Methanol is toxic by inhalation and ingestion. Inhalation of vapors may cause cyanosis, CNS effects, lethargy, loss of consciousness and death. The effects from inhalation may be delayed. Ingestion may cause malaise, CNS effects, discomfort, and death if not treated promptly. Ingestion of methanol has resulted in adverse effects (necrosis and hemorrhaging) in the brain. Medical conditions aggravated by exposure include: skin disorders and allergies, liver disorders and eye disease. Long term exposure to methanol has been associated with headaches, giddiness, conjunctivitis, insomnia and impaired vision. Dermal absorption of significant amounts of methanol resulted in death in several animal species. Toxic effects in animals exposed to methanol by inhalation include eye irritation, blindness and nasal discharge. Toxic effects observed in animals exposed to methanol by ingestion include CNS effects, gastrointestinal effects, anesthetic effects, damage to the optic nerve and acidosis.

Synergistic Products: In animals, high concentrations of methanol can increase the toxicity of other chemicals, particularly liver toxins like carbon tetrachloride. Ethanol significantly reduces the toxicity of methanol because it competes for the same metabolic enzymes, and has been used to treat methanol poisoning.

Potential for Accumulation: Methanol is readily absorbed into the body following inhalation and ingestion. Skin absorption may occur if the skin is broken or exposure is prolonged. Once absorbed, methanol is rapidly distributed to body tissues. A small amount is excreted unchanged in exhaled air and the urine. The rest is first metabolized to formaldehyde, which is then metabolized to formic acid and/or formate. The formic acid and formate are eventually converted to carbon dioxide and water. In humans, methanol clears from the body, after inhalation or oral exposure, with a half-life of 1 day or more for high doses (greater than 1000 mg/kg) or about 1.5-3 hours for low doses (less than 100 mg/kg or 76.5-230 ppm (100-300 mg/m³

11.3 Numerical measures of toxicity

Acute toxicity

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral)	671.00 mg/kg
ATEmix (dermal)	318.00 mg/kg
ATEmix (inhalation-dust/mist)	0.53 mg/l
Unknown acute toxicity	No information available

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Ethanol 64-17-5	= 7060 mg/kg (Rat)	Not available	= 124.7 mg/L (Rat) 4 h
Methanol 67-56-1	= 6200 mg/kg (Rat)	Not available	= 22500 ppm (Rat) 8 h
Ethyl Acetate 141-78-6	= 5620 mg/kg (Rat)	> 18000 mg/kg (Rabbit)	Not available
Water 7732-18-5	> 90 mL/kg (Rat)	Not available	Not available

11.4 Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation

Causes mild skin irritation. May cause dermatitis, prolonged or repeated contact may cause skin sensitization. May be absorbed through the skin and contribute to the symptoms listed under ingestion.

Serious eye damage/eye irritation

Causes moderate to severe irritation, experienced as discomfort or pain, excess blinking and tear production, with marked excess redness and swelling of the conjunctiva.

Respiratory or skin sensitization

No information available.

Germ cell mutagenicity

No information available.

Carcinogenicity

Classification based on data available for ingredients.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Ethanol 64-17-5	A3	Group 1	Known	X
Methanol 67-56-1	Not available	Not available	Not available	Not available
Ethyl Acetate 141-78-6	Not available	Not available	Not available	Not available
Water 7732-18-5	Not available	Not available	Not available	Not available

Reproductive toxicity

Methanol is reported to cause birth defects in rats exposed to 20 000 ppm. In experimental animals, methanol is fetotoxic, teratogenic and has produced significant behavioral abnormalities in offspring at dose levels not producing maternal toxic effects. Behavioral abnormalities were observed in the offspring of rats given drinking water containing 2% methanol. Methanol has produced mutagenic effects (somatic cells) in experimental animals. Contains Ethanol, which may cause birth defects or other adverse effects on pregnancy. Risk of effects depends on duration and level of exposure.

Specific target organ systemic toxicity - single exposure

Based on the classification criteria of the Globally Harmonized System as adopted in the country or region with which this safety data sheet complies, this product has been determined to cause systemic target organ toxicity from acute exposure. (STOT SE). Causes damage to organs.

Specific target organ systemic toxicity - repeated exposure

No information available.

Aspiration hazard

No information available.

12. ECOLOGICAL INFORMATION**12.1 Ecotoxicity**

Chemical Name	Ecotoxicity- Freshwater Algae Data	Ecotoxicity- Fish Species Data	Toxicity to microorganisms	Crustacea
Ethanol 64-17-5	Not Available	12.0 – 16 mL/L LC50 (Oncorhynchus mykiss) 96 h static 13400- 15100 mg/L LC50 (Pimephales promelas) 96 h flow-through 100 mg/L LC50 (Pimephales promelas) 96 h static	Not available	LC50: 9268 - 14221mg/L (48h, Daphnia magna) EC50: =2mg/L (48h, Daphnia magna)
Methanol 67-56-1	Not available	13500 - 17600 mg/L LC50 (Lepomis macrochirus) 96 h flow-through 18 - 20 mL/L LC50 (Oncorhynchus mykiss) 96 h static 19500 - 20700 mg/L LC50 (Oncorhynchus mykiss) 96 h flow-through 28200 mg/L LC50 (Pimephales promelas) 96 h flow-through 100 mg/L LC50 (Pimephales promelas) 96 h static	Not available	Not available
Ethyl Acetate 141-78-6	Not available	220 - 250 mg/L LC50 (Pimephales promelas) 96 h flow-through 352 - 500 mg/L LC50 (Oncorhynchus mykiss) 96 h semi-static 484 mg/L LC50 (Oncorhynchus mykiss) 96 h flow-through	Not available	EC50: =560mg/L (48h, Daphnia magna)
Water 7732-18-5	Not available	Not available	Not available	Not available

Persistence and degradability

No information available.

Bioaccumulation

No information available.

Component Information

Chemical Name	Partition coefficient
Ethanol	-0.32
64-17-5	
Methanol	-0.77
67-56-1	
Ethyl Acetate	0.6
141-78-6	
Water	Not available
7732-18-5	

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Do not reuse empty containers.

14. TRANSPORT INFORMATION

TDG (Canada):

UN Number	UN1986
Shipping name	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S. (ETHANOL)
Class	3 (6.1)
Packing Group	II
Marine pollutant	Not available.

DOT (U.S.)

UN Number	UN1986
Shipping name	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S. (ETHANOL)
Class	3 (6.1)
Packing Group	II
Marine pollutant	Not available

International Inventories

15. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Prepared By: Polymer Science Corp. 403 287 2751
Preparation Date: 26/Jul/2017