

## MATERIAL SAFETY DATA SHEET

MSDS NUMBER: 1000 DYNAMIC AQUA-SUPPLY LTD.  
 DATE PRINTED: #112 - 8299 129TH ST.  
 WHMIS CODES: B.2 D.1A D.2B SURREY, BC V3W 0A6

## -----EMERGENCY ASSISTANCE-----

For Emergency Assistance Involving Chemicals  
 Call CHEMTREC (800) 424-9300

## -----PRODUCT INFORMATION-----

Product name: 2-A ALCOHOL DAG 95%  
 Common Name/Synonym: D.A.G. No.2-A; 2A Solvent; DAG; 2A.  
 Chemical Name: Denatured Ethyl Alcohol Grade No. 2-A (95% Vol)  
 Chemical Family: Alcohols/Ketones/Esters  
 Formula: CH<sub>3</sub>-CH<sub>2</sub>-OH and CH<sub>3</sub>OH and CH<sub>3</sub>-CO-C<sub>2</sub>H<sub>5</sub> and CH<sub>3</sub>-CO<sub>2</sub>-C<sub>2</sub>H<sub>5</sub>  
 Molecular Weight: For the components of this blend: Ethyl Alcohol - 46.07;  
 Methanol - 32.04; Methyl Ethyl Ketone - 72.10;  
 Ethyl Acetate - 88.10.  
 Product Use: General purpose organic solvent, printing inks, protective and decorative coatings, resins, etc.

## -----PREPARATION INFORMATION-----

Date Issued: 06/2008  
 Supersedes: 06/2006  
 Prepared By: MSDS Coordinator. Contact during business hours, Pacific Time

## -----HAZARDOUS INGREDIENTS-----

Component(s)/ CAS No.	% wt.	Exposure Limits, ppm ACGIH (1988-1989) TLV
Ethyl Alcohol (64-17-5)	80.7	1000
Methanol	14.3	200 (Skin)
Methyl Ethyl Ketone (78-93-1)	0.5	200
Ethyl Acetate (141-78-6)	0.2	400
Water	Balance	

Local regulated limits may vary.

## -----PHYSICAL PROPERTIES-----

Boiling Point, °C at 760 mm Hg: 75.6  
 Melting Point: N/D  
 Freezing Point, °C: N/D  
 Vapor Pressure KPA at 20 °C: Ethyl Alcohol - 5.87; Methanol - 12.80; Methyl Ethyl Ketone - 9.49; Ethyl Acetate - 9.73  
 Vapor Density (Air=1): Ethyl Alcohol - 1.6; Methanol - 1.1; Methyl Ethyl Ketone - 2.4; Ethyl Acetate - 3.0  
 pH: N/A  
 Miscibility in Water: Complete  
 % Volatiles by Volume: 100  
 Evaporation Rate (Butyl Acetate=1): 1.8  
 Odor Threshold: Approximately 0.1 to 5100 ppm for ethyl alcohol, 4.3 to 59000 ppm for methanol, 2 to 80 ppm for MEK, and 0.056 ppm for ethyl acetate.  
 Distillation Range, °C: 75.3 - 78.6  
 Density, kg/L at 20 °C: 0.8074  
 Coefficient of Water/Oil Distribution: Separates from oil.  
 Appearance and Odor: Colorless liquid with typical wood alcohol (ketone ester).  
 Physical State: Liquid.

## -----FIRE AND EXPLOSION DATA-----

**Flash Point/Method:** 15 °C Tag closed cup, ASTM D-56  
**Flammable Limits in Air, % v/v**  
**Lower Flammable Limit:** Ethyl Alcohol - 3.3; Methanol - 7.3; Methyl Ethyl Ketone - 2.0;  
 Ethyl Acetate - 2.2  
**Upper Flammable Limit:** Ethyl Alcohol - 19.0; Methanol - 36.0;  
 Methyl Ethyl Ketone - 12.0; Ethyl Acetate - 11.5  
**Auto ignition Temperature °C:** Ethyl Alcohol - 422; Methanol - 385;  
 Methyl Ethyl Ketone - 515; Ethyl Acetate - 427  
**Extinguishing Media:** Apply alcohol-type or all-purpose-type foams by manufacturers recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires. Water is generally unsuitable and may help to spread the fire.

**Special Fire Fighting Procedures:** Use water spray to cool fire-exposed containers structures. Use water spray to disperse vapors; reignition is possible. Use self-contained breathing apparatus and protective clothing.

**Unusual Fire and Explosion Hazards:** Vapors form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from handling point.

**Hazardous Combustion Products:** N/D

Explosion Data

Sensitivity to Mechanical Impact: N/D

Sensitivity to Static Discharge: N/D

Conditions of Flammability: N/D

-----HAZARDOUS REACTIVITY-----

Stability: Stable.

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Sources of ignition.

Materials to Avoid: Oxidizing materials.

Hazardous Decomposition Products: Burning can produce carbon monoxide and/or carbon dioxide and/or formaldehyde.

-----FIRST AID MEASURES-----

If Inhaled: Remove victim to fresh air. Artificial respiration should be given if breathing has stopped and cardiopulmonary resuscitation if heart has stopped. Oxygen may be given if necessary. Seek medical attention immediately.

**In case of Eye Contact:** Immediately flush eyes with water for at least 20 minutes, holding the eyelids open. Seek medical attention immediately.

**In case of Skin Contact:** Flush contaminated area with water for at least 20 minutes. Remove contaminated clothing under running water. Completely decontaminate clothing before re-use, or discard. If irritation occurs seek medical attention.

**If Ingested:** Never give by mouth if victim is rapidly losing consciousness or is unconscious or convulsing. DO NOT INDUCE VOMITING. Have victim drink about 250 ml (8 oz) of water to dilute material in stomach. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Seek medical attention immediately.

**Notes to Physician:** This product contains 14.3% v/v of methanol, a toxic substance having produced blindness and other serious effects on vision, as well as death. However this product also contains accepted antidote, ethanol (80.7% v/v). This product also contains 0.5% v/v of MEK, a chemical which has caused embryotoxicity in high concentrations in one animal study. Given its low concentration in 2-A Alcohol DAG 95%, the risk it poses in this respect is judged to be very low.

-----HEALTH HAZARD INFORMATION-----

Primary Routes of Exposure: N/D

**Signs, Symptoms of Effects of Exposure:**

**Inhalation:** Irritation of the nose, throat and eyes will begin at approx. 200 ppm MEK and approx. 400 ppm ethyl acetate. Inhalation of high concentrations can produce dizziness, faintness, drowsiness, nausea, and vomiting. Symptoms depend on the level and duration of exposure.

**Eye Contact:** Eye irritant. Eye damage from contact with liquid is reversible and proper treatment will result in healing within a few days. Damage is usually mild to moderate conjunctivitis, seen mainly in redness of the conjunctiva.

**Skin Contact:** Mild irritant. Repeated or prolonged exposure may lead to dermatitis, erythema, and scaling.

**Skin absorption:** Methanol can be absorbed through the skin in toxic and lethal amounts. MEK can also be absorbed through the skin, but has low toxicity by this route. Ethanol and ethyl acetate pose little risk in this respect.

**Ingestion:** The most hazardous component in 2-A Alcohol is the methanol, a toxic substance which has produced blindness and death, the symptoms following ingestion include dizziness, faintness, drowsiness, decreased awareness and responsiveness, euphoria, abdominal discomfort, nausea, vomiting, staggering gait, lack of coordination, and coma.

**Chronic Effects of Exposure:** Long term repeated oral exposure to ethanol may result in the development of progressive liver injury with fibrosis. Long term exposure to methanol has been associated with headaches, giddiness, conjunctivitis, insomnia and impaired vision.

**Medical Conditions and Aggravated Exposure:** Repeated exposure to ethanol may exacerbate liver injury produced from other causes.

Additional Information: N/D

-----TOXICITY DATA-----

Ethyl Alcohol

LD50 Oral (rat): 7060 mg/kg

### 3

LD50 Dermal (rabbit) 20,000 mg/kg  
LC50 (rat): 31,623 ppm/4H

#### Methanol

LD50 Oral (rat): 5268 mg/kg  
LD50 Dermal (rabbit) 20,000 mg/kg  
LC50 (rat): 64,000 ppm/4H

#### Methyl Ethyl Ketone

LD50 Oral (rat): 2737 mg/kg  
LD50 Dermal (rabbit) 13,000 mg/kg  
LC50 (rat): N/D

#### Ethyl Acetate

LD50 Oral (rat): 11,300 mg/kg  
LD50 Dermal (rabbit) N/D  
LC50 (rat): 22,627 ppm/4H

Carcinogenicity: N/D  
Sensitization: N/D  
Irritancy: N/D  
Reproductive Effects: N/D

Teratogenicity: Methyl Ethyl Ketone (MEK) has been reported to be chloroform, bromotrichloromethane, dimethylnitrosamine, thiocetamide methanol with carbon tetrachloride and MEK with n-hexane, methyl n-butyl ketone.

Other Data: N/D  
Environmental Effects: N/D

#### -----PREVENTATIVE MEASURES-----

Ventilation (Engineering Controls): The ventilation system should be non-sparking, grounded and separate from other exhaust ventilation systems. Local ventilation is recommended when handling.

#### Personal Protective Equipment

Respiratory: Up to 1000 ppm, an approved organic vapour 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.

Eye: Chemical resistant monogoggles when handling.

Clothing: N/D

Footwear: N/D

Hands: Neoprene, butyl or natural rubber gloves.

Other Protective Measures: Eye bath, safety shower and other protective equipment is required.

**Action to Take for Spills or Leaks:** Contain spilled material. Provide adequate ventilation and protective equipment. Remove sources of heat, sparks or flames. Spill should be collected in suitable containers or adsorbed on a suitable absorbent material for subsequent disposal.

**Waste Disposal Method:** Waste material should be disposed of in an approved incinerator or a designated landfill site, in compliance with all federal provincial and local government regulations.

**Storage and Handling Precautions and Equipment:** Keep away from heat, sparks and flames. Keep container closed when not in use. Use with adequate ventilation. Avoid breathing vapours. Avoid contact with eyes and skin. Wash exposed skin thoroughly after handling. Take precautions to prevent static electricity build-up when transferring contents.

**Special Shipping Information:** N/D

Other Precautions: Good personal hygiene practices are suggested, such as abstaining from eating, drinking and smoking in workplace.

#### -----REGULATORY INFORMATION-----

#### TDG Classification

Shipping Name: Alcohols, Toxic, N.O.S. (Ethanol/Methanol)  
UN: 1986  
Class: 3.2 (6.1)  
PKG: II

WHMIS Classification: B.2; D.1A; D.2B

Listed on the Domestic Substances List (DSL): Yes

-----END OF MSDS-----