DISCLAIMERS

1) Methanol is classified by the International Code Council (ICC) and the National Fire Protection Agency (NFPA) under the Uniform Fire Code as a “IB Flammable Liquid”. Guidelines for handling IB flammable liquids are provided by codes and standards published by ICC, NFPA, and the International Fire Code.

2) Improper fuel blending or fuel inputs that do not meet the purity requirements in this specification may cause product malfunction and void the e1 Limited Warranty.

CAUTION

Before handling, transporting or storing methanol, refer to the Material Safety Sheet or Methanol Safe Handling FAQ’s available through your methanol product distributor or the Methanol Institute at www.methanol.org

PRODUCT DESCRIPTION: FUEL CELL BLEND


1) Fuel Blend Ratio:

Mixed by weight, not volume. Methanol content 62-63%; Distilled or De-ionized water 37-38%. Methanol and water volume vary according to temperature, so it is important to mix blend by weight. The following calculation is based on ambient temperature at 20C. Note: container should be pre-weighed, then its weight factored out of blend equation.

Example A:

55-gallon drum mixed by weight at 62.5% methanol & 37.5% DI water:

• 35.4 gallons methanol @ 6.63 lbs./gal = 235 lbs. methanol (.625 weight)
• 17 gallons DI water @ 8.35 lbs./gal = 142 lbs. DI water (.375 weight)
• 377 lb. batch weight (excluding drum) makes about 52.4 gallons at 20C

Example B:

5-gallon tank mixed by weight, at 62.5% methanol & 37.5% DI water:

• 3.3 gallons methanol @ 6.63 lbs./gal = 22 lbs. methanol (.625 weight)
• 1.5 gallons DI water @ 8.35 lbs./gal = 13 lbs. DI water (.375 weight)
• 35 lb. batch weight (excluding container) makes about 4.8 gallons at 20C

2) Methanol/Water Purity Standards:

a) Methanol must meet the purity reference standards of the International Methanol Producers and Consumers Assn. (IMPCA). For additional information, refer to www.impca.be.
b) Water must be distilled or de-ionized and meet ASTM Type II purity standards or higher. Water may be sourced already purified, or purified at the distribution location using a water purification vessel supplied by a water purification reseller.

c) Water Purity Standard: (ASTM Type II w/modified specification for resistivity) Refer to www.astm.org category D1193-06 Regeant Water for additional information.

- Electrical Resistivity 8-10 megohm-cm @ 25C
- Total Organic Carbon 50 ug/L
- Sodium 5 ug/L
- Chlorides 5 ug/L
- Total Silica 3 ug/L

3) Sourcing Guidance:

Methanol is available worldwide, and regionally through petroleum or chemical distributors. These regional resellers may have “drumming” capabilities, that is, the ability to blend methanol and pure water at their fuel depot. Once blended to the FUEL CELL BLEND spec, the product is transported to the installation site to be dispensed, or the product may be blended at the installation location following the guidelines in this specification.

a) METHANOL SOURCING/NORTH AMERICA - Contact these national distributors, or a regional chemical or petroleum dealer who retails methanol.
   - Brenntag North America
   - Colonial Chemical Solutions
   - Southern Chemical Corporation

b) WATER SOURCING/NORTH AMERICA - Local water purification companies provide purification vessels capable of cleaning water to ASTM Type II standards. Contacts these national distributors.
   - www.culligan.com
   - www.purewatersolutions.com
   - www.parish-supply.com
   - www.cwwltd.com

4) Storage Guidelines:

a) Methanol blended with water is considered a flammable material, and can be corrosive to some non-ferrous alloys, and react with certain plastics and composites. Recommended storage vessels include lined steel drums or containers, totes, or plastic drums. For additional detail, refer to Methanol Safe Handling FAQ’s and Technical Bulletins available at www.methanol.org and by codes and standards published by ICC, NFPA, and the International Fire Code.

b) Transportation and Handling Guidelines. Methanol is classified by the International Code Council (ICC) and the National Fire Protection Agency (NFPA) under the Uniform Fire Code as a “IB Flammable Liquid”. For specific transportation standards, reference the Department of Transportation, International Maritime Organization, International Air Transport Association, and the Intergovernmental Organization for International Carriage by Rail.

5) Transportation and Handling Guidelines

Please refer to the Methanol Institute website for regulatory information: www.methanol.org