



## Engineering Report

### Underground Tank Alcohol Compatibility

William A. Schneider  
9/25/03

All Containment Solutions Inc. (CSI) single and double wall fuel tanks manufactured since the inception of CSI on 1/1/1995 are listed by Underwriters Laboratories Inc. under UL Standard 1316 (*Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol-Gasoline Mixtures*) for the storage of "Petroleum Products, Alcohols and Alcohol-Gasoline Mixtures" under UL file MH7991..

The listing includes gasoline, gasoline-ethanol blends at any level of ethanol, gasoline-methanol blends at any level of methanol, 100% ethanol, and 100% methanol.

On 1/1/95, CSI purchased the assets of Owens Corning (OC) who previously developed and then manufactured fiberglass reinforced plastic underground storage tanks for fuel storage starting in the mid 60's. Documents produced by OC concerning the alcohol compatibility of their tanks are available from Owens Corning.

**Owens Corning**

David H. Bartlow  
636 Bellingrath Park  
Conroe, TX 77302

Telephone: 936-273-4383  
Fax: 936-273-4384

May 8, 2000

Containment Solutions  
5150 Jefferson Chemical Road  
Conroe, TX 77301  
Attr: Steven Macy

Re: Pre-1981 Owens Corning tanks storing 10% ethanol.

Dear Mr. Macy:

This letter responds to your request for information about the performance of Owens Corning underground petroleum storage tanks that were manufactured prior to 1981, when used to store fuel containing 10% ethanol.

Tanks manufactured by Owens Corning prior to January 1981 were not warranted for the storage of any type of pure alcohol or blend of fuel containing alcohol. In addition, these tanks were not tested and listed by Underwriters Laboratory for these fuels. However, because of the similarity between tanks manufactured before 1981 and those manufactured after this date, Owens Corning knows of no technical reason why properly installed pre-1981 tanks should not perform equally as well as post-1981 tanks when used to store fuels containing 10% ethanol.

This statement should not be misconstrued as either broadening or extending the tank's original warranty. Also, owners should always consult their local regulators to confirm and verify compliance with local regulations and codes.

If you have any questions, please feel free to give me a call.

Sincerely,



David Bartlow  
Manager, Tanks

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**Owens Corning**

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272 Bellingrath Park  
Conroe, TX 77302

Telephone (409)273-4383  
Fax (409)273-4384

January 6, 1997

Steve Macy  
Fluid Containment Inc.  
Rt. 20, Box 1380  
Conroe, TX 77301

**Re: Compatibility of Owens Corning Underground Tanks**

Dear Mr. Macy;

Recently, I read in an industry publication where the EPA Office of Underground Storage Tanks had sent the state UST program managers a letter I wrote in April 1995 that addressed the warranty status of pre-1981 Owens Corning underground petroleum storage tanks. Based on several people subsequently contacting me, I think that my letter may have been misinterpreted.

The April 1995 letter is factual as stated. However, while tanks produced prior to 1981 were not (and are still not) warranted for the storage of fuels containing alcohol, the materials used to manufacture these pre-1981 tanks were the same as those used to produce tanks after this date.

The year 1981 is significant only because testing by Underwriter's Laboratory (UL) on the tank laminate was completed. This allowed UL to "List" the tank for the storage of 10% ethanol. Also, Owens Corning was able to extend its 30 year corrosion warranty to cover the storage of 10% ethanol.

I hope this clarifies the compatibility of Owens Corning tanks when used to store 10% ethanol. If you have any questions, please feel free to contact me at 419-248-8823.

Sincerely,



Dave Bartlow  
Manager, Tanks

OWENS-CORNING WORLD HEADQUARTERS  
FIBERGLAS TOWER  
TOLEDO, OHIO 43659  
419.248.8000

April 14, 1995



To Owens-Corning Tank Customers:

The purpose of this letter is to clarify the use of fiberglass underground storage tanks produced by Owens-Corning for the storage of ether and alcohol fuel blends. All percentages are by volume.

**FUELS BLENDED WITH ETHER:**

Owens-Corning has extensively tested fuels containing up to 20% MTBE, ETBE, and TAME. The results show very little effect on the laminate, and hence storage of these ether blends in underground storage tanks produced by Owens-Corning from 1964 through 1994 would not void the manufacturer's warranty.

**ALCOHOL FUELS:**

**TANKS MADE PRIOR TO JANUARY 1981:**

Tanks produced prior to January 1981 were not warranted for any alcohol or alcohol blend fuels. In addition, these tanks were not tested and listed by Underwriter's Laboratory (UL) for such fuels. The use of alcohol or alcohol blends in tanks produced and sold prior to January 1981 would void both the manufacturer's warranty and the UL listing for the tank.

**TANKS MADE BETWEEN JANUARY 1981 AND JUNE 1984:**

In December 1981, Owens-Corning completed UL testing and introduced a 30-year warranty on the standard fiberglass tank for 10% ethanol blended fuel. For these tanks, the use of ethanol blends over 10% or any methanol blends in the standard fiberglass tank would void both the manufacturer's warranty and the UL listing for the tank.

For methanol blends or blends of ethanol exceeding 10%, an optional vinyl ester resin system was UL listed and available as an option from Owens-Corning.

**TANKS MADE BETWEEN JULY 1984 AND JUNE 1990:**

In July 1984, Owens-Corning completed additional UL testing and introduced a 30-year warranty on the standard fiberglass tank for low levels of methanol such as 90.5% gasoline and 9.5% Oxinol-50 (4.75/4.75 methanol/GTBA). For these tanks, the use of ethanol blends over 10% and methanol blends over 4.75% would void the manufacturer's warranty and the UL listing for the tank.

April 14, 1995

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**TANKS MADE SINCE 1990:**

In July of 1990, Owens-Corning issued a 30-year warranty for all levels of alcohol (ethanol or methanol) on standard double wall tanks. These tanks were UL listed for this service.

It is our belief that the prudent tank owner will want to secondarily contain any high level alcohol blends (over 10%), as higher levels could be considered hazardous material as defined in the underground tank regulations published by the federal Environmental Protection Agency. It is our recommendation that double wall fiberglass tanks be used to achieve that secondary containment.

The above should clarify the issue of fuel compatibility warranty coverage and UL listings for ether and alcohol blended fuels stored in tanks manufactured by Owens-Corning between 1964 and December 31, 1994.

Sincerely,



David Bartlow  
Manager, Tanks  
Owens-Corning Fiberglass Corporation