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(FORM UPDATED: 08/11/2010)

## WISCONSIN STATE LEGISLATURE ... PUBLIC HEARING - COMMITTEE RECORDS

**2003-04**

(session year)

**Assembly**

(Assembly, Senate or Joint)

**Committee on Agriculture...**

### **COMMITTEE NOTICES ...**

- Committee Reports ... **CR**
- Executive Sessions ... **ES**
- Public Hearings ... **PH**

### **INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL**

- Appointments ... **Appt** (w/Record of Comm. Proceedings)
- Clearinghouse Rules ... **CRule** (w/Record of Comm. Proceedings)
- Hearing Records ... bills and resolutions (w/Record of Comm. Proceedings)
  - (**ab** = Assembly Bill)                      (**ar** = Assembly Resolution)                      (**ajr** = Assembly Joint Resolution)
  - (**sb** = Senate Bill)                              (**sr** = Senate Resolution)                              (**sjr** = Senate Joint Resolution)
- Miscellaneous ... **Misc**

\* Contents organized for archiving by: Stefanie Rose (LRB) (August 2012)

## Assembly

### Record of Committee Proceedings

#### **Committee on Agriculture**

##### **Assembly Bill 675**

Relating to: labeling of gasoline-ethanol fuel blends sold at retail.

By Representatives Hahn, Ott, Petrowski, Freese, Ainsworth, Balow, Gronemus, Stone, J. Wood, Suder, Hines, Owens, Albers, Powers, McCormick, Ward, Van Roy, Steinbrink and Musser; cosponsored by Senators Schultz, Brown and A. Lasee.

November 17, 2003 Referred to Committee on Agriculture.

December 11, 2003 **PUBLIC HEARING HELD**

Present: (12) Representatives Ott, M. Williams, Ainsworth, Petrowski, Kestell, Hines, Loeffelholz, Towns, Plouff, Balow, Hebl and Molepske.

Absent: (3) Representatives Suder, Gronemus and Vruwink.

##### Appearances For

- State Representative Gene Hahn, 47th Assembly District, Madison
- Bob Sather, WI Ethanol Producers Association, Chippewa Falls
- Keith Glasshof, Eau Claire
- Alexander Samardzich, Ace Ethanol, Bruce
- Bob Oleson, Wisconsin Corn Growers Association, Palmyra

##### Appearances Against

• State Representative Gregg Underheim, 54th Assembly District  
Hunter Kurtz, Office of State Senator Carol Roessler  
Joe Norris, EAA, Wisconsin Rapids  
Christa Westerberg, Garvey & Stoddard, Attorneys at Law, Madison

##### Appearances for Information Only

Ralph Groschen, Minnesota Department of Agriculture, St. Paul, MN

##### Registrations For

John Malchine, Badger State Ethanol, Wind Lake  
Paul Zimmerman, Wisconsin Farm Bureau Federation, Madison  
Will Hughes, DATCP, Madison

##### Registrations Against

Matt Hauser, Petroleum Marketers Association of WI, WI Association of  
Convenience Stores, Madison

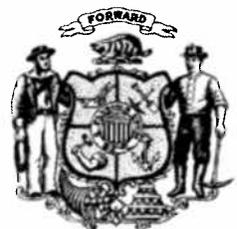
March 11, 2004

Failed to pass pursuant to Senate Joint Resolution 1.

Erin Napralla  
Committee Clerk



# WISCONSIN STATE LEGISLATURE



**TESTIMONY**  
**KEITH GLASSHOF**  
**ASSEMBLY BILL 675**  
**DECEMBER 11, 2003**

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Good morning.

My name is Keith Glasshof and I reside at 2033 Henry Avenue, Eau Claire, WI.

I am retired and speak on behalf of myself.

I am a professional engineer and a pilot with approximately 2,500 hours which, by the way, equates to a traveled distance of approximately one half million air miles.

I wish to speak in favor of Assembly Bill 675.

From the perspective of general principles, I support the Assembly Bill 675 for two reasons:

- 1) When it can happen without a significant negative impact, I favor actions that enhance the opportunities for the agriculture community of our State.
- 2) Second, I am supportive of less versus more legislative and/or administrative control, and the enactment of this bill would eliminate one such control.

From a technical perspective, I wish to address Assembly Bill 675 from the prospective of aviation. The question I wish to address is simply this: Will the enactment of Assembly Bill 675 adversely impact aviation?

As an engineer and pilot, my 40-year professional career has been based on the cornerstone of safety. Every structure designed, every mile flown has been approached first and foremost from the prospective of safety.

In engineering, safety is infused into a project by anticipating all forces and conditions that could impact the project, and, beyond that, by introducing a factor of safety to accommodate human error and/or unanticipated circumstances.

In flying, safety is infused into the process by carefully and fully evaluating every element of flight. Those elements include such items as the weather, the mechanical condition of the aircraft, the aircraft limitations, the limitations of the pilot, and the fuel aboard.

As to the fuel, in aviation there are two conditions that need to be carefully managed: quantity and quality. The pilot must assure that there is an adequate quantity of fuel including an appropriate reserve for each and every flight. As to quality, the pilot must assure that the fuel meets the requirements of the aircraft and that the fuel is free of detrimental contaminants.

In aviation, the most appropriate method of controlling the quality of the fuel is to purchase the appropriate aviation fuel at an airport equipped with the appropriate fuel handling equipment.

Assembly bill 675 is completely consistent with this practice.

That said, I wish to tell you that there is a contingent within the aviation community that find it desirable to fuel their aircraft with auto fuel purchased off site. Needless to say, these aviators have the same concerns about the fuel that they burn in their aircraft. Namely, they are concerned that the fuel is appropriate for their aircraft.

However, because these pilots are venturing outside the safe haven of the regulations controlling aviation fuel, they must be particularly vigilant as to the fuel they consume in their aircraft. There are the issues of fuel composition, fuel octane, the presence of particulate matter and moisture within the fuel, and numerous other factors that otherwise are closely controlled by the regulations governing aviation fuel. For these pilots the labeling of the fuel composition would seem significant. However, I suggest that the current labeling of auto fuel for ethanol content may very well give pilots a false sense of security. The fact that auto fuel is labeled may lead them to believe that the fuel has been subjected to controls similar to those imposed upon aviation fuel. Such is simply not the case. For example aviation fuel and auto fuel are both subject to filtration prior to delivery. However, in aviation the filter is a 2-micron filter while in the auto fuel industry it is a 10-micron filter.

For safety sake these pilots owe a duty to assure the appropriate quality of the fuel they purchase for their aircraft. They should review the Motor Carrier Straight Bill of Lading or Loading Ticket, a copy of which is on file at the fueling station where they purchase their auto fuel. This document contains some of the key specifics relating to the quality of the fuel including the ethanol content.

The point is this. In the absence of the safety net created by the controls imposed on aviation fuel, the pilot must take it upon himself to assure the quality of the fuel. A label on the pump indicating the Ethanol content simply is not adequate.

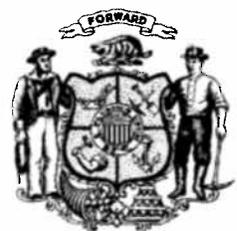
In summary, I initially posed the question: Will the enactment of Assembly Bill 675 adversely impact aviation? Hopefully, you have gathered that in my opinion Assembly Bill 675 does not adversely impact aviation. In fact, for the vast majority of pilots the enactment of Assembly Bill 675 will be entirely neutral. In the case of pilots purchasing auto fuel off site, the enactment of Assembly Bill 675 may encourage these pilots to be more vigilant as to the fuel they purchase for use in their aircraft.

I recommend the enactment of Assembly Bill 675.

Thank you for your kind attention.



# WISCONSIN STATE LEGISLATURE





State of Wisconsin  
Jim Doyle, Governor

Department of Agriculture, Trade and Consumer Protection  
Rod Nilsestuen, Secretary

Testimony of

Will Hughes, Administrator  
Division of Agricultural Development  
Wisconsin Department of Agriculture, Trade and Consumer Protection  
December 11, 2003

Chairman Ott and members of the Committee, thank you for the opportunity to testify in support of AB 675 relating to labeling of gasoline-ethanol fuel blends sold at retail.

DATCP supports making labeling of gasoline-ethanol fuel blends sold at retail voluntary because we believe ethanol should be treated the same as toluene, benzene and some 200 other gasoline additives for which labeling is not required. We believe that making labeling voluntary will reduce some retailers' reluctance to sell gasoline-ethanol fuel blends, thus increasing demand for ethanol and expanding markets for Wisconsin-grown corn.

Ethanol has been around since the 1970s. Wisconsin has four ethanol operating plants at Monroe, Stanley, Oshkosh and Plover capable of producing 84 million gallons per year with another four in different stages of planning that could add as much as 120 million gallons of production. By all accounts, these plants are doing well.

With the federal energy bill in question along with its mandate to increase ethanol utilization by five billion gallons by 2012, now is the time for Wisconsin to focus our attention on policies and initiatives that will increase demand, particularly as new processing plants are coming on line.

That is why this administration supports AB 675 today and why DATCP wants to work with this committee to evaluate other cost-effective strategies to increase demand for ethanol in Wisconsin.

Wisconsin needs to carefully analyze and evaluate approaches our neighboring states are taking to decide how best to invest scarce tax dollars. While DATCP is not prepared to propose specific initiatives at this time, I would like to take a minute to summarize neighboring states programs and policies to increase ethanol demand.

Minnesota requires that most gasoline sold in the state contain 2.7% oxygen by weight, which can be obtained by blending about 7.8% ethanol with gasoline. While the law does not require ethanol as the oxygenate, MTBE is prohibited. The effect has been to significantly increase demand for ethanol.

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Illinois and Iowa have taken a different approach than Minnesota, providing incentives to make ethanol more attractive to retailers and consumers. Iowa induces retailers to blend ethanol by offering a \$0.025 per gallon tax credit for ethanol-blended gasoline in excess of 60% of gasoline sold (Iowa Code § 422.11C). In addition, Iowa offers an excise tax refund on all ethanol blends, which effectively gives ethanol-blends a penny per gallon tax advantage (Iowa Code 452A.21, 452A.3).

Illinois induces retailers to sell gasoline-ethanol blends by exempting 20% of its 6.25% sales tax on 10% blends and exempting blends exceeding 70% ethanol from sales tax entirely (Illinois Code 35 ILCS 105/3-10). Illinois also offers one time rebates up to \$4000 to purchasers of flexible fuel vehicles that can use an 85% ethanol blend (E85) (Illinois Code 415 ILCS 120/30) (a similar rebate is available for conversion of existing vehicles). In addition, Illinois provides an annual rebate up to \$450 per vehicle to operate flexible fuel vehicles (Illinois Code 415 ILCS 120/30).

Working together, we need to determine how effective these incentives have been to increase demand and decide what makes sense for Wisconsin.

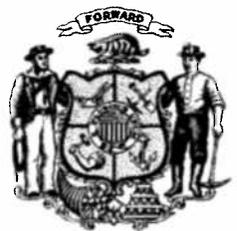
In addition, we need to set ambitious goals for purchasing flexible fuels vehicles, like those made at the General Motors plant in Janesville, that use a 10% blend or an E85 blend and more aggressively develop E85 fueling stations. Wisconsin is behind Minnesota in developing the infrastructure for E85 vehicles. The Wisconsin Ethanol Producers Association reports that Wisconsin has seven E85 stations in operation. Minnesota has 85 stations pumping E85 statewide.

Achieving the goal of reducing our dependence on fossil fuels and developing new markets for Wisconsin-grown corn will require many small steps and long-term commitment. Wisconsin will soon have the capacity to convert one of every five rows of corn to ethanol. Now we need to focus our attention on developing the demand side of the equation. In these times of scarce resources, we must make careful choices that ensure tangible results.

Making retail labeling of ethanol voluntary is a good step forward.



WISCONSIN STATE LEGISLATURE



## COMMITTEE ON AGRICULTURE

The Experimental Aircraft Association (EAA) appreciates this opportunity to present testimony regarding Assembly Bill 675. I am sure the members of the Committee know of EAA from our event, the annual EAA AirVenture Oshkosh fly-In and air show. What you may not know is that we researched and obtained the required certifications to operate 68% of the current piston aircraft fleet on automobile gasoline in the 1980's. In obtaining the certification of these fuels for aircraft use, EAA obtained a series of "supplemental type certificates" (STC) from the Federal Aviation Administration providing us the right to allow aircraft owners the use of automotive fuels and the responsibility for maintaining the approvals and informing the FAA and aircraft owners of changes that may effect the safety of flight. It is in the role of STC holder that we are commenting here today.

The use of automotive gasoline in aircraft has reduced the cost of operation and increased safety in many small aircraft. This is due to the fact that the low/lead or no lead fuels that these aircraft were designed to operate on is no longer available, and they are then forced to operate on an aviation fuel that has a relatively high lead content. This high lead content leads to several problems in the operation of these engines such as spark plug fouling and stuck valves. These problems and the cost advantage have led many small aircraft owners to use automotive gasoline. Automotive gasoline is a safe fuel for aircraft use. (*Attachment 1*)

Since aircraft first started to use automotive gasoline (1982), there have been many changes to the formulation of the fuels. These changes have required EAA to continually track the fuel formulations and test to ensure safety in aircraft use. EAA has tested many different blends of fuels over the years. Most recently we have been involved in the testing of the oxygenate additives, ETBE, MTBE and Ethanol. In addition, the FAA Technical Research Center in Atlantic City NJ and the Cessna Aircraft Corporation have conducted parallel independent tests on oxygenated fuels. In all of these tests it has been found that automotive fuels oxygenated with ethanol are not compatible with aircraft use.

All of the current automotive gasoline approvals for aircraft use specifically exclude any gasoline that contains ethanol. However, all other ether based oxygenates have been approved in aircraft use. The FAA has found multiple issues with gasolines oxygenated with ethanol in aircraft use including vapor lock and material compatibility issues. EAA is not against the use of ethanol, but unfortunately we, as well as the FAA and Cessna the largest producer of general aviation aircraft in the world, have found that the use of gasolines blended with ethanol is not safe for use in the current aircraft fleet. (*See Attachment 2 FAA Statement*)

The committee may have heard of aircraft certificated to use ethanol fuels. EAA must point out that those approvals are for the use of pure ethanol in highly modified aircraft, not for the use of fuel purchased from a local gas station.

Although we appreciate the proposed language in Assembly Bill 675 that allows for the labeling of automotive gasoline used on airports, we must point out that in EAA's estimation the majority of automotive fuel used in aircraft is purchased at a local service station not on an airport.

Also of important note for this bill is that for aircraft use, it does not matter what percentage of the ethanol is used. If ethanol is added to the gasoline it is not approved for aircraft use. It is fair to point out that EAA has found that quantities of less than 3% ethanol have not caused problems in aircraft but the FAA approvals say there must be no ethanol present to be a legal fuel for aircraft use. The knowledge of the 3% number provides both the FAA and EAA confidence that if some contamination occurs between a gasoline oxygenated with ethanol, say from using the same refueling truck used to deliver the two fuels one after the other, the resulting blend will not be a safety problem.

EAA raises the issue of percentage labeling to make clear we have no objections to not listing the actual percentage of ethanol used in the fuel provided, only that the oxygenate or ethanol added used be listed. As stated before, the other ether based oxygenates are approved for aircraft use so the knowledge of what oxygenate used is important.

Most users of automotive gasoline purchase their fuel from only one station, a station that they learn by experience provides a safe fuel for their aircraft. Under this law that station can switch to an ethanol blend gasoline without the knowledge of the aircraft owner. Since that owner has been purchasing fuel at that station for years, he would have no reason to suspect a problem. However, the end result could end in an engine failure for that aircraft owner.

The EAA highly encourages the Committee to maintain a requirement to label the use of ethanol in automotive gasolines. This request is made entirely for safety of flight reasons. EAA does not want to see even one Wisconsin aircraft owner have an accident because they unknowingly purchased the wrong fuel.

Earl Lawrence  
Vice President  
Regulatory & Industry Affairs  
Experimental Aircraft Association

**ATTACHMENT 1**

<http://www.eaa.org/education/fuel/letter.pdf>



**U.S. Department  
of Transportation  
Federal Aviation  
Administration**

**Small Airplane Directorate  
601 E. 12th Street, ACE-100  
Kansas City, Missouri 64106**

JUN 04 1998

Mr. Earl Lawrence  
Executive Director, Government Programs  
Experimental Aviation Association (EAA)  
EAA Aviation Center  
P.O. Box 3086  
Oshkosh, Wisconsin 54903-3086

Dear Mr Lawrence:

This letter is in response to your letter dated May 28, 1998, concerning a recent Federal Aviation Administration (FAA) Aviation Safety Program Newsletter that highlighted autogas use in a negative way. Several comparisons between autogas and avgas were cited in the newsletter that infer airplanes and engines that have Supplemental Type Certificates (STCs) approved for autogas use are not as safe as airplanes or engines that use avgas exclusively. This is not an accurate representation of the operational service history for these products that use autogas. The sixteen year service history for airplanes and engines using autogas is good.

The newsletter cites a 1976 Textron Lycoming service information document and a Teledyne Continental Engine Technical Bulletin that defines certain concerns with autogas use. At that time, there were questions and issues that needed to be answered. However, since that time a tremendous amount of airplane, engine, and fuel testing has been accomplished among EAA, FAA, and other organizations. Autogas use has been extensively compared, tested, and analyzed. Autogas has been shown to be an acceptable alternative to avgas for the airplanes and engines approved for such use. Airplanes and engines approved for autogas use have met the FAA certification requirements for engine detonation, engine cooling, fuel flow, hot fuel testing, fuel system compatibility, vapor lock, and performance. The newsletter also cited a report about aggravated engine valve seat recession (wear) with the use of autogas. Extensive FAA Technical Center testing concluded that valve seat recession with autogas use is not significantly different from avgas use.

In summary, there are numerous studies and technical reports available comparing autogas to avgas for use in certificated airplanes and engines. The service history for airplanes and engines using autogas has been good and is comparable to avgas.

## ATTACHMENT 2

### ALCOHOL AND AIRCRAFT DON'T MIX

by Ken Knopp

*In our November/December 1997 issue we ran an article that contained - by the time we printed it - some outdated information, and we apologize for any problems. The article was "Is It OK to Use RFG In Your STC Without MTBE?" Mr. Ken Knopp, a fuels engineer, provided us with the following information which should clarify the issue. - Editor*

Many pilots may not be aware that, indeed, their aircraft and their lives may be in danger from another type of alcohol if autogas is being used under the current STC - not from the kind of alcohol we used in mixed drinks but the kind that the fuel industry has been adding to the automotive fuels we use. Automobile gasoline is currently approved for use on aircraft with appropriate STC's that meet the American Society for Testing and Material (ASTM) specification D439 or D4814 with the following exception: the automobile gasoline cannot contain alcohol.

Many older aircraft with an STC for automobile gasoline may only refer to ASTM D439; however, the FAA does recognize D4814 as an equivalent to D439. However, the operator of the aircraft must take action to assure that automobile gasoline with alcohol is not used. The alcohol may be added before distribution to meet Environmental Protection Agency (EPA) requirements for oxygen content by adding either methanol or ethanol.

Two other oxygenates used are methyl-tertiary-butyl ether (MTBE) and ethyl-tertiary-butyl ether (ETBE), which are approved for use with an STC, since they do not have any of the dangerous effects of methanol and ethanol.

There are three primary reasons for not using an automobile gasoline that contains methanol or ethanol. First, the addition of alcohol to gasoline adversely affects the volatility of the fuel, which could cause vapor lock. Second, alcohol present in automobile gasoline is not compatible with the rubber seals and materials used in aircraft. Phase separation is the last reason, which happens when the fuel is cooled as a result of the aircraft's climbing to higher altitude. When the alcohol separates from the gasoline, it may carry water that has been held in solution and that cannot be handled by the sediment bowl.

In order to avoid any of these problems, a simple test can be done to screen for the presence of methanol or ethanol. All that is required is a transparent container (something like a fuel strainer, test tube, or graduated cylinder) and a small amount of water. First, add a small amount of water to the container and mark the container at the water's highest level. Next, add about nine parts gasoline to the one part water (i.e., one ounce of water, nine ounces of gasoline). Cover and shake to allow the water to mix with the gasoline. After mixing, let the water and gasoline settle. If alcohol is present in the gasoline, the water will absorb it, and the amount of water will appear to increase, indicating the gasoline should not be used in the aircraft. However, if the water level remains the same, no alcohol is present in the gasoline, and it can be used in the aircraft.

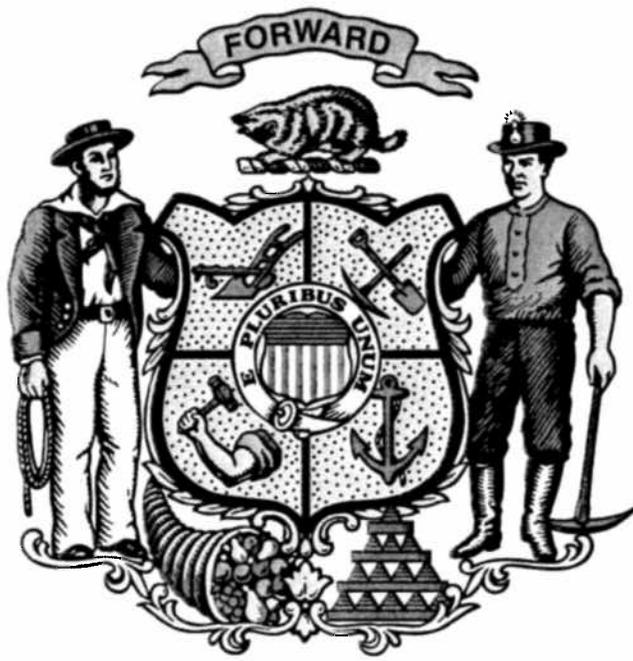
*Mr. Knopp is a research engineer at the FAA Technical Center working with propulsion and fuel issues for the Airport and Aircraft Safety Research and Development Division.*

We thank you for bringing this issue to our attention and we hope this clarifies the Small Airplane Directorate's position on approved autogas use in 14 CFR part 23 airplanes.

Sincerely,

*Ronald K. Rathjens*

for Michael Gallagher  
Manager  
Small Airplane Director



KOHLER CO. KOHLER, WISCONSIN 53044 PHONE 920-457-4441 www.kohlerco.com

**KOHLER**

December 11, 2003

**RE: State of Wisconsin 2003 Assembly Bill 675**

Dear Representative Ott:

Kohler Co. is a manufacturer of small spark-ignited engines that operate on unleaded gasoline. I am writing this letter to express Kohler's concern with 2003 Assembly Bill 675. As written, the Bill puts no maximum cap on the amount of ethanol that can be blended with gasoline and sold at the retail level as reformulated gasoline.

The August 13, 2003 Preliminary Draft of Final Rules for Chapter Comm 48 relating to Petroleum Products states in Comm 48.10 (1)(b)1 that gasoline-ethanol fuel blends of more than 2% by volume of ethanol shall be labeled with the maximum volume percent of ethanol at all times the product is offered for retail sale.

Kohler Co. has tested gasoline containing 10% ethanol by volume and approves use of gasoline with up to that percentage (10% ethanol, 90% unleaded gasoline) in our Kohler Engine owners manuals. Since the use of oxygenates has a leaning effect on the air fuel ratio, and could affect engine performance and life, it is important that our customers be aware of the amount of ethanol in commercially available fuel, especially if it exceeds 10% ethanol. Kohler Co. is opposed to AB-675, which would eliminate the labeling of ethanol blended products. At a minimum, Kohler requests that wording be included in the Bill that states that the amount of ethanol in the fuel cannot exceed 10% by volume without labeling the percent of ethanol in the gasoline.

If you need any additional information, please feel free to contact:

Don DeMaster  
Mgr. Emission Compliance/Fuel Systems  
Engine Engineering  
Kohler Co.  
Phone: 920-457-4441 (ext. 77649)  
Fax: 920-457-1025  
E-Mail: don.demaster@kohler.com

Thanks for your consideration in this matter.

Sincerely,



Chad Severson  
Vice President - Sales, Kohler Engines

Representative Al Ott  
Chairman - Committee on Agriculture  
Fax: 608-282-3603

CC: Phil Albert - Wisconsin Department of Commerce



## Napralla, Erin

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**From:** Waitrovich, Eric  
**Sent:** Wednesday, January 14, 2004 8:23 AM  
**To:** Napralla, Erin  
**Subject:** FW: 2003 Assembly Bill 675

-----Original Message-----

From: GDikkers@aol.com [mailto:GDikkers@aol.com]  
Sent: Tuesday, January 13, 2004 5:06 PM  
To: rep.freese@legis.state.wi.us; rep.hahn@legis.state.wi.us;  
rep.ott@legis.state.wi.us; rep.petrowski@legis.state.wi.us;  
rep.ainsworth@legis.state.wi.us; rep.balow@legis.state.wi.us;  
rep.gronemus@legis.state.wi.us; rep.stone@legis.state.wi.us;  
rep.suder@legis.state.wi.us; rep.woodj@legis.state.wi.us;  
rep.hines@legis.state.wi.us; rep.owens@legis.state.wi.us;  
rep.albers@legis.state.wi.us; rep.powers@legis.state.wi.us;  
rep.mccormick@legis.state.wi.us; rep.ward@legis.state.wi.us;  
rep.vanroy@legis.state.wi.us; rep.steinbrink@legis.state.wi.us;  
rep.musser@legis.state.wi.us  
Cc: rep.black@legis.state.wi.us; sen.risser@legis.state.wi.us;  
rep.gard@legis.state.wi.us; sen.brown@legis.state.wi.us;  
sen.lasee@legis.state.wi.us; sen.schultz@legis.state.wi.us  
Subject: 2003 Assembly Bill 675

Ladies and Gentlemen,

This is a request that you withdraw from consideration 2003 Assembly Bill 675 your group jointly introduced. As you know, this is a bill that would no longer require accurate labeling of automobile fuel containing ethyl alcohol (ethanol).

It is difficult to understand any legitimate or compelling reason why you would want to conceal from consumers the ethanol content of the fuel they buy. In fact, to be completely honest and fair, consumers must know whether the fuel they are buying contains ethanol and what that percentage is.

The reason is that automobile fuel containing ethanol does not contain as much energy per gallon as pure gasoline, and knowing what percent the fuel contains is reasonable information a consumer needs to make an informed choice.

Two quick examples:

1. A gallon of fuel containing 10% ethanol (E10) contains only 96% the British thermal units (Btu) in a gallon of straight gasoline, and it takes 1.04 gallons of E10 to move a car as far as one gallon of gasoline can move it. (114,100 Btu in a gallon of gasoline. 110,200 BTUs in a gallon of E10.)

2. A gallon of fuel containing 85% ethanol (E85) contains only 72% the Btu in a gallon of straight gasoline and it takes 1.4 gallons of E85 to move an auto as far as one gallon of gasoline can move it. (Only 81,800 Btu in a gallon of E85.)

Knowing the energy content of the fuel is an important piece of information for consumers, and there is no compelling reason to conceal that information. Not disclosing that information is the same as not showing how many ounces of liquid are in a bottle. It is deceptive -- why would you want to do it?

The ethanol content of fuel should be an open and obvious piece of information. If one has the choice of buying straight gasoline or E10 for an equal price, it would be irrational to spend the same amount of money buying E10 since that would move the car a lesser distance. I'm sure all of you want to keep consumers from making unwise choices when they buy fuel, but if this bill becomes law, that is exactly what will happen. You

• will be hiding the truth from consumers, and they won't have the information they need to make an informed choice.

#### SUGGESTION

1. I also suggest you go one step further, and REQUIRE fuel retailers post both the energy and ethanol content of the fuel they sale as information for consumers. I suggest a placard on each pump such as the following:

Octane = 87  
Ethanol content = 0%  
Energy density = 114,100 Btu/gallon

Octane = 87  
Ethanol content = 10%  
Energy density = 110,200 Btu/gallon

Octane = 87  
Ethanol content = 85%  
Energy density = 81,800 Btu/gallon

That would provide important information a wise consumer could use.

Please reconsider and withdraw your bill. There is no legitimate or compelling reason to hide the ethanol content of automobile fuel from consumers.

I also note this bill went to the Committee on Agriculture for their review. Is that the correct place for this bill? Don't you agree it would be more appropriate if Representative Ainsworth's Committee on Transportation reviewed it? Certainly agriculture is concerned about ethanol, but this bill more directly affects the drivers who use Wisconsin roads and highways.

With regards,

Gary Dikkers  
Madison (Senate District 26, Assembly District 7)  
(Tel: 608-833-8208)





February 17, 2004

Representative Alvin Ott  
P. O. Box 8953  
Madison, WI 53708

Dear Representative Ott:

The EAA has been working cooperatively with the Wisconsin Ethanol Producers to develop compromise language for the proposed Assembly Bill 675. EAA's primary concern with the proposed bill is its effect on flight safety for the aviation users of automotive gasoline.

Included in this letter is a draft amendment that if adopted, would allow EAA to drop its opposition to Assembly Bill 675.

EAA appreciates the opportunity to share our concerns and proposals with your committee, and thanks you for consideration of this proposal.

At the locations indicated, the proposed Amendment would read as follows.

Page 2, line 16: delete lines 16 to 21 and substitute:

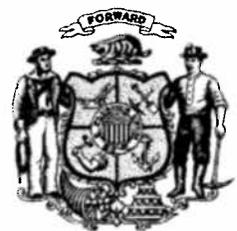
**"SECTION 2m. 168.11 (1) (c) of the statutes is created to read:  
168.11 (1) (c) A retail dealer of petroleum products shall post in a conspicuous place and in a conspicuous manner on or near the entrance to the filling station, garage, or other place where the petroleum products are being offered for sale a notice stating, for each device that dispenses petroleum products, whether the device dispenses a gasoline-ethanol fuel blend and the grade of the petroleum product being dispensed."**

Sincerely,

Earl Lawrence  
Vice President  
Industry & Regulatory Affairs

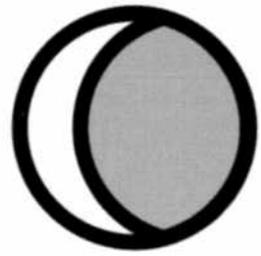


# WISCONSIN STATE LEGISLATURE





PMAW



WACS

**DATE: FEBRUARY 18, 2004**

**TO: REPRESENTATIVE AL OTT AND MEMBERS OF THE  
ASSEMBLY COMMITTEE ON AGRICULTURE**

**FROM: MATT HAUSER, DIRECTOR OF GOVERNMENT AFFAIRS**

**RE: MOTOR FUEL LABELING REQUIREMENTS**

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The Assembly Committee on Agriculture may hold an executive session on Assembly Bill 675 on Thursday, February 18, 2004. AB 675 repeals the requirement that any device that dispenses a gasoline-ethanol fuel blend for sale at retail to be labeled with the percentage of ethanol. **The Petroleum Marketers Association of Wisconsin/Wisconsin Association of Convenience Stores (PMAW/WACS) opposes AB 675.**

PMAW/WACS supports current law and believes it is a good policy to provide consumers with information regarding the products they use in their motor fuel operated vehicles, especially given the considerable investment consumers make in their automobiles or other vehicles including snowmobiles and boats.

There is a growing trend in our retail business that an increasing number of consumers "pay at the pump." By requiring a label on all retail fuel pumps, consumers can be assured the information they need to make their purchasing decision is consistently available in a conspicuous area that is easily viewable to them from their motor vehicle.

AB 675 eliminates a long-standing policy that serves Wisconsin consumers well. Therefore, on behalf of the PMAW/WACS Board of Directors and members, I respectfully ask you to consider these points as you review AB 675. Again, thank you for taking the time to consider this important request. Should you have any additional questions or concerns please do not hesitate to contact me at (608) 256-7555 or by email: [mhauser@pmawwacs.org](mailto:mhauser@pmawwacs.org).

*PMAW/WACS represents over 500 independent businesses engaged in petroleum marketing, convenience stores, truck stops and related businesses. PMAW/WACS members employ over 12,000 people, operate 2,500 stations and stores, account for more than one-half of the motor fuel and nearly all the home heating oil sold in Wisconsin.*

**PETROLEUM MARKETERS  
ASSOCIATION OF WISCONSIN**



**WISCONSIN ASSOCIATION  
OF CONVENIENCE STORES**

Representing Independent Business





**Senator Carol Roessler's Testimony**  
**Assembly Bill 675**  
**Labeling of Ethanol Fuel Bill**

Chairman Ott and Members of the Agriculture committee, thank you for this opportunity to provide you with testimony on behalf of Senator Roessler. She is currently testifying on her own bill in another hearing.

Senator Roessler is adamantly opposed to Assembly Bill 675. This legislation would have extremely dangerous unintended consequences. In the United States over 60% of aircraft fleet is authorized to use automotive gasoline, and most of this gasoline is purchased at gas stations not located at an airport. The Federal Aviation Administration or the FAA specifically excludes the use of ethanol fuel in most small aircraft for safety concerns. The American Society of Testing and Materials is a nonprofit organization that helps develop standards for materials, products and systems. Their specifications for aviation fuel exclude ethanol for safety reasons. Many of you have been to the Experimental Aircraft Association or EAA's Wisconsin Day. The EAA is one of Wisconsin Premier tourist attractions. The EAA is here today to also testify in opposition to this bill out of concern for the safety of Wisconsin Pilots and their passengers.

Sen. Roessler believes that encouraging the use of ethanol fuel is an admirable cause. Ethanol blends are a clean alternative in modern automobiles, and she encourages education campaigns to demonstrate to people this is so. She DOES NOT want to see a new danger created for small aircraft, just to encourage the use of these fuels.

Thank you for the opportunity to testify today and I am happy to answer any questions that you have, though there are probably others in attendance who would be able to give you more detailed answers.





# Wisconsin Ethanol Producers Association

11010 161st Street

Chippewa Falls, WI 54729

Telephone: 715/382-5268

Fax: 715/382-5325

e-mail: bonanza@execpc.com

## TESTIMONY OF ALEXANDER SAMARDZICH PRESIDENT OF WISCONSIN ETHAOL PRODUCERS ASSOCIATION AND ACE ETHANOL

Mr. Chairman, Committee members, I wish to thank you for the opportunity to testify on behalf of the Wisconsin Ethanol Producers Association.

Wisconsin labeling requirement is outdated and we believe it should be repealed. In 2002, the states of Oklahoma, Ohio, Missouri, and North Carolina repealed outdated ethanol labeling requirements. Many other states have already repealed their ethanol labeling law or never adopted a requirement. Those states include California, Hawaii, Indiana, Kentucky, Maryland, Minnesota, Montana, New Jersey, Tennessee and the District of Columbia. The Wisconsin Ethanol Producers Association is here to speak in support of Assembly Bill 675 which will make labeling of ethanol an option by retail gasoline station owners. This bill is not a mandatory prohibition of labeling.

Perhaps owners of gasoline retailers might wish to label any one of the 200 different chemicals used by refiners. In particular, retailers would be doing a good public service if they would label blended product contains MTBE, benzene or toluene. These often used gasoline blended chemicals can cause either environmental or health problems but there are no labeling requirements. By August 2004 Methyl Tertiary Butyl Ether (MTBE) will be prohibited as a gasoline blend in Wisconsin.

In the 1970's when ethanol was introduced as a gasoline blending component, many agricultural proponents believed it was in their best interest to require mandatory labeling of ethanol blended in gasoline at the retail dispenser pump. However, that strategy backfired- big time. Big oil refiner concocted a marketing blitz to suggest that ethanol blended gasoline could cause engine problems. Their marketing campaigns did nothing empirically wrong; but by erecting banners stating that "pure gasoline-no alcohol added" created a negative consumer's perception. This was confusing at best to the public and seemed to demonize the product at worst. Of course, then, it was in the financial interest of refineries to blend with MTBE because of their vested interest.

The refiner's campaign was successful because thereafter there were much lower ethanol sales and a corresponding increase use of MTBE.

I suggest that the State of Minnesota has model statutes that encourage ethanol use. In 1988, the Minnesota Ethanol Commission called a meeting of gasoline retailers and blenders to ask them what they needed to do to increase their sales of ethanol. The overwhelming answer was to remove the onerous label that created the perception among consumers that ethanol was inferior for reasons I previously sighted. The mandatory labeling of ethanol was repealed in 1989. After removing the label requirement most retail stations began blending ethanol and created their own attractive displays identifying their product as enhanced with ethanol. Immediately thereafter, there was a dramatic increase in ethanol use from 7% to 30% in a period of only eighteen months. The Wisconsin Ethanol Producers Association believes that the Minnesota model of repealing mandatory ethanol in gasoline product would be a fitting model for Wisconsin and our Association urges that this committee adopts AB676.

I thank you for this opportunity and I remain available to answer any questions you may have.



# Motor Carrier Straight Bill of Lading or Loading Ticket

2 CONSIGNEE COPY

(Not a Bill of Lading when moved in vehicle operated by shipper or owner of product, but merely a receipt for product in behalf of shipper or owner.)

AB675

# 4

FOR CHEMICAL EMERGENCY  
 SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT  
 CALL CHEMTREC DAY OR NIGHT  
 800-424-9300

Page 1 of 1

Shipped from 017CHS INC Chippewa Terminal  
 3827 STATE HWY 124  
 CHIPPEWA FALLS, WI 54729

No. 163495

Carrier CENERGY LLC

Shipper CHS INC

Subject to Section 7 conditions of applicable bill of lading, on freight collect shipments, the carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

Consignee CONSUMERS COOPERATIVE ASSN  
 and  
 Destination

EAD CLATRE, WI

Shipper

CUSTOMER NUMBER		AUTH. NUMBER		ACCT. NUMBER		ICC OR MVFD NUMBER	
12618		0					
DATE	DRIVER NO.	TIME IN	TIME OUT	LOAD AREA	SEQUENCE NO.	PURCHASE ORDER NUMBER	
11/19/2003	600601	7:53	8:02	LANE 3			
ORDER NUMBER			PETROEX CONSIGNEE NUMBER		TRACTOR NUMBER		TRAILER NUMBER
			012618		74		1043

HM	D.O.T. HAZARDOUS MATERIAL DESCRIPTION	TEMP/PI/GRAY	GROSS GALS. LOADED	NET GALS. AT 60°F
B2-3 333848	X FUEL OIL, COMBUSTIBLE LIQUID, NA, 1993, III L3 #2 BURNER FOUR DEPRES	38.9 32.0	2500	2524
PR-3 333849	X GASOLINE, 3, UN 1203, II, PLACARDED: FLAMMABLE LIQUID UNL WITH ETHANOL (OCTANE 90) "ADDITIZED DETERGENT GASOLINE	41.5 65.0	2000	2026
UL-3 333850	X GASOLINE, 3, UN 1203, II, PLACARDED: FLAMMABLE LIQUID UNL WITH ETHANOL (OCTANE 90) "ADDITIZED DETERGENT GASOLINE	41.2 65.0	3500	3545
		TOTAL	8000	8095

CHS INC EPA Registration #5093

THIS PRODUCT DOES NOT MEET THE REQUIREMENTS FOR REFORMULATED GASOLINE, AND MAY NOT BE USED IN ANY REFORMULATED GASOLINE COVERED AREA.

GASOLINE IS IN COMPLIANCE WITH APPLICABLE RVP STANDARDS AT THE TIME OF DELIVERY.

is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation, according to the applicable regulations the Department of Transportation.

CHS INC

Shipper

Carrier hereby certifies that the cargo tank used for this shipment is a proper container for 1 commodity loaded therein and complies with Department of Transportation specifications.

Driver's Signature

*Paul Brown*

Carrier

Received for  
 Consignee

**PRODUCT LABELING INFORMATION**  
PRODUCT INFORMATION ON FACE OF MANIFEST  
For Further Information See Appropriate Data Sheet

**PRODUCT**

Chemical Name: Denatured Alcohol  
Common Names: Ethanol, Ethyl Alcohol

**HEALTH & PHYSICAL HAZARDS**

DANGER! FLAMMABLE LIQUID VAPOR HARMFUL. Keep away from flames and other sources of ignition. Do not extinguish fire unless flow can be stopped. Solid streams of water may be ineffective. Use water to keep fire exposed containers cool. Use water in flooding quantities as fog. Extinguishing media - CO<sub>2</sub>, Class 'B' extinguisher, alcohol foam or water fog. If released or spilled, add sand, earth or other suitable absorbent to spill area. Keep product out of sewers and water sources by diking or impounding. Use water spray to disperse vapors and dilute standing pools of liquid. Wear self-contained breathing apparatus when fire fighting. Avoid breathing vapors. May cause edema, chemical pneumonia, vomiting, blurred vision, dermatitis, drowsiness and irritation of the eyes and respiratory tract. CAUTION - Static electricity may be a source of ignition at ambient temperatures. Wear chemical resistant gloves, goggles or face shield, long sleeve shirt and pants. Use NIOSH approved respirator if TLV's are exceeded.

**EVACUATION**

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind, keep out of low areas. Isolate for 1/2 mile in all directions if tank, rail car, or tank truck is involved in fire.

**FIRST AID**

Inhalation - Remove victim to fresh air. Start artificial resuscitation if necessary. If breathing is difficult, give oxygen. Call a physician.  
Eyes - Flush eyes with water for at least 15 minutes. Call a physician.  
Skin - If material contacts skin wash thoroughly with warm water.  
Ingestion - If ingested call a physician.

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**PRODUCT**

Chemical Name: Automotive Gasoline  
Common Names: Regular, Super Regular, Unleaded, Super Unleaded, Premium Unleaded.  
Flashpoint: -36°F (-38°C)

**HEALTH & PHYSICAL HAZARDS**

DANGER! EXTREMELY FLAMMABLE LIQUID - VAPOR HARMFUL. Keep away from flames and other sources of ignition. CAUTION - Static electricity may be a source of ignition at ambient temperatures. Do not extinguish fire unless flow can be stopped. Solid streams of water may spread fire. Use water to keep fire exposed containers cool. Extinguishing media - CO<sub>2</sub>, Class 'B' extinguisher, foam or water fog. If released or spilled, add sand, earth or other suitable absorbent to spill area. Keep product out of sewers and water sources by diking or impounding. Wear self-contained breathing apparatus when fire fighting. Avoid breathing vapors. Avoid skin contact. Suspect carcinogen. May cause lung, skin and eye irritation, narcosis, asphyxiation and chemical pneumonia. Some grades (Regular - Super Regular) contain small amounts of lead antiknock compounds. Wear chemical resistant gloves, goggles or face shield, long sleeve shirt and pants. Use NIOSH approved respirator if TLV's are exceeded.

**EVACUATION**

If fire becomes uncontrollable or container is exposed to direct flame - consider evacuation of 1/2 mile radius. If material leaking (not on fire) consider evacuation from downwind area based on amount of material spilled, location and weather conditions.

**FIRST AID**

Inhalation - Remove victim to fresh air. Start artificial resuscitation if necessary. If breathing is difficult, give oxygen. Call a physician.  
Eyes - Flush eyes with water for at least 15 minutes. Call a physician.  
Skin - If material contacts skin wash thoroughly with soap and water.  
Ingestion - If ingested call a physician.

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**PRODUCT**

Chemical Name: Petroleum Distillate  
Common Names: #2 Diesel, #2 Burner, #2 Fuel Oil, #1 Diesel, #1 Burner, #1 Fuel Oil  
Flashpoint: 100 °F (30 °C)

**HEALTH & PHYSICAL HAZARDS**

DANGER! COMBUSTIBLE LIQUID - VAPOR HARMFUL. Keep away from flames and other sources of ignition. CAUTION - Static electricity may be a source of ignition at temperatures above 105°F. Do not extinguish fire unless flow can be stopped. Solid streams of water may spread fire. Use water to keep fire exposed containers cool. Extinguishing media - CO<sub>2</sub>, Class 'B' extinguisher, foam and water fog. If released or spilled, add sand, earth or other suitable absorbent to spill area. Keep product out of sewers and water sources by diking or impounding. Wear self-contained breathing apparatus when fire fighting. Avoid breathing vapors. May cause edema, lung and skin irritation, narcosis, chemical pneumonia, vomiting, blurred vision, dermatitis, drowsiness and irritation of the eyes and respiratory tract. Wear chemical resistant gloves, goggles or face shield, long sleeve shirt and pants. Use NIOSH approved respirator if TLV's are exceeded.

**FIRST AID**

Inhalation - Remove victim to fresh air. Start artificial resuscitation if necessary. If breathing is difficult, give oxygen. Call a physician.  
Eyes - Flush eyes with water for at least 15 minutes. Call a physician.  
Skin - If material contacts skin wash thoroughly with soap and water.  
Ingestion - If ingested call a physician.

Complies with OSHA Hazard Communication Rule 29 CFR 1910, 1200  
**FOR CHEMICAL EMERGENCY**  
**SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT**  
**CALL CHEMTREC DAY OR NIGHT**  
**800-424-9300**



## 2000 Auto Manufacturer Fuel Recommendations (Vehicle Owner's Manual Statements)

### Introduction

To inform vehicle owners about fuel quality and fuel ingredients, automobile manufacturers place statements in their owner's manuals concerning octane and fuel components such as alcohols, ethers, and in some cases, detergent additives.

This paper contains information regarding the auto manufacturers fuel recommendations contained in their vehicle owner's manuals. In some cases, manufacturers have issued bulletins or supplements that supersede or modify wording in existing or previous model year owners manuals. Such changes or modifications, when known, are listed after applicable fuel recommendations. All fuel recommendations are from the owner's manuals for the 2000 model year.

In general, all owner's manuals state that the fuel must be unleaded, and specify the octane required. These sections have been omitted because different versions of the same model may have different octane requirements (e.g. turbos) and the specific owner's manual should be referred to.

Due to the number of different models available from each manufacturer, it would be difficult to list every model separately. Each manufacturer's recommendation regarding oxygenates and fuel additives is similar, if not identical, across its product line. Accordingly, we have listed the wording from one of each manufacturers more popular models.

#### • Chrysler Corporation/Jeep, Eagle

##### FUEL REQUIREMENTS

Your vehicle is designed to meet all emission regulations and provide excellent fuel economy and performance when using high quality unleaded gasoline having an octane rating of 87. The use of premium gasoline is not recommended. The use of premium gasoline will provide no benefit over high quality regular gasolines, and in some circumstances may result in poorer performance.

Light spark knock at low engine speeds is not harmful to your engine. However, continued heavy spark knock at high speeds can cause damage and immediate service is required. Engine damage resulting from operating with a heavy spark knock may not be covered by the new vehicle warranty.

Poor quality gasoline can cause problems such as hard starting, stalling and hesitation. If you experience these symptoms, try another brand of "regular" gasoline before considering service for the vehicle.

Over 40 automobile manufacturers around the world have issued and endorsed consistent gasoline specifications (the World Wide Fuel Charter, WWFC) to define fuel properties necessary to deliver enhanced emissions, engine performance, and durability for your vehicle. DaimlerChrysler Corporation recommends the use of gasolines that meet the WWFC specifications if they are available.

##### Reformulated Gasoline

Many areas of the country require the use of cleaner burning fuel referred to as "Reformulated Gasoline".

Reformulated gasolines contain oxygenates, and are specially blended to reduce vehicle emissions and improve air quality.

DaimlerChrysler Corporation strongly supports the use of reformulated gasolines. Properly blended reformulated gasolines will provide excellent performance and durability for the engine and fuel system components.

##### Gasoline/Oxygenate Blends

Some fuel suppliers blend unleaded gasoline with oxygenates such

as 10% ethanol, MTBE, and ETBE. Oxygenates are required in some areas of the country during the winter months to reduce carbon monoxide emissions. Fuels blended with these oxygenates may be used in your vehicle.

##### Caution!

DO NOT use gasolines containing Methanol. Use of these blends may result in starting and driveability problems and may damage critical fuel system components.

Problems that result from using methanol/gasoline blends are not the responsibility of DaimlerChrysler Corporation and may not be covered by the vehicle warranty. While MTBE is an oxygenate made from Methanol, it does not have the negative effects of Methanol.

##### MMT in Gasoline

MMT is a manganese containing metallic additive that is blended into some gasoline to increase octane number. Gasolines blended with MMT offer no performance advantage beyond gasolines of the same octane number without MMT. Gasolines blended with MMT have shown to reduce spark plug life and reduce emission system performance in some vehicles. DaimlerChrysler Corporation recommends using gasolines without MMT. Since the MMT content of gasoline may not be indicated on the pump, you should ask your gasoline retailer whether or not his/her gasoline contains MMT.

It is even more important to look for gasolines without MMT in Canada because MMT can be used at levels higher than allowed in the United States.

MMT is prohibited in Federal and California reformulated gasolines.

##### Sulfur in Gasoline

If you live in the northeast United States, your vehicle may have been designed to meet California low emission standards with clean-burning California reformulated gasoline with low sulfur. If such fuels are not available in states adopting California emission standards, your vehicle will operate satisfactorily on fuels meeting Federal specifications, but emission control system performance may be adversely affected.

Gasoline sold outside of California is permitted to have higher sulfur levels which may affect the performance of the vehicle's catalytic converter. This may cause the Check Engine Light to illuminate. DaimlerChrysler Corporation recommends that you try a different brand of unleaded gasoline having lower sulfur to determine if the problem is fuel related prior to returning your vehicle to an authorized dealer for service.

#### Caution!

If the Service Engine Soon light is flashing, immediate service is required; see paragraph on the Onboard Diagnostics System in section 7 of this manual.

#### Materials Added to Fuel

All gasoline sold in the United States and Canada is required to contain effective detergent additives. Use of additional detergents or other additives is not needed under normal conditions and would result in additional cost. Therefore you should not have to add anything to the fuel.

### • Ford Motor Company

#### Choosing the Right Fuel

Use only UNLEADED FUEL. The use of leaded fuel is prohibited by law and could damage your vehicle.

#### Octane Recommendation

Your vehicle is designed to use "Regular" gasoline with an (R+M)/2 octane rating of 87. We do not recommend gasolines labeled as "Regular" that are sold with octane ratings of 86 or lower in high altitude areas.

Do not be concerned if your vehicle sometimes knocks lightly. However, if it knocks heavily under most driving conditions while you are using fuel with the recommended octane rating, see your dealer or a qualified service technician to prevent any engine damage.

#### Fuel Quality

If you are experiencing starting, rough idle or hesitation driveability problems during cold start, try a different brand of "Regular" unleaded gasoline. "Premium" unleaded gasoline is not recommended (particularly in the United States) because it may cause these problems to become more pronounced. If the problems persists, see your dealer or a qualified service technician.

Many of the world's automakers issued the World Wide Fuel Charter that recommends gasoline specification to provide improved performance and emissions control system protection for your vehicle. Gasolines that meet the World Wide Fuel Charter should be used when available. Ask your fuel supplier about gasolines that meet the World Wide Fuel Charter.

#### Cleaner Air

Ford approves the use of reformulated "cleaner-burning"

gasolines to improve air quality. These gasolines may contain oxygenates up to 10% ethanol or 15% MTBE.

### • General Motors Corporation/Saturn

#### Fuel

It is recommended that the gasoline meet specifications which have been developed by the American Automobile Manufacturers Association (AAMA) and endorsed by the Canadian Motor Vehicle Manufacturers Association for better vehicle performance and engine protection. Gasolines meeting the AAMA specification could provide improved driveability and emission control system performance compared to other gasolines.

Be sure the posted octane is at least 87. If the octane is less than 87, you may get a heavy knocking noise when you drive. If it's bad enough, it can damage your engine.

If you're using fuel rated at the recommended octane or higher and you hear heavy knocking, your engine needs service. But don't worry if you hear a little pinging noise when you're accelerating or driving up a hill. That's normal, and you don't have to buy a higher octane fuel to get rid of pinging. It's the heavy, constant knock that means you have a problem.

If your vehicle is certified to meet California Emission Standards (indicated on the underhood emission control label), it is designed to operate on fuels that meet California specifications. If such fuels are not available in states adopting California emissions standards, your vehicle will operate satisfactorily on fuels meeting federal specifications, but emission control system performance may be affected. The malfunction indicator lamp on your instrument panel may turn on and/or your vehicle may fail a smog-check test. If this occurs, return to your (GM) dealer for diagnosis to determine the cause of failure. In the event it is determined that the cause of the condition is the type of fuel used, repairs may not be covered by your warranty.

Some gasolines that are not reformulated for low emissions contain an octane-enhancing additive called methylcyclopentadienyl manganese tricarbonyl (MMT); ask your service station operator whether or not his fuel contains MMT. General Motors does not recommend the use of such gasolines. If fuels containing MMT are used, spark plug life may be reduced and your emission control system performance may be affected. The malfunction indicator lamp on your instrument panel may turn on. If this occurs, return to your authorized (GM) dealer for service.

To provide cleaner air, all gasolines in the United States are now required to contain additives that will help prevent deposits from forming in your engine and fuel system, allowing your emission control system to function properly. Therefore, you should not have to add anything to the fuel. In addition, gasolines containing oxygenates, such as ethers and ethanol, and reformulated gasolines may be available in your area to contribute to clean air. General Motors recommends that you use these gasolines particularly if they comply with the specifications described earlier.

#### Notice:

Your vehicle was not designed for fuel that contains methanol.

Don't use it. It can corrode metal parts in your fuel system and also damage plastic and rubber parts. That damage wouldn't be covered under your warranty.

#### • BMW

For Your own safety

Use unleaded gasoline only. Fuels containing up to 10% ethanol or other oxygenates with up to 2.8% oxygen by weight (i.e. 15% MTBE or 3% methanol plus an equivalent amount of co-solvent) will not void applicable warranties with respect to defects in materials and workmanship.

Field experience has indicated significant difference in fuel quality (i.e. volatility, composition, additives, etc.) among gasolines offered for sale in the United States and Canada. The use of poor quality fuels may result in driveability, starting and stalling problems especially under certain environmental conditions, such as high ambient temperatures and high altitude.

Should you encounter driveability problems that you suspect could be related to the fuels you are using, we recommend that you respond by switching to a recognized high-quality brand.

Failure to comply with these recommendations may result in unscheduled maintenance.

Follow the relevant safety rules when handling gasoline.

#### • Honda/Acura

##### Gasoline

Your Honda is designed to operate on unleaded gasoline with a pump octane number of 86 or higher. Use of a lower octane gasoline can cause a persistent, heavy metallic rapping noise in the engine that can lead to mechanical damage.

We recommend using gasoline containing detergent additives that help prevent fuel system and engine deposits.

Using gasoline containing lead will damage your car's emission controls. This contributes to air pollution.

In Canada some gasolines contain an octane-enhancing additive called MMT. If you use such gasolines, your emission control system performance may deteriorate and the Malfunction Indicator Lamp on your instrument panel may turn on. If this happens, contact your authorized Honda dealer for service.

##### Oxygenated Fuels

Some conventional gasolines are being blended with alcohol or an ether compound. These gasolines are collectively referred to as oxygenated fuels. To meet clean air standards, some areas of the United States and Canada use oxygenated fuels to help reduce emissions.

If you use an oxygenated fuel, be sure it is unleaded and meets the minimum octane rating requirement.

Before using an oxygenated fuel, try to confirm the fuel's contents. Some states/provinces require this information to be posted on the pump.

The following are the U.S. EPA and Canadian CGSB approved percentages of oxygenates:

##### ETHANOL (ethyl or grain alcohol)

You may use gasoline containing up to 10 percent ethanol by volume. Gasoline containing ethanol may be marketed under the name "Gasohol".

##### MTBE (Methyl Tertiary Butyl Ether)

You may use gasoline containing up to 15 percent MTBE by volume.

##### METHANOL (methyl or wood alcohol)

Your vehicle was not designed to use fuel that contains methanol. Methanol can corrode metal parts in the fuel system, and also damage plastic and rubber components. This damage would not be covered by your warranties.

If you notice any undesirable operating symptoms, try another service station or switch to another brand of gasoline.

Fuel system damage or performance problems resulting from the use of an oxygenated fuel containing more than the percentages of oxygenates given above are not covered under warranty.

#### • Hyundai

##### What about Gasohol

Gasohol (a mixture of 90% unleaded gasoline and 10% ethanol or grain alcohol) may be used in your Hyundai. However, if your engine develops driveability problems, the use of 100% unleaded gasoline is recommended. Fuels with unspecified quantities of alcohol, or alcohols other than ethanol, should not be used.

##### Do Not Use Methanol

Fuels containing methanol (wood alcohol) should not be used in your Hyundai. This type of fuel can reduce vehicle performance and damage components of the fuel system.

##### CAUTION:

Your Hyundai's New Vehicle Limited Warranty may not cover damage to the fuel system and performance problems that are caused by the use of methanol or fuels containing MTBE over 15.0% vol. (Oxygen Content 2.7 % weight).

##### GASOLINES FOR CLEANER AIR

To help contribute to cleaner air, Hyundai recommends that you use gasolines treated with detergent additives, which

help to prevent deposit formation in the engine. These gasolines will help the engines run cleaner and the Emission Control System performance

#### Use of MTBE

Hyundai recommends that fuels containing MTBE (Methyl Tertiary Butyl Ether) over 15.0% vol. (Oxygen Content 2.7% weight) should not be used in your Hyundai. Fuels containing MTBE over 15.0% vol. (Oxygen Content 2.7% weight) may reduce vehicle performance and produce vapor lock or hard starting.

#### • Isuzu

#### (Trooper, Amigo, Rodeo)

##### FUEL REQUIREMENTS

Use regular gasoline rated at 87 octane or higher. At a minimum, it should meet specifications ASTM D4814 in the United States and CGSB 3.5-M93 in Canada. Improved gasoline specifications have been developed by the American Automobile Manufacturers Association (AAMA) for better vehicle performance and engine protection. Gasoline meeting the AAMA specification could provide improved driveability and emission control system protection compared to other gasolines. Be sure the posted octane is at least 87. If the octane is less than 87, you may get a heavy knocking noise when you drive. If it's bad enough, it can damage your engine.

If you're using fuel rated at 87 octane or higher and you still hear heavy knocking, your engine needs service.

But don't worry if you hear a little pinging noise when you're accelerating or driving up a hill. That's normal, and you don't have to buy a higher octane fuel to get rid of pinging. It's the heavy constant knock that means you have a problem.

If your vehicle is certified to meet California Emission Standards (indicated on the underhood tune-up label), it is designed to operate on fuels that meet California specifications. If such fuels are not available in states adopting California emissions standards, your vehicle will operate satisfactorily on fuels meeting federal specifications, but emission control system performance may be affected. The malfunction indicator lamp on your instrument panel may turn on and/or your vehicle may fail a smog-check test. If this occurs, return to your authorized Isuzu dealer for diagnosis to determine the cause of failure. In the event it is determined that the cause of the condition is the type of fuels used, repairs may not be covered by your warranty.

In Canada, some gasolines contain an octane enhancing additive called MMT. If you use such fuels, your emission control system performance may deteriorate and the malfunction indicator lamp on your instrument panel may turn on. If this happens, return to your authorized Isuzu dealer for service. To provide cleaner air, all gasolines are now required to contain additives that will help prevent deposits from

forming in your engine and fuel system, allowing your emission control system to function properly. Therefore, you should not have to add anything to the fuel. In addition, gasolines containing oxygenates, such as ethers and ethanol, and reformulated gasolines may be available in your area to help clean the air. Isuzu recommends that you use these gasolines if they comply with the specifications described earlier.

#### CAUTION

**Your vehicle was not designed for fuel that contains methanol. Don't use it. It can corrode metal parts in your fuel system and also damage plastic and rubber parts. That damage wouldn't be covered under your warranty.**

#### (Hombre)

##### Fuel (Gasoline)

The 8th digit of your vehicle identification number (VIN) shows the code letter for your engine. You will find the VIN at the top left of your instrument panel. (See "Vehicle Identification Number" in the Index).

If you have the 2200 L4 (Code 5) engine, you may use either regular unleaded gasoline or ethanol fuel up to 85% (E-85); also see "Fuel (85% Ethanol/E-85)" following. If you have the 2200 L4 (Code 4) engine or 4.3 L V6 engine, use only regular unleaded gasoline.

Use regular unleaded gasoline rated at 87 octane or higher. It is recommended that the gasoline meet specifications which have been developed by the American Automobile Manufacturers Association (AAMA) and endorsed by the Canadian Motor Vehicle Manufacturers Association for better vehicle performance and engine protection. Gasolines meeting the AAMA specification could provide improved driveability and emission control system performance compared to other gasolines.

Be sure the posted octane is at least 87. If the octane is less than 87, you may get a heavy knocking noise when you drive. If it's bad enough, it can damage your engine.

If you're using fuel rated at 87 octane or higher and you still hear heavy knocking, your engine needs service.

But don't worry if you hear a little pinging noise when you're accelerating or driving up a hill. That's normal, and you don't have to buy a higher octane fuel to get rid of pinging. It's the heavy constant knock that means you have a problem.

If your vehicle is certified to meet California Emission Standards (indicated on the underhood tune-up label), it is designed to operate on fuels that meet California specifications. If such fuels are not available in states adopting California emissions standards, your vehicle will operate satisfactorily on fuels meeting federal specifications, but emission control system performance may be affected. The malfunction indicator lamp on your instrument panel may

turn on and/or your vehicle may fail a smog-check test. If this occurs, return to your authorized Isuzu dealer for diagnosis to determine the cause of failure. In the event it is determined that the cause of the condition is the type of fuels used, repairs may not be covered by your warranty.

Some gasolines that are not reformulated for low emissions may contain an octane-enhancing additive called methylcyclopentadienyl manganese tricarbonyl (MMT); ask your service station operator whether or not the fuel contains MMT. If fuels containing MMT are used, spark plug life may be reduced and your emission control system performance may be affected. The malfunction indicator lamp on your instrument panel may turn on. If this occurs, return to your authorized Isuzu dealer for service.

To provide cleaner air, all gasolines in the United States are now required to contain additives that will help prevent deposits from forming in your engine and fuel system, allowing your emission control system to function properly. Therefore, you should not have to add anything to the fuel. In addition, gasolines containing oxygenates, such as ethers and ethanol, and reformulated gasolines may be available in your area to contribute to clean air.

#### CAUTION

**Your vehicle was not designed for fuel that contains methanol. Don't use it. It can corrode metal parts in your fuel system and also damage plastic and rubber parts. That damage wouldn't be covered under your warranty.**

#### Fuel E-85 (85% Ethanol)

The 8th digit of your vehicle identification number (VIN) shows the code letter for your engine. You will find the VIN at the top left of your instrument panel. (See "Vehicle Identification Number" in the Index).

If you have the 2200 L4 (Code 5) engine, you may use either regular unleaded gasoline or ethanol fuel up to 85% (E-85); also see "Fuel (Gasoline)" listed previously. If you have the 2200 L4 (Code 4) engine or 4.3 L V6 engine, use only regular unleaded gasoline.

Only vehicles with the 2200 L4 (Code 5) engine may use 85% ethanol fuel (E-85).

Most service stations will not have an 85% ethanol fuel (E-85) pump available. Those stations that do have E-85 should have a label indicating minimum ethanol content. Do not use the fuel if the minimum ethanol content is greater than 85%. Your vehicle may not operate properly if the ethanol content is greater than 85%.

At a minimum, E-85 should meet ASTM D 5798 specifications. E-85 fuels meeting the AAMA specification could

provide improved durability compared to other E-85 fuels.

To insure quick starts in the wintertime, the E-85 fuel must be formulated properly for your climate according to ASTM specification D 5798. If you have trouble starting on E-85, it may be because your E-85 fuel is not properly formulated for your climate. If this happens, switching to gasoline or adding gasoline to your fuel tank may improve starting. Mixing gasoline with E-85 in your fuel tank will not cause any problems with your vehicle. E-85 fuel that is properly formulated for use in temperatures between 0°F and 32°F (-18°C and 0°C) will contain about 70% ethanol. For good starting and heater efficiency below 0°F (-18°C), the fuel mix in the fuel tank should contain a maximum of 50% ethanol.

E-85 has less energy per gallon than gasoline, so you'll need to refill your fuel tank more often when using E-85 than when you're using gasoline. Use regular gasoline when pulling a trailer. For payload capacity with ethanol fuel see "Loading Your Vehicle" in the index.

#### NOTICE:

**Some additives are not compatible with E-85 fuel and may harm your fuel system. Damage caused by additives may not be covered by your new vehicle warranty. Don't use additives with E-85 fuel.**

#### NOTICE:

**Your vehicle was not designed for fuel that contains methanol. Don't use it. It can corrode metal parts in your fuel system and also damage plastic and rubber parts. That damage wouldn't be covered under your warranty.**

#### • Jaguar

#### Caution:

1. Take care not to spill fuel during refueling. Fuel containing alcohol can cause paint damage which may not be covered under the warranty.
2. Vehicles with engines fitted with catalytic converters must only be filled with "Unleaded Fuel".

#### Notes:

1. Use only Premium Unleaded gasoline with a minimum Anti-Knock Index (AKI) of 91.
2. Oxygenated gasoline blended with ethanol (max. 10%), methanol (max 10%), or methyl tertiary butyl ether (MTBE) (max 15%) may be used.
3. Reformulated Gasoline with a minimum AKI of 91 may also be used.

The use of high quality fuel containing "intake system deposit control" detergent and other additives will help to keep the

vehicle's intake system free of deposits and its fuel system free of corrosion and gumming.

If high quality fuels containing "intake system deposit control" detergent and other additives are used continuously, there should be no need to add any after market products to the fuel tank.

If problems are experienced with starting, rough idling or hesitation when the engine is cold, it may be caused by gasoline with a low volatility. Try a different grade and/or brand of fuel. If the condition persists, see a Jaguar Dealer or a qualified service technician.

**Oxygenated gasoline**

Fuels that are blended with compounds containing oxygen, called oxygenates, may be used. Common oxygenates are ethanol or grain alcohol (blended at no more than 10%), methanol or wood alcohol (blended at no more than 5% with necessary co-solvents and additives), and MTBE or methyl tertiary butyl ether (blended at no more than 15%). The type of oxygenate may be found on the fuel pump or by asking the attendant. In certain areas of the country, oxygenates are required to be in all fuels to help improve air quality.

Generally, difficulty should not be experienced while operating the vehicle on fuels containing oxygenates. If problems are experienced switch to a fuel with a different type of oxygenate, or switch to a fuel that does not contain oxygenates, if available.

**Reformulated gasoline**

Several petroleum companies have announced the availability of reformulated fuels. These fuels are specially designed to further reduce vehicle emissions.

Jaguar fully supports all effort to protect and maintain ambient air quality, and encourage the use of reformulated gasoline, where available.

**• Kia**

**Gasoline Containing Alcohol and Methanol**

Ethanol (also known as grain alcohol) is a mixture of ethanol and gasoline marketed as gasohol. Do not use gasohol containing more than 10% ethanol.

Methanol (also known as wood alcohol) is a mixture of gasoline and methanol marketed as gasohol. Do not use gasoline or gasohol containing methanol.

Either of these fuel may cause driveability problems and damage to the fuel system.

Discontinue using gasohol of any kind if driveability problems occur.

Vehicle damage or driveability problems may not be covered by the manufacturer's warranty if they result from the use of

- Gasohol containing more than 10% ethanol,
- Gasoline or gasohol containing methanol, or
- Leaded fuel or leaded gasohol.

**\*NOTICE**

Never use gasohol which contains methanol. Discontinue use of any gasohol product which impairs driveability.

**• Land Rover**

Reformulated gasolines and gasolines that contain detergents, anti-corrosion and stability additives are recommended - they will help you vehicle maintain the correct level of emissions and engine performance.

Fuel system cleaning agents should be avoided, as many of these products can be harmful to gaskets and other materials used in fuel system components.

**Driveability**

If you encounter driveability, starting and stalling problems, especially in high ambient temperatures or at high altitude when the engine is cold, it may be caused by poor quality fuel. Try an alternative brand, and if the problem persists, seek advice from your dealer.

**Gasoline/oxygenated fuel blends**

To avoid invalidating the vehicle warranty, use ONLY fuels blended within the following limits.

1. Up to 15% of Methyl Tertiary Butyl Ether (MTBE) and unleaded fuel mix.
2. Up to 15% of Ethyl Tertiary Butyl Ether (ETBE) and unleaded fuel mix.
3. Up to 10% of Ethanol (Ethyl or grain alcohol) and unleaded fuel mix.

**Methanol/unleaded fuel blends**

In some areas it is possible to buy unleaded fuel that is blended with up to 5% Methanol (Methyl or wood alcohol) and cosolvents and corrosion preventatives. Using these blends can cause driveability problems and damage to the fuel system components. Their use may also invalidate the vehicle warranty.

**WHEREVER POSSIBLE, AVOID USING FUEL CONTAINING METHANOL!**

**Octane enhancers**

The use of octane enhancers is not recommended, and may invalidate the vehicle warranty.

**•Mazda**

**Fuel Requirements**

Gasoline blended with oxygenates such as alcohol or an other compound are generally referred to as oxygenated fuels. The common gasoline blend that can be used with your vehicle is ethanol blended at no more than 10%. Gasoline containing alcohol, such as ethanol or methanol, may be marketed under the name "Gasohol".

**Caution**

Your vehicle can only use oxygenated fuels containing no more than 10% ethanol by volume. Damage to your vehicle may occur when ethanol exceeds this recommendation, or if the gasoline contains any methanol.

Stop using gasohol of any kind if your vehicle is performing poorly.

**Caution**

Never add fuel system additives. Never add cleaning agents other than those specified by Mazda. Other cleaning agents and additives may damage the system. Consult an Authorized Mazda Dealer.

Vehicle damage and driveability problems resulting from the use of the following may not be covered by the manufacturer's warranty.

- 1) Gasohol containing more than 10% ethanol
- 2) Gasoline or gasohol containing methanol
- 3) Leaded fuel or leaded gasohol

• **Mercedes-Benz**

**Fuel Requirements**

Use only Premium unleaded meeting ASTM standard D 439:

The octane number (posted at the pump) must be 91 min. It is an average of both the Research (R) octane number and the Motor (M) octane number:  $[(R + M)/2]$ . This is also known as ANTI-KNOCK INDEX.

Unleaded gasoline containing oxygenates such as Ethanol, IPA, IBA and TBA can be used provided the ratio of any one of these oxygenates to gasoline does not exceed 10%, MTBE not to exceed 15%.

The ratio of Methanol to gasoline must not exceed 3% plus additional cosolvents.

Using mixtures of Ethanol and Methanol is not allowed. Gasohol, which contains 10% Ethanol and 90% unleaded gasoline, can be used.

These blends must also meet all other fuel requirements such as resistance to spark knock, boiling range, vapor pressure, etc.

**Gasoline Additives**

A major concern among engine manufacturers is carbon build up caused by gasoline. Mercedes-Benz recommends to use only quality gasoline containing additives that prevent the build up of carbon deposits.

After an extended period of using fuels without such additives, carbon deposits can build up especially on the intake valves and in the combustion area, leading to engine performance problems such as

warm-up hesitation,  
unstable idle,

knocking/pinging,  
misfire,  
power loss.

Do not blend other specific fuel additives with fuel. They only result in unnecessary cost, and may be harmful to the engine operation.

Damage or malfunctions resulting from poor fuel quality or from blending specific fuel additives are not covered by the Mercedes-Benz Limited Warranty.

• **Mitsubishi**

**Fuel selection****Gasoline additives**

Many fuel suppliers add detergents to their gasoline to minimize fuel injector fouling and to control intake valve deposits. These detergent gasolines are highly recommended for use in your car. They help keep your engine in tune and your emission control system working properly.

**Oxygenated gasoline**

Gasoline sold at some service stations may contain oxygenates such as ethanol, methanol, and MTBE (Methyl Tertiary Butyl Ether), although they may not be so identified. Oxygenates are required in some areas of the country. Fuels blended with these oxygenates may be used in your cars.

**Ethanol (Gasohol)**

A mixture of 10% ethanol (grain alcohol) and 90% unleaded gasoline may be used in your vehicle, provided the octane rating is at least as high as that recommended for unleaded gasoline.

**Methanol**

Do not operate your car on gasoline containing methanol (wood alcohol). The use of this type of alcohol can result in vehicle performance problems and could damage critical fuel system parts.

**MTBE (Methyl Tertiary Butyl Ether)**

A mixture of unleaded gasoline and 15% or less MTBE may be used in your car provided the octane rating is at least as high as that recommended for unleaded gasoline.

This type of fuel containing MTBE over 15% vol. may cause reduced vehicle performance and produce vapor lock or hard starting.

**Reformulated Gasoline**

Many areas of the country require the use of cleaner burning fuel referred to as "Reformulated Gasoline".

Reformulated gasolines contain oxygenates, and are specially blended to reduce vehicle emissions and improve air quality.

Mitsubishi Motors Corporation strongly supports the use of reformulated gasolines. Properly blended reformulated gasolines should have no adverse effects on vehicle performance or the durability of engine and fuel system components.

**MMT**

MMT is a manganese containing metallic additive that is blended

into some gasolines to increase the octane number. Gasolines blended with MMT offer no performance advantage beyond gasolines of the same octane number without MMT. Gasolines blended with MMT may adversely affect the spark plug and emission systems.

Mitsubishi Motors Corporation recommends using gasolines without MMT.

#### Sulfur in gasoline

If you live in the northeast United States, your vehicle may have been designed to meet California low emission standards based on clean burning California low sulfur gasoline. Gasoline sold outside of California is allowed to have higher sulfur levels that may effect the performance of your vehicle's catalytic converter. This may cause the engine Malfunction Indicator Light (Service engine soon) to illuminate. Illumination of this light while operating on high sulfur gasoline does not necessarily mean your emission control system is malfunctioning. If this happens, your authorized Mitsubishi dealer may recommend that you try a tank of a different brand of unleaded gasoline having lower sulfur to determine if the problem is fuel related.

#### Note

Poor quality gasoline can cause problems such as hard starting, stalling, engine noise and hesitation. If you experience these problems, try another brand and/or grade of gasoline.

If the engine Malfunction indicator light (Service engine soon) is flashing, have the system checked as soon as possible at an authorized Mitsubishi dealer.

### • Nissan/Infiniti

#### Reformulated Gasoline

Some fuel suppliers are now producing reformulated gasolines. These gasolines are specially designed to reduce vehicle emissions. NISSAN supports efforts towards cleaner air and suggests that you use reformulated gasoline when available.

#### Gasoline containing oxygenates

Some fuel suppliers sell gasoline containing oxygenates such as ethanol, MTBE, and methanol with or without advertising their presence. Nissan does not recommend the use of fuels of which the oxygenate content and the fuel compatibility for your NISSAN cannot be readily determined. If in doubt, ask you service station manager.

If you use oxygenate-blend gasoline, please take the following precautions as the usage of such fuels may cause vehicle performance problems and/or fuel system damage.

- **The fuel should be unleaded and have an octane rating no lower than that recommended for unleaded gasoline.**

- **If an oxygenate-blend, excepting a methanol blend, is used, it should contain no more than 10% oxygenate. (MTBE may, however, be added up to 15%).**
- **If a methanol blend is used, it should contain no more than 5% methanol (methyl alcohol, wood alcohol). It should also contain a suitable amount of appropriate cosolvents and corrosion inhibitors. If not properly formulated with appropriate cosolvents and corrosion inhibitors, such methanol blends may cause fuel system damage and/or vehicle performance problems. At this time, sufficient data is not available to ensure that all methanol blends are suitable for use in Nissan vehicles.**

If any driveability problems such as engine stalling and hard starting are experienced after using oxygenate-blend fuels, immediately change to a non-oxygenate fuel or a fuel with a low blend of MTBE.

**Take care not to spill gasoline during refueling. Gasoline containing oxygenates can cause paint damage.**

#### After Market Fuel Additives

NISSAN does not recommend the use of any fuel additives (i.e. fuel injector cleaner, octane booster, intake valve deposit remover, etc.) which are sold commercially. Many of these additives intended for gum, varnish, or deposit removal may contain active solvents or similar ingredients that can be harmful to the fuel system and engine.

#### Octane rating tips

In most parts of North America, you should use unleaded gasoline with an octane rating of at least 87 or 91 AKI (Anti-Knock Index) number. However, you may use unleaded gasoline with an octane rating as low as 85 AKI number in these high altitude areas (over 4,000 ft (1,219 m) such as: Colorado, Montana, New Mexico, Utah, Wyoming, north-eastern Nevada, southern Idaho, western South Dakota, western Nebraska, and that part of Texas which is directly south of New Mexico.

**Using unleaded gasoline with an octane rating lower than stated above can cause persistent, heavy spark knock. (Spark knock is a metallic rapping noise.) If severe, this can lead to engine damage. If you detect a persistent heavy spark knock even when using gasoline of the stated octane rating, or if you hear steady spark knock while holding a steady speed on level roads, have you dealer correct the condition. Failure to correct the condition is misuse of the vehicle, for which Nissan is not responsible.**

Incorrect ignition timing will result in knocking, after-run or overheating. This in turn may cause excessive fuel consump-

tion or damage to the engine. In any of the above symptoms are encountered, have your vehicle checked at a Nissan dealer or other competent service facility.

However, now and then you may notice light spark knock for a short time while accelerating or driving up hills. This is no cause for concern, because you get the greatest fuel benefit when there is light spark knock for a short time under heavy engine load.

#### • Porsche (911)

##### Fuel Quality

Your engine is designed to provide optimum performance and fuel economy using unleaded premium fuel with an octane rating of 98 RON (93 CLC or AKI). Porsche therefore recommends the use of these fuels in your vehicle.

Porsche also recognizes that these fuels may not always be available. Be assured that your vehicle will operate properly on unleaded premium fuels with octane numbers of at least 95 RON (90 CLC or AKI), since the engine's "Electronic Oktan<sup>TM</sup> knock control" will adapt the ignition timing, if necessary.

##### Fuels containing alcohol and ether

Some areas of the U.S. require oxygenated fuels during certain portions of the year. Oxygenated fuels are fuels which contain alcohol (such as methanol or ethanol) or ether (such as MTBE).

Under normal conditions, the amount of these compounds in the fuel will not affect driveability.

You may use oxygenated fuels in your Porsche, provided the octane requirements for your vehicle are met. We recommend, however, to change to a different fuel or station if any of the following problems occur with your vehicle:

- Deterioration of driveability or performance.
- Substantially reduced fuel economy.
- Vapor lock and non-start problems, especially at high altitude or at high temperature.
- Engine malfunction or stalling.

##### Fuels containing MMT

Some North American fuels contain an octane enhancing additive called methyl-cyclopentadienyl manganese tricarbonyl (MMT).

If such fuels are used, your emission control system performance may be negatively affected.

The malfunction indicator light (check engine) on your instrument panel may turn on. If this occurs, Porsche recommends you stop using fuels containing MMT.

#### • Rolls Royce

##### Caution

Always use a good quality fuel obtained from a reputable supplier and do not add any kind of additives to the fuel yourself.

Fuel containing oxygenates such as Ethanol, IPA, IBA, and TBA can be used provided the ratio of either one of these oxygenates to gasoline does not exceed 10%. MTBE may, however, be added up to 15%. Gasohol, which contains 10% Ethanol and 90% unleaded gasoline may be used.

The ratio of Methanol to gasoline must not exceed 3% plus additional cosolvents.

Using mixtures of Ethanol and Methanol is not allowed. These blends must also meet all other fuel requirements such as octane rating, boiling range, and vapour pressure, etc.

The engine in your car has been designed to operate on a premium unleaded fuel (95 RON minimum), meeting BS 7070, DIN 51607, ASTM standard D439, or national equivalent.

In the USA, the required fuel octane rating 91 minimum (which is displayed on the pump), is the average of both the Research octane number (R) and the Motor octane number (M).

This average octane  $(R + M)/2$ , is also known as the Anti Knock Index (AKI).

##### Caution

In order to maintain durability of the engine under all operating conditions, premium unleaded fuel should be used. If however, premium unleaded fuel is not available, then partially fill the tank with regular unleaded fuel. The fuel tank should then be filled with premium unleaded fuel as soon as possible.

##### Caution

Some gasolines may now contain an octane enhancing additive, normally referred to as MMT (methylcyclopentadienyl manganese tricarbonyl). Rolls Royce Motor Cars does not recommend the use of such gasolines, as spark plug life may be reduced and emission control system performance may be affected.

If fuels containing MMT are used, the 'CHECK ENGINE' indicator lamp on the driver information panel may illuminate. If this occurs, consult a Franchise Holder/Dealer as soon as possible.

• Saab

**Refueling:**

Ensure that you are using the correct grade of fuel, unleaded AON 87-93. For optimum performance we recommend:

- AON 93 for 2.0 Turbo 185 hp
- AON 93 for 2.0 Turbo 205 hp and 2.3 Viggen.

If fuel containing a mixture of alcohol is used, the following restrictions apply:

Methanol: max. 5% by volume

Ethanol: max. 10% by volume

MTBE: max. 15% by volume

The most effective way to prevent condensation forming in the tank (and thus avoid possible running problems) is to keep the tank well filled.

Before the onset of freezing temperatures in winter, it may be advisable to add gasoline anti-freeze to the fuel a few times to dispel any condensation in the system.

**Recommended Fuel:**

The engine in your Saab 9-3 is designed to operate on unleaded gasoline that has an octane rating of:

- AON 90 (minimum 87) for 185 hp engines
- AON 93 (minimum 87) for 205 hp engines and 2.3 Viggen.

Octane rating is determined according to the formula:

MON + RON

2

where MON is the Motor Octane Number, and RON is the Research Octane Number. The average of these two values is the octane rating of the gasoline as it appears on the pump at a retail gas station. This value is sometimes referred to as the "Anti-knock Index" (AKI) or the "Average Octane Number" (AON).

To avoid deposit formation on the fuel injectors which can cause poor driveability, use only quality gasolines that contain detergents and corrosion inhibitors. Because gasolines sold at retail gas stations vary greatly in their composition and quality, you should switch to a different brand if you begin experiencing driveability and/or hard starting problems shortly after refueling your car. In recent years, a variety of fuel additives and alcohols or oxygenates have been blended with gasoline. These types of gasoline may be found in all parts of the United States and Canada, but particularly in geo-

graphic areas and cities that have high carbon monoxide levels. Saab approves the use of such "reformulated" gasolines in its products, which help in reducing pollution from all motor vehicles, provided that the following blending percentages are met by such fuels:

- up to 10% ethanol by volume, with corrosion inhibitors
- up to 15% MTBE by volume (methyl tertiary butyl ether)
- up to 5% methanol by volume, with an equal amount of a suitable co-solvent and added corrosion inhibitors

Other, less common, fuel additives used by some gasoline retailers are also acceptable, provided that the resultant gasoline is not more than 2.7% oxygen by weight. In many cases, you may not be able to determine the exact type or percentage by volume of fuel additive in the gasoline you purchase for your car.

Some Canadian and U.S. gasolines contain an octane enhancing additive called methylcyclopentadienyl manganese tricarbonyl (MMT). If such fuel is used, your emission control system performance may deteriorate and the malfunction indicator lamp on your instrument panel may turn on. If this occurs, return to your authorized Saab dealer for service.

However, these blended gasolines are regulated and should never exceed these recommended blend percentages and service station operators should know if their gasolines contain detergents and oxygenates, and if they have been reformulated to reduce vehicle emissions. Nevertheless, if you begin to notice a problem with the way your car starts or runs shortly after it has been refueled, try a different brand or gasoline.

**NOTE**

Higher concentrations of methanol than listed above, or the use of methanol-blended gasoline without suitable cosolvents and corrosion inhibitors, can damage your car's fuel system, leading to the need for repairs which are not covered by Saab's product warranty.

• Subaru

**CAUTION**

**Use of a fuel which is low in quality or use of an inappropriate fuel additive may cause engine damage.**

**Fuel Requirement**

- **Gasoline for California-certified TLEV**  
If your vehicle is a California-certified Transitional Low Emission Vehicle (TLEV) as indicated on the underhood tune-up label, it is designed to optimize engine and emission

control system performance with gasoline that meets California specifications. Your vehicle will operate on gasoline meeting Federal specifications.

**CAUTION:**

**Do not let fuel spill on the exterior surfaces of the vehicle. Fuels containing alcohol may cause paint damage, which is not covered under the SUBARU Limited Warranty.**

• **Gasolines for cleaner air**

Your use of gasoline with detergent additives will help prevent deposits from forming in your engine and fuel system. This helps keep your engine in tune and your emission control system working properly, and is a way of doing your part for cleaner air. If you continuously use a high quality fuel with the proper detergent and other additives, you should never need to add any fuel system cleaning agents to your fuel tank.

Many gasolines are now blended with materials called oxygenates. Use of these fuels can also help keep the air cleaner. SUBARU approves the use of oxygenated blend fuels, such as MTBE (methyl tertiary butyl ether) or ethanol (ethyl or grain alcohol). These blended fuels should contain no more than 15% MTBE or 10% ethanol for the proper operation of your SUBARU.

In addition, some gasoline suppliers are now producing reformulated gasolines, which are designed to reduce vehicle emissions. SUBARU approves the use of reformulated gasoline.

If you are not sure what the fuel contains, you should ask your service station operators if their gasolines contain detergents and oxygenates and if they have been reformulated to reduce vehicle emissions.

As additional guidance, only use fuels suited for your vehicle as explained below.

- Fuel should be unleaded and have an octane rating no lower than that specified in this manual.
- Methanol (methyl or wood alcohol) is sometimes mixed with unleaded gasoline. Methanol can be used in your vehicle **ONLY** if it does not exceed 5% of the fuel mixture **AND** if it is accompanied by sufficient quantities of the proper cosolvents and corrosion inhibitors required to prevent damage to the fuel system. Do not use fuel containing methanol **EXCEPT** under these conditions.
- If undesirable driveability problems are experienced and you suspect they may be fuel related, try a different brand of gasoline before seeking service at your SUBARU dealer.

- Fuel system damage or driveability problems which result from the use of improper fuel are not covered under the SUBARU Limited Warranty.

• **Suzuki**

**FUEL RECOMMENDATION**

Your vehicle requires regular unleaded gasoline with a minimum rating of 87 pump octane ((R + M)/2 method). In some areas, the only fuels that are available are oxygenated fuels.

Oxygenated fuels which meet the minimum octane requirement and the requirements described below may be used in your vehicle without jeopardizing the New Vehicle Limited Warranty.

**NOTE:**

Oxygenated fuels are fuels which contain oxygen-carrying additives such as MTBE or alcohol.

**Gasoline Containing MTBE**

Unleaded gasoline containing MTBE (methyl tertiary butyl ether) may be used in your vehicle if the MTBE content is not greater than 15%. This oxygenated fuel does not contain alcohol.

**Gasoline/Ethanol Blends**

Blends of unleaded gasoline and ethanol (grain alcohol), also known as gasohol, may be used in your vehicle if the ethanol content is not greater than 10%.

**Gasoline/Methanol Blends**

Fuels containing 5% or less methanol (wood alcohol) may be suitable for use in your vehicle if they contain cosolvents and corrosion inhibitors. Do **NOT USE** fuels containing more than 5% methanol under any circumstances. Fuel system damage or vehicle performance problems resulting from the use of such fuels are not the responsibility of SUZUKI and may not be covered under the New Vehicle Limited Warranty.

**Fuel Pump Labeling**

In some states, pumps that dispense oxygenated fuels are required to be labeled for the type and percentage of oxygenate and whether important additives are present. Such labels may provide enough information for you to determine if a particular blend of fuel meets the requirements listed above. In other areas, pumps may not be clearly labeled as to the content or type of oxygenate and additives. If you are not sure that the fuel you intend to use meets these requirements, check with the service station operator or the fuel supplier.

**NOTE:**

To help clean the air, SUZUKI recommends you use the oxygenated fuels. However, if you are not satisfied with the driveability or fuel economy of your vehicle when you are using an oxygenated fuel, switch back to the regular unleaded gasoline.

**CAUTION**

Be careful not to spill fuel containing alcohol while refueling. Fuels containing alcohol can cause paint damage, which is not covered under the New Vehicle Limited Warranty.

• **Toyota/Lexus**

**FUEL TYPE**

Your new vehicle must use only unleaded gasoline.

To help prevent gas station mix-ups, your Toyota has a new smaller fuel tank opening. The special nozzle on pumps with unleaded fuel will fit it, but the larger standard nozzle on pumps with leaded gas will not.

At a minimum, the gasoline you use should meet specifications of ASTM D4814 in the U.S.A. and CGSB 3.5-M93 in Canada.

**NOTICE**

Do not use leaded gasoline. Use of leaded gasoline will cause the three-way catalytic converter to lose its effectiveness and the emission control system to function improperly. Also, this can increase maintenance costs.

**OCTANE RATING**

Select Octane Rating 87 (Research Octane Number 91) or higher. For improved vehicle performance, the use of premium unleaded gasoline with an Octane Rating of 91 (Research Octane Number 96) or higher is recommended.

Use of unleaded fuel with an octane number or rating lower than stated above will cause persistent heavy knocking. If severe, this will lead to engine damage.

If your engine knocks...

If you detect heavy knocking even when using the recommended fuel, or if you hear steady knocking while holding a steady speed on level roads, consult your Toyota dealer.

However, now and then, you may notice light knocking for a short time while accelerating or driving up hills. This is no need for concern.

**GASOLINES CONTAINING DETERGENT ADDITIVES**

Toyota recommends use of gasolines that contain detergent additives to avoid build-up of engine deposits.

For further details, ask your Toyota dealer or a local gasoline retailer.

**IMPROVED GASOLINES**

The American Automobile Manufacturers Association (AAMA) has developed a specification of improved gasolines. The AAMA specification offers optimal fuel information for better vehicle performance and better protection of your engine.

Toyota recommends the use of gasolines that meet the AAMA specification, if available, for improved driveability and emission control system.

**GASOLINES CONTAINING MTBE**

Gasolines that contain MTBE (Methyl Tertiary-Butyl Ether) are available in the market. If you use a gasoline mixed with MTBE, make certain that it does not contain more than 15% of MTBE.

**GASOLINES CONTAINING MMT**

Some gasolines contain an octane-enhancing additive called MMT (methylcyclopentadienyl manganese tricarbonyl).

Toyota does not recommend the use of gasolines that contain MMT. If fuels containing MMT are used, your emission control system may be adversely affected. The Malfunction Indicator Lamp on the instrument cluster may come on. If this happens, contact your Toyota dealer for service.

**GASOLINES CONTAINING ALCOHOL**

If you use gasohol in your Toyota, be sure that it is unleaded, has an octane rating no lower than 87 and does not contain more than 10% ethanol.

Gasohol is mixture of gasoline and ethanol.

Toyota does not recommend the use of gasolines containing methanol. If you use gasoline containing methanol, use only gasoline meeting the requirements above and also containing less than 5% methanol with cosolvents and corrosion inhibitors for methanol.

**GASOLINES QUALITY**

In a very few cases, you may experience driveability problems caused by the particular gasoline that you are using. If

you continue to have unacceptable driveability, try changing gasoline brands. If that does not rectify your problem, then consult your Toyota dealer.

#### Notice

Do not use gasohol other than stated above. It will cause fuel system damage or vehicle performance problems.

If driveability problems occur (poor hot starting, vaporizing, engine knock, etc.), discontinue use.

Take care not to spill gasohol during refueling. Gasohol may cause paint damage.

#### • Volkswagen/Audi

##### Use of gasoline containing alcohol or MTBE (methyl tertiary butyl ether)

You may use unleaded gasoline blended with alcohol or MTBE (commonly referred to as oxygenates), if the blended mixture meets the following criteria:

##### Blend of gasoline methanol (wood alcohol or methyl alcohol)

- Antiknock index must be 87 or higher.
- Blend must contain no more than 3% methanol.
- Blend must contain more than 2% Co-solvents.

#### Note

Methanol fuels which do not meet these requirements, may cause corrosion and damage to plastic and rubber components in the fuel system.

##### Blend of gasoline and ethanol (grain alcohol or ethyl alcohol)

- Antiknock index must be 87 or higher.
- Blend must not contain more than 10% ethanol.

##### Blend of gasoline and MTBE

- Antiknock index must be 87 or higher.
- Blend must contain not more than 15% MTBE.

#### Notes

- Do not use fuels that fail to meet the criteria specified above.
- If you are unable to determine whether or not a particular fuel blend meets the specifications above, ask you service station or its fuel supplier.
- Do not use fuel for which the contents cannot be identified.
- Fuel system damage and performance problems resulting from the use of fuels different from those specified above are not the responsibility of VOLKSWAGEN and are not covered under the New Vehicle or the Emission Control System Warranties.

- If you experience a loss of fuel economy or driveability and performance problems due to the use of one of these fuel blends, we recommend that you switch to unblended fuel.

#### Seasonally adjusted gasoline

Many gasolines are blended to perform especially well for winter or summer driving. During seasonal change-over, we suggest that you fill up at busy gas stations where the seasonal adjustment is more likely to be made in time.

#### Gasoline additives

A major concern among many auto manufacturers is carbon deposit build-up caused by the type of gasoline you use.

Although gasolines differ from one manufacturer to another, they have certain things in common. All gasolines contain properties that can cause deposits to collect on vital engine components, such as fuel injectors and intake valves. Although most gasoline brands include additives to keep engine and fuel systems clean, they are not equally effective.

After an extended period of using inadequate fuels, built-up carbon deposits can rob your engine of peak performance.

#### Note

Damage or malfunction due to poor fuel quality is not covered by the VOLKSWAGEN New Vehicle Limited Warranty.

#### • Volvo

##### Deposit Control Gasoline (detergent additives)

Volvo recommends the use of gasoline containing deposit control additives. These additives have shown to be efficient in keeping injector and intake valves clean. Consistent use of deposit control gasolines help ensure good driveability and fuel economy. If you are not sure whether the gasoline contains deposit control additives, check with the service station operator.

NOTE: Some U.S. and Canadian gasolines contain an octane enhancing additive called methyl-cyclopentadienyl manganese tricarbonyl (MMT). If such fuels are used, you Emissions Control System performance may be affected, and the Check Engine Lamp located on your instrument panel may light. If this occurs, please return your vehicle to an authorized Volvo retailer for service.

##### Gasoline Containing Alcohol and Ethers "Oxygenated fuels"

Some fuel suppliers sell gasoline containing "oxygenates" which are usually alcohols or ethers. In some areas, state or local laws require that the service pump be marked indicating use of alcohols or ethers. However, there are areas in which the pumps are unmarked. If you are not sure whether there is

alcohol or ethers in the gasoline you buy, check with the service station operator. To meet seasonal air quality restrictions, some states require the use of "oxygenated" fuel.

Volvo allows the use of the following "oxygenated" fuels; however, the octane ratings listed on this page must still be met.

**Alcohol – Ethanol**

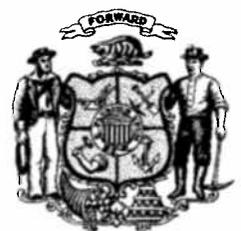
Fuels containing up to 10% ethanol by volume may be used. Ethanol may also be referred to as Ethyl alcohol, or "Gasohol".

**Ethers – MTBE**

Fuels containing up to 15% MTBE may be used.



# WISCONSIN STATE LEGISLATURE



AB 475

2/14: Chet Berlach: Hahn has amendment drafted. Running it by EAA today...

\* Told Chet Ad wants letter from EAA stating they will support the bill w/ amendment.

- Also wants Underheim + Reischer to sign off.

Wendy Hahn's Office: Relayed conversation w/ Chet.

\* Will start counting votes once they get the OK from EAA.