NEW SOUTH WALES FIRE BRIGADES

OPERATIONS BULLETIN 2008/02

Ethanol blended fuels

With the introduction and widespread use of ethanol blended fuels in motor vehicles, firefighters may have difficulty extinguishing fires with Tridol foam.

Production of ethanol in Australia

Ethanol (ethyl alcohol, C_2H_5OH) is an alcohol made by fermenting and distilling simple sugars that are normally derived from grain starches and the woody residues of crops.

Ethanol is used in the manufacture of alcoholic beverages. It is denatured (made unfit for human consumption) when used for fuel.

In 2007, the ethanol processing capacity in Australia was 140 million litres, with planned capacity of 1155 million litres a year within the next few years. A large percentage of this production is in country NSW and Queensland.

Bulk denatured ethanol (often E95) is transported from production facilities by road or rail to oil refineries where it is blended with unleaded fuel for domestic use.

Use of ethanol blended fuels

All major fuel suppliers in Australia now market ethanol blended fuels. These are commonly labelled as E10, while independent fuel suppliers sell other variations.

NOTE

Any vehicle with the capacity to use unleaded fuel may contain ethanol blended fuel.

Product name	Ethanol	Unleaded
E5	5%	95%
E10	**10%**	**90%**
E20	20%	80%
E85	85%	15%

Anecdotal evidence also suggests that some "backyard" modification of vehicles is occurring so that they may run on E85.

Size Up Considerations—Ethanol

When sizing-up incidents involving ethanol (fire or spill), use dynamic risk assessment principles and refer to **Guide 14 in the Dangerous Goods — Initial Emergency Response Guide book.**

Use a Gas Detector to check for explosive limits and if there is any chance of fire or ignition, Structural Firefighting Ensemble & SCBA must be worn.

NEW SOUTH WALES FIRE BRIGADES

OPERATIONS BULLETIN 2008/02

Ethanol blended fuels

Fires

The burning characteristics of low percentage (E5, E10, E20) ethanol blended fuels are not greatly different from pure unleaded. Both have similar flashpoints and both have a clearly visible flame.

The burning characteristics of **higher percentage** (E85, E95, E100) ethanol vary from pure unleaded. The **flame becomes less visible** as the ethanol concentration increases. A thermal imaging camera should be used whenever a flame is not clearly visible.

The water miscibility (solubility in water) of the fuel increases as the percentage of ethanol increases.

Tridol Foam

Tridol foam is not alcohol resistant. A **Tridol foam blanket will degrade more quickly in contact with ethanol blended fuels**. The quicker degradation of the foam blanket will reduce the chance of extinguishment and increase the chance of re-ignition or burn-back.

For this reason, when fighting fires involving:

low percentage (E5, E10, E20) ethanol blended fuels:	• significantly **increase foam application rate** as required for extinguishment eg: additional foam lines • **call for additional foam** supplies, even if only a relatively small fire • **monitor & maintain foam blanket**
high percentage (E85, E95, E100) ethanol blended fuels:	• **Protect exposures** • If necessary, **call for supplies of Alcohol Resistant Foam** through your ComCen, who will contact the Assistant Director Operational Logisitics (Ph: 0438 497 243).

The NSWFB is assessing which available foam concentrates are suitable for ethanol blended fuels.

Noted, Station Commander	**A**	**B**	**C**	**D**	**Other**

Contact Officer:	**File Number:**	**Date:**
Name: C/Supt John Denny 02 9265 2763 Assistant Director Specialised Operations	CHO/06238	26 February 2008

Previous Operations Bulletin: 2008/02 – (Tanker decanting operations)