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bcc CP/DER
1460 D. W. Stegen
1070 H. R. Ford

April 7, 1972

Mr. Stan Copeland
Humble Oil Co.
P.O. Box 60626
New Orleans, La. 70160

Dear Mr. Copeland:

Just a note to include up to date toxicity information on Therminol 66 heat transfer fluid as a candidate for your offshore platforms. With the advent of possible FDA action to prevent the spread of PCBs we urge that your Therminol FR systems be converted as soon as possible. Again we suggest that the systems be drained, flushed with a light solvent or MCS 681 flushing fluid prior to refill with a non-PCB material. We will absorb both the return freight and the disposal cost for both the used Therminol FR as well as the flushing material.

As shown in the toxicity statement Therminol 66 is considered to be practically non-toxic by ingestion in single doses and by single dermal applications based on feeding studies to albino rats and skin tests with albino rabbits.

Limited studies indicate that Therminol 66 undergoes primary biodegradation and that it would not be a persistent aquatic pollutant if small amounts inadvertently entered waterways. Previous studies indicate that "...less than 25% of the fish (trout fry) died within 48 hours in Therminol 66 suspensions containing 100 mg/liter or less...".

Additional studies are now under way regarding both toxicity and biodegradation tests on both Therminol 66 and Therminol 55.

Regarding fire tests comparing Therminol 66 and Dowtherm G we did uncover a few interesting ideas. We ran flash, fire and AIT temperatures of both fluids by the latest methods (flash and fire - ASTM D-92) and (AIT - ASTM D-2155). The results

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were as follows:

	Dow G		Therminol 66	
	Published	New	Published	New
Flash Point (°F)	305	285	355	365
Fire Point (°F)	315	305	374-392	390
AIT (°F)	over 1150	1015	705	720

We feel that of the three indications of fire hazards that the fire point is probably the most important. Should you have a tube rupture in the heater both fluids would readily burn because the combustion chamber is operating at temperatures over the AIT of either product. This failure can be protected by the use of a CO_2 snuffer.

An external leak such as at a flange or pump is a potential hazard provided the fluid is at temperature and provided an ignition source is present.

Once we establish that an ignition source is necessary then the key property of the fluid to evaluate is the fire point. The fire point of Therminol 66 is 85°F higher than that of Dowtherm G. Some customers tend to disregard this difference as a safety factor; however, let's look at it from another viewpoint. Assume a system is operating at 550°F and an atmospheric leak occurs. Both fluids will cool upon air contact but they are both capable of burning in the presence of an ignition source until they cool below their fire point. In the case of Therminol 66 the fluid must cool only 160°F; Dowtherm G must cool 245°F. From this standpoint Therminol 66 is about 50% safer than Dowtherm G.

Recent fire tests also indicated that a low boiling point and a high vapor pressure can also play a very important role in the combustibility of a fluid. Spray tests with hot Dowtherm G into a hot air stream caused a massive mushroom of fluid vapors. An identical spray test using Therminol 66 resulted in only a compact cloud of vapors. We feel certain this is caused by the high vapor pressure and the low boiling point of Dowtherm G, and would contribute to seeking an ignition source upon leakage from a system.

Therminol 66 has been used for eight years in heat transfer systems very successfully for temperatures up to 650°F. We have every confidence that from the standpoint of thermal stability and toxicity that Therminol 66 is the correct fluid for your application.

Please call me or Mr. Don Stegen at our Houston office should you have other questions.

Very truly yours,

J. J. Roder
Product Supervisor
Heat Transfer Fluids

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Attachments