Monsanto

DEVELOPMENT DEPARTMENT
MONSANTO CHEMICAL COMPANY

ORGANIC CHEMICALS DIVISION
ST. LOUIS 66, MISSOURI

Therminol 77

Preliminary Technical Data Sheet

August 30, 1963

TO ASSIST YOU IN THE EVALUATION OF THE ABOVE PRODUCT, WE HAVE OBTAINED THE INFORMATION CONTAINED IN THIS BULLETIN FROM LITERATURE SOURCES AND PRELIMINARY INVESTIGATION IN OUR OWN LABORATORIES. WHILE WE BELIEVE THE INFORMATION IS ACCURATE, WE ASSUME NO RESPONSIBILITY AND DISCLAIM ANY LIABILITY INCURRED IN USING THESE DATA OR SUGGESTIONS. ONLY QUALIFIED TECHNICAL PERSONNEL SHOULD WORK WITH THIS PRODUCT UNTIL SUBSEQUENT STUDIES JUSTIFY ITS USE IN YOUR PRODUCTS OR PROCESSES. OBVIOUSLY NOTHING IN THIS BULLETIN SHOULD BE CONSTRUED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIAL OR ITS USE.

Therminol 77 is a clear, amber fluid with exceptionally high thermal and oxidative stability. It was especially designed for use as a liquid-phase heat transfer fluid at temperatures above 600°F. Following are some fluid properties:

Temp. °F	Vapor Pressure (mm Hg)	Viscosity (cs)	Viscosity (Lbs/Ft-Hr)	Density (GMS/cc)	Density (Lbs/Gal)
100	---	181	505	1.152	9.60
210	---	7.78	20.8	1.106	9.22
300	0.27	---	---	---	---
400	1.03	1.50	3.74	1.029	8.58
500	9.2	0.96	2.28	0.981	8.16
600	44	0.66	1.49	0.931	7.76
700	168	0.46*	0.99	0.885	7.38
800	530	---	---	---	---

Temp. °F	Specific Heat (BTU/Lb)	Thermal Conductivity (Cal/cm. °C. sec).	Thermal Conductivity (BTU/°F. Ft-Hr)
100	0.350	32.25×10^{-5}	0.0781
200	0.385	31.40×10^{-5}	0.0760
300	0.420	30.50×10^{-5}	0.0739
400	0.455	29.65×10^{-5}	0.0719
500	0.495	28.80×10^{-5}	0.0698
600	0.530	---	---
700	0.565	---	---
800	0.600	---	---

*Extrapolation

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Refractive Index	1.6413
Pour Point	+45°F
Flash Point	460°F
Fire Point	540°F
A. I. T.	1115°F
Thermal Decomposition*	800°F

Electrical Properties

	60 Cycle	1000 Cycle
Dielectric Constant at 100°C	3.77	3.54
Power Factor at 100°C, %	19.3	1.21
Resistivity, ohm-cm	at 100°C 29×10^9	

Oxidation-Corrosion Test (48 hrs, 450°F, Air, MIL-L-9236A Method)

% Viscosity Incr. at 100°F	37
at 210°F	13
Metal Weight Loss, mg/cm^2	
Cu	-1.56
Fe	+0.01
Mg	+0.02
Ag	-0.99
Ti	0.0
Al	0.0

Toxicity and Safe Handling:

Appropriate animal toxicity studies indicate that Therminol 77 is "practically non-toxic" from the standpoint of accidental swallowing or single massive skin exposures. Irritation potential studies indicate that it should not be irritating to the skin and only slightly irritating to the eyes if there is accidental contact. Animals survived a single four-hour exposure to an atmosphere saturated with vapors at room temperature. It appears that no particular safety precautions are necessary during the handling of this fluid at room temperature.

*Thermal decomposition was determined by the isoteniscope method as described in the "Journal of Chemical and Engineering Data", January 1961, Volume 6, No. 1. It is defined as the temperature at which dp/dt = 0.014 mm. Hg per second or 500 mm. Hg per 10 hours.

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