MCS 225

Preliminary Technical Data Sheet

August 30, 1963

DEVELOPMENT DEPARTMENT
MONSANTO CHEMICAL COMPANY

ORGANIC CHEMICALS DIVISION
ST. LOUIS 66, MISSOURI

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.

MCS 225 is a clear, amber fluid with exceptionally high thermal and oxidative stability. It was designed for use as a high temperature lubricant in applications where the thermal and/or oxidative stability of currently-available lubricants are unsatisfactory. Following are some fluid properties.

Temp. °F	Vapor Pressure (mm Hg)	Viscosity (cs)	Viscosity (Lbs/Ft-Hr)	Density (GMS/cc)	Density (Lbs/Gal)
100	---	262	734	1.158	9.66
210	---	8.97	24	1.122	9.36
300	0.123	---	---	---	---
400	1.03	1.60	4.02	1.038	8.66
500	8.8	0.98	2.35	0.993	8.28
600	41	0.67	1.53	0.945	7.88
700	145	0.50	1.08	0.891*	7.43
800	450	---	---	---	---

Temp. °F	Specific Heat (BTU/Lb)	Thermal Conductivity (Cal/cm. °C. sec)	Thermal Conductivity (BTU/°F. Ft-Hr)
100	0.350	32.0×10^{-5}	0.0775
200	0.385	31.0×10^{-5}	0.0751
300	0.420	30.0×10^{-5}	0.0727
400	0.455	29.1×10^{-5}	0.0705
500	0.495	28.1×10^{-5}	0.0680
600	0.530	---	---
700	0.565	---	---
800	0.600	---	---

Pour Point	445°F
Flash Point	465°F
Fire Point	545°F
A. I. T.	1,110°F
Refractive Index	1.6422

* Extrapolation

0095568

AD-737

TOWOLDMON0043771
WATER_PCB-00028240

Thermal Decomposition* 795°F

Shell Four-Ball Wear (400°F, 626 rpm, 1 Hr.)

(steel) 52-100	on	(steel) 52-100
10 kg.	-	1.46 mm scar dia.
30 kg.	-	1.63 mm scar dia.
50 kg.	-	1.43 mm scar dia.

Oxidation-Corrosion Test **

% Viscosity Incr. at 100°F	52
at 210°F	17

Metal Weight Loss, mg/cm^2

Cu	-0.58
Fe	+0.01
Mg	none
Ag	-0.28
Ti	-0.01
Al	none

Ryder Gear Scuffing Load

lbs./in. of face	2255

Evaporation Loss (6½ Hrs. at 450°F)

Sea Level (760 mm Hg)	23%
40,000 Ft. (140 mm Hg)	23%

Foam Test

	Tendency	Stability
Room Temp. (Seq. 1)	0 ml	0 sec.
200°F (Seq. 2)	0 ml	0 sec.
Room Temp. after 200°F (Seq. 3)	10 ml	15 sec.

Toxicity and Safe Handling:

Appropriate animal toxicity studies indicate that MCS 225 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.

**MIL-L-9236A Method, 48 hours at 450°F, air.

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