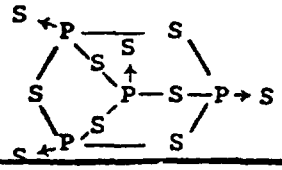
164584

Figure 8

IN 619

PHYSICAL CONSTANTS DATA

SUBSTANCE	STRUCTURAL FORMULA
PHOSPHORUS PENTASULFIDE	
COMPILED BY: A. J. Burns (MBJ) — DATE: 8/1/73	

NAME		SOURCE & DATE
Formula	P_4S_{10}	
Molecular Weight	444.66	
Appearance	Greenish Yellow Crystalline Solid	
Boiling Point at 760 mm	513-515°C	Ref. 1
Boiling Point at 400 mm	488°C	Ref. 2
Boiling Point at 200 mm	446°C	Ref. 2
Boiling Point at 100 mm	414°C	Ref. 2
~~Crystallizing Point~~ Boiling Pt. @ 1 mm	300°C	Ref. 1
Melting Point	279-283°C (1st meniscus)	Ref. 1
~~Solution Point~~ Specific Gravity (Flake)	.8-1.0 g/cc	A. J. Burns
Specific Gravity @ (Powder)	1.0-1.3 g/cc	Ref. 1
Specific Gravity @ 17°C (Solid)	2.1 g/cc	Ref. 2
Pounds per Gal. @ 323 °C	14.415	Ref. 1
Coefficient of Expansion		
Refractive Index @ $n_D^{\bar{}}$		
Infra Red Spectrum *(Reference)*	Report 3705	Ref. 3
~~Ultra Violet Spectrum *(Reference)*~~ Solid Phase Diagram	Report 7607	Ref. 4
Viscosity @ 320°C	140 cp	Ref. 2
Viscosity @ 380°C	190 cp	Ref. 2
Surface Tension @ 314°C	21.4 dynes/cm	Ref. 3
Solubility in Water	Decomposes	
Solubility in CS_2 @ 17°C	.22 gm/100 gm	Alfred Stock
Solubility in Trichlorobenzene @ 175°C	5.8 gm/100 gm	Ref. 2
Explosive Limits (Dust)	.050 oz/ft.^{3}	Ref. 1
Autoignition Temp. (Dust)	260-290°C	Ref. 1
Autoignition Temp. (Liquid)	275°C	Ref. 1
Flash Point °F *(Method)*		
Fire Point °C		
Heat of Combustion	2135 Kcal/mole P_4S_{10}	(Cueillcron CA 73
Heat of Formation	73.9 Kcal/mole P_4S_{10}	62185e, 1970)
~~Thermal Stability (cal./kg/min.)~~	9.8 ± 0.3 Kcal/mole P_4S_{10}	(Peters CA68)
Latent Heat of Fusion	8.4 ± 0.5 Kcal/mole P_4S_{10}	Ref. 2
Latent Heat of Vap. @ 514°C	45.2 Kcal/mole P_4S_{10}	Ref. 2
Specific Heat (Solid)	0.15 + .02 cal/gm/°C	(Peters CA 68
~~Critical Temperature~~ Specific Heat (Liquid)	0.31 + .02 cal/gm/°C	108656m, 1967)
Critical Pressure		
Dissociation Constant		

TRADE SECRETS

Other Constants

Ref. 1 - MCA Safety Data Sheet for P_2S_5 SD-71, 1958
Ref. 2 - Inorganic Research Revised Tent. Prod. Report on P_2S_5 Report No. 3872 by J. W. Cross
Ref. 3 - Final Report on Molten P_2S_5 No. 3705 by M. L. Salutsky
Ref. 4 - Final Report on Chemistry of Low Reactive P_2S_5 Report No. 7607 by F. J. Griffith

Toxicity *(Give Reference)* TLV 8 hr/day	1 mg/m^3 air	Ref. 1

NOTE: *These data should not be released outside of Monsanto Chemical Company. Use additional sheets if necessary.*