JMQ HAS ASKED FOR DATA ON VCM & EDC PHOTODEGRADATION AND VCM SOLUBILITY IN WATER.

THIS IS ALL AO WAS ABLE TO FIND IN A FEW HOURS OF LOOKING.

BSK
6/14/14

B.F.GOODRICH CHEMICAL COMPANY

PHYSICAL PROPERTIES DATA SHEET

Vinyl Chloride (Chloroethylene)

Formula:	$CH_2 = CHCl$
Molecular Weight:	62.5
Boiling Point:	+7.93°F.
Melting Point:	-244.82°F.
Specific Gravity:	1.00 gm/ml. @ -22°F.
	0.914 gm/ml. @ 68°F.

Viscosity:

°F.	μ, Centipoise
-40°F.	0.34
32°F.	0.225
86°F.	0.181

Surface Tension:

°F.	γ, dynes/cm.
14°F.	20.88
-4°F.	22.27
-22°F.	23.87

Index of Refraction: $n_d^{20} = n_d^{10} = 1.4046$ $n_d^{15} = 1.398$

Specific Heat: Liquid - 0.38 BTU/lb. °F.
Vapor - 0.205 BTU/lb. °F. @ 77°F.

Heat of Vaporization: 128.27 BTU/lb. @ 77°F.
143.15 BTU/lb. @ +8°F.

Flash Point: (Closed Cup)
(Open Cup) -78°C.

Auto Ignition Temperature:

Explosive Limits: 4 to 22% by volume in air

Critical Properties: t_c = 313.7°F.
p_c = 55.2 atm.
d_c = 0.370 gm./ml.

Solubility in Water: 1.0% by weight @ 15°C. (sat'd.)
2.0% by weight @ 38°C. (sat'd.)

Solubility of Water in: 0.11%

Max. Allowable Concentration in Air: 500 ppm. for 8 hr. exposure

Thermal Conductivity: 0.08 BTU/hr. ft.^{2} °F./ft. (estimated by Girdler)

Ref: Dow Chemical Company, "Vinyl Chloride Monomer Bul."

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...ium hydrogen sulphide gives the dimercaptan:

$$ClCH_2.CH_2Cl + 2NaSH \rightarrow SH.CH_2.CH_2.SH + 2NaCl.^{69}$$

...ated in ethanol containing sodium ethoxide, DCE forms ethyl vinyl ether:[70]

$$ClCH_2.CH_2Cl + 2NaOEt \rightarrow EtO.CH{:}CH_2 + 2NaCl + EtOH.$$

...ther vinyl ethers may be obtained similarly.

An interesting synthesis of taurine and N-methyltaurine from DCE was reported[71] ... which DCE and Na_2SO_3 are condensed to sodium chloroethylsulphonate which ... then aminated with ammonia or methylamine. Taurine is a detergent intermedi... This work might well be restudied using modern aprotic solvents:

$$ClCH_2.CH_2Cl + Na_2SO_3 \rightarrow ClCH_2.CH_2.SO_3Na + NaCl$$

$$ClCH_2.CH_2.SO_3Na + 2NH_3 \rightarrow NH_2.CH_2.CH_2.SO_3Na + NH_4Cl.$$

4. VINYL CHLORIDE—PREPARATION AND PROPERTIES[1]

Vinyl chloride, chloroethylene, monochloroethylene, chloroethene, VC or VC ...nomer, is with the exception of its precursor, DCE, the halogenated organic ...mpound made in largest tonnage [redacted] prepared by Regnault[2] who observed that exposure to sunlight converts the mobile volatile liquid to a white, amorphous ...owder now known as poly(vinyl chloride) or PVC. Until 1965 for many years ... vinyl chloride was the synthetic polymer produced in largest amount; in that ...r it was surpassed by polyethylene. Production of both polymers is growing ...idly and the prediction has been made[3] that PVC will resume the lead at least ... packaging as a result of the recent discovery that clear bottles can be made from ... Over 3,000,000 tons are produced annually.

In view of the great industrial importance of vinyl chloride, it was inevitable that ...reat deal of research should have been devoted to lowering its cost of production; ... effort shows no sign of abatement and, in fact, the present situation must be ...scribed as fluid, with five different raw materials: coal, natural gas, ethane, ...phtha and gas oil and a multitude of processes competing for the market.

4.1. Production via Acetylene

...ough Regnault first made vinyl chloride from 1,2-dichloroethane by the action ...alkali, this process is not used for economic reasons, one half of the chlorine is

[69] Meadow and Reid, *J. Am. Chem. Soc.*, 1934, 56, 2177.
[70] Ernst and Berndt (I. G. Farben.), GP 525,188 (1931). Reppe (I. G. Farben.), GP 550,495 ...2, 559,523 (1930).
[71] Schick and Degering, *Ind. Eng. Chem.*, 1947, 39, 906.

[1] The aid of Dr S. A. Miller on Sections 4 and 5 of this chapter is acknowledged. The ... has borrowed extensively from the literature review in his *Acetylene. Its Properties, ...ufacture and Uses* (Academic Press, N.Y., Vol. I, 1965; Vol. II, 1966).
[2] Regnault, *Ann.*, 1835, 14, 22.
[3] *Chem. Eng. News*, 1966, 44, (46), 33.