

Date 30 DECEMBER 1976

~~o~~ DISTRIBUTION

Subject PVC PLANT PHYSICAL DATA

From G. B. H. SPEED

TO: J. T. Barr/Allentown
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J. P. Parker
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Attached are physical data on PVC and chemicals used in the PVC Plant which have been obtained since the VCI data book was issued on 21 August 1976.

These data should be included in the book.

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PVC

PHYSICAL DATA

	<u>Temp., F</u>	<u>% Solids By Wt.</u>	<u>Specific Gravity</u>	<u>Viscosity, Cp</u>
VAc Copolymer Slurry (7121)	75	23.6	1.07	
	75	29.4	1.09	
	75	39.1	1.11	
	70	30.0		15
Homopolymer Slurry (1230P)	77	27.6	1.06	
	77	32.5	1.07	
	77	36.2	1.10	
	130	21.6		12
	130	31.6		18
	130	35.0		29
	130	41.6		93
Sodium Nitrite Solution	60	25.0	1.1819	4.5
	100	25.0	1.1695	2.5
Antifoam Drew L-250	77		0.9074	590
	100		0.8914	470
Alpha Methyl Styrene (AMS)	77		0.9067	4.5

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PUT IT IN WRITING

Date 17 DECEMBER 1976

To J. T. BARR/ALLENTOWN

Subject CALVERT PVC PROJECT

From G. B. H. SPEED/CALVERT CITY

CATALYTIC JOB NO. 36310

cc: V. L. Hoeksema/Allentown
G. L. Miller/Allentown
W. Silowka/Allentown
L. A. Sutton/Catalytic

An effort was made to determine the viscosity of 30% by weight solids vinyl acetate copolymer slurry. Based on tests using various methods to keep the slurry in suspension, it is estimated that the viscosity is 15cp at 70 F.

Specific gravities at 25°C were also obtained on homopolymer slurry as follows:

27.6% solids - 1.06 sp gr
32.5% solids - 1.07 sp gr
36.2% solids - 1.10 sp gr

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AP00055972



VINYL ACETATE MONOMER

PHYSICAL PROPERTIES (Pure Material)

Molecular weight	86.1								
Boiling point (760 mm)	72.5°C.								
Melting point	-100.2°C.								
Flash point	-5°C. (23°F.)								
Specific gravity (20/20°C.)	0.9342								
Weight per gallon (20°C.)	7.79								
Viscosity (20°C.)	0.432 cps								
Refractive index, n_D^{20}	1.3956								
Latent heat of vaporization	7.8 kg-cal./mole								
Heat of combustion	495 kg-cal./mole								
Heat of formation (ΔH , from acetylene and acetic acid)	-28.3 kg-cal./mole								
Heat of polymerization	21.3 kg-cal./mole								
Autoignition temperature	427°C.								
Explosive limits in air	2.65-38%								
Coefficient of cubical expansion (5-26°C.)	0.00155								
Dielectric constant (25°C.)	5.8								
Dipole moment	1.75 Debye units								
Surface tension (20°C.)	23.95 dynes/cm								
Parachor	205								
Critical temperature	228.9°C.								
Critical pressure	22.4 atms.								
Solubility in water, 20°C.	2.4 g/100 g								
50°C.	2.5 g/100 g								
Solubility of water in vinyl acetate, 20°C.	0.9 g/100 g								
50°C.	1.9 g/100 g								
Azeotropes									
Vinyl acetate—water, 93.5/6.5, b.pt.	66°C.								
—toluene, 96/4	72.6°C.								
—methanol, 60/40	59.3°C.								
Vapor pressure									
°C.	-0.15	10.70	20	21.07	31.62	40.05	51.64	61.33	72.5
mm	31.9	54.4	90	94.6	152.4	220.7	351.3	509.7	760.0
Specific heat, liquid	0.51 BTU/lb.								
vapor at 1 atm., 20°C.	22.5 cal./mole								
100°C.	27.3								
Toxicity	LD ₅₀ (rats) 0.3 g/kg								

SPECIFICATIONS*

	Specification Limits	Typical Analysis
Vinyl acetate	99.8%	99.9%
Aldehydes as acetaldehyde	0.02% max.	0.005%
Acid as acetic acid	0.01% max.	0.002%
Moisture	0.05% max.	0.02%
Color	Colorless to light yellow	Colorless
Boiling range	71.8 — 73.0°C	71.9 — 72.9°C
Specific gravity 20/20	0.9335 — 0.9345	0.9341
Hydroquinone	14 — 17 ppm	15 ppm
Diphenylamine	275 — 325 ppm	300 ppm
Activity (H Grade)	135 — 165 minutes	150 minutes
unspended matter	none	none

*See section on Analytical Methods, p. 13.

Date 22 October 1976

To J. T. Barr/Trexlertown Subject CALVERT PVC PROJECT -
From G. B. H. Speed/Calvert City CATALYTIC JOB. NO. 36310

The following Brookfield viscosities were obtained on a homopolymer resin in mid 1975. A No. 1 spindle at 60 RPM was used. The measurements were made at 130°F.

<u>% Solids</u>	<u>Viscosity, cp</u>
21.6	12
31.6	18
35.0	29
41.6	93

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cc: V. L. Hoeksema/Trexlertown
E. A. Primeau/Pensacola
D. R. Riggs
L. A. Sutton/Catalytic

1230P Prod
 on 170 94.7 %
 200 3.1
 230 0.7
 270 0.7
 320 0.2
 400 0.2
 TL 400 0.4

Date 11 NOVEMBER 1976

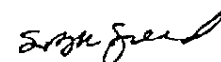
To L. A. SUTTON/CATALYTIC Subject SPECIFIC GRAVITY OF PVC SLURRY
From G. B. H. SPEED/CALVERT CITY

cc: J. T. Barr/Allentown
V. L. Hoeksema/Allentown
G. L. Miller/Allentown

The following specific gravities were obtained on PVC 7121 (VAc copolymer) slurry at 75^oF.

<u>% Solids</u>	<u>Specific Gravity</u>
23.6	1.07
29.4	1.09
39.1	1.11

Data will be obtained on a homopolymer resin as soon as possible.


G. B. H. SPEED

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AP00055975