

Interoffice Communication

To F. Kennedy
From W. R. Sorenson
Date April 11, 1974
Subject VCM in Resin and Downstream Materials

We have recently had analyses of VCM in resin and downstream materials to get a fix on the carry-through of VCM from start to finish of PVC processing. This is not a final statement, obviously. It is apparent that the VCM level in any material is closely tied to its age, so is thus a moving target. The time spans in the following are indicated where something about them is known. All analyses were done between March 25 and 29.

No quantitative relationships between original resin and derived materials is possible at this point. This initial summary is to give some idea of the magnitude of the problem as it typically exists and with some detail of the aging or other factors that could influence the VCM content.

A. Resin-into-Pipe ppm, VCM

1. Colonial (Federal Mogul), Tampa, Florida

a. In-plant dry blend	120
b. Conoco 89030 (CONX 45307, shipped 2/18/74)	11
c. Pipe	67

Samples were collected at Colonial on March 20. Samples a and c were taken immediately after manufacture. The drop temperature from the blender is 240°F. The pipe sample, c, was being extruded from in-plant dry blend, very close in time to the production of dry blend, a. Dry blend b was made from resin of unknown VCM level, but conservatively can be estimated at 500 ppm.

2. Davis Water and Waste, Thomasville, Georgia

a. Conoco 5385 (PTLX 41600, shipped from Aberdeen on 2/18/74)	150
b. In-plant dry blend (DC-1)	0
c. Conoco 89030 (CONX 45268, shipped 3/7/74)	5
d. Pipe from b	15

Samples were collected March 22; b and d were sampled as made and were close together in time. Davis drops at 220°F from their blender.

The very low level of VCM in Conoco dry blend is consistent with the Colonial results. The higher level of

VCM in pipe may reflect the variability in dry blend; no VCM level from a small sample can be regarded as guaranteedly applicable to a larger mass. Analysis errors are also possible.

<u>3. Carlon, Oklahoma City</u>		ppm, VCM
a. Dryer, M501 (OkC)		580
b. Dryer, M502 (OkC)		550
c. Resin, tower 1		530
d. Resin, tower 2		520
e. Dry blend (C-250), tower 1		75 (100)*
f. Dry blend (C-250), tower 2		110 (147)*
g. Pipe from C-250, extruded 3/20		18 (24)*

The resins from Carlon were taken from the feed to the blender. The transfer from the resin plant causes little VCM loss prior to use. Blending and extrusion resulted here in about equal percentage decreases in VCM content. E through g were taken freshly as manufactured; the resins were taken shortly before e and f were made. Date collected: March 22.

Note that fresh dry blend here has much higher levels of VCM than that made at Aberdeen and received at Colonial and Davis starting probably from higher VCM in the resin. The shipping and handling of dry blend must involve enough time and air blowing to usefully dissipate VCM.

*C-250 is ca. 75% PVC, the remainder being mainly CaCO_3 filler. The numbers in parentheses reflect the VCM level in ppm of contained resin.

4. Capco, Siloam Springs, Arkansas

a. Resin (5385, Aberdeen)	390
b. Dry blend	200

These were supplied by Capco via parcel delivery. The time interval between sampling and delivery/analysis is probably about a week. Pipe was to have been sent but has not been received.

B. Resin and Derived Compound, Aberdeen

	<u>ppm, VCM</u>
1. <u>90828, Blk 10</u>	
a. 5350 resin used	5,000
b. 3S 20421, B4 pellets (from 1,a resin)	54
c. 5350 resin used	2,500
d. 3S 20421, A5 pellets (from 1,b resin)	150

The compounds were made on line 3 on March 20. The resin was being dried to the silo in both cases, so there was little silo residence time before it was compounded.

2. <u>80128 White</u>	0
3. <u>80857 Black</u>	0

2 and 3 were received from Aberdeen in connection with another problem the week of March 18 and dissolved for analysis by March 25. They represent retains of materials made at Aberdeen within the last three months. The zero detectable levels are additional evidence that time leads to reduced levels of VCM in PVC in any form.

C. Miscellaneous Resins and Finished Items

The following, 1 through 4, are resins stored in bags in PVC. The dates are for manufacture in Aberdeen.

1. 5260 - 42492 (9/12/72)	0
2. 5300 - 42704 (6/20/72)	0
3. 5385 (-)	0
4. 5446 - 56802 (7/24/73)	0

Long-term storage of resin in bags may not be practical but is at least a boundary condition for certain removal of VCM. We are doing a "simulated silo" storage in the lab.

5. 5385, OkC. received in boxes, shipped to Ponca City 1/25/74	260
---	-----

Assuming initial VCM levels about equal to those recently determined; i.e., 550-580, the fall off has been about one-half.

VRB-0002013962

F. Kennedy
April 11, 1974
Page 4

ppm, VCM

6. 5385, OkC, originally at 750 ppm off dryer M500 on 2/28/74 (analyzed on March 3, 1974), was re-analyzed on March 26 after storage in a capped bottle 64
7. Medical tubing, extruded by Travenol, ca. 2-4 weeks preceeding analysis; presumed by Travenol to be from 5446 resin. Sample is ca. 3 mm ID, 3.4 mm OD. 0
8. Tygon tubing from storeroom shelves; age not known, ca. 1/4" ID, 1/2" OD. 0


W. R. Sorenson

rh

CC: EMS GFT PAS DVP HJH
KY KLS GJK JSC JFG WRBe