INTER-OFFICE MEMO **TENNECO CHEMICALS, INC.** APR 27 1972

TO M. W. Williams AT Flemington DATE April 25, 1972

FROM H. B. Carr AT Flemington COPY TO P. Gawason
H. R. Horton
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File

SUBJECT Quality Control and A&E
Monthly Report - April, 1972

RESIN PLANTS

Raw Materials

1. Metallic Contamination - Methocel and Gelatin (F. W. Kanzler)

Round robin testing is continuing with Dow (Methocel) and Atlantic Gelatin (gelatin) to establish a firm correlation towards defining realistic specifications. Arrangements were made to have our Plant Technical Service people discuss various in-process magnets (Eriez and Bunting) with the vendors who will pursue these recommendations.

2. Antifoam Evaluation - TBP vs. TBEP (F. W. Kanzler, R. J. Eckman)

Tributyl phosphate (TBP) is currently used to control foaming in the dispersion resin process; particularly, sodium lauryl sulfate emulsifier formulations. Tributoxyethyl phosphate (TBEP) was evaluated as a possible lower cost substitute in a Q.C./P.E. laboratory program. The evaluation consisted of recirculating both 1% emulsifier aqueous solutions (industry recognized test) and plant latex with a peristaltic pump. The TBP and TBEP were added at 0.3% (V/V), which is approximate plant usage rate, and antifoam (prevention of foam) and defoamer (foam breaking) characteristics were determined. While both were equal as defoamers, TBP was the superior antifoam (principal plant requirement) and will continue to be employed in the dispersion resin process.

In-Process

1. Oxygen Analyses - Flemington Recovered Monomer (F. W. Kanzler)

As suggested at the March Resin Council Safety Meeting, Quality Control and Manufacturing have established a sampling and testing program for assessing oxygen levels at the discharge of the second stage compressors in the Flemington recovered monomer system. This program is

being pursued to monitor the plant control since it is known that oxygen, through formation of peroxides, may cause compressor detonations. A similar program conducted in Burlington resulted in proper specification levels and controls and, as a result, the Burlington plant has not experienced a compressor detonation in two years.

2. Burlington Homopolymer In-Process Magnets (F. W. Kanzler, E. L. Kanyok)

Manufacturing completed the installation of 4" double tapered step magnets in the PVC product line. These magnets will be monitored for metallic contamination on a once-per-every-24-hour basis to determine whether it is a more effective tool than our current Q.C. Syntron test for metallic contamination. The thought at this point is that the in-process magnets will see larger samples and hence will provide more realistic data upon which to base the resin quality.

3. Flemington Homopolymer Slurry pH Control (M. C. Spalding)

Pilot Plant studies have indicated that bulk density of PVC resin may be affected by slurry pH with a critical pH for good bulk density being above 6.5. Since we have only sparse data, Q.C. has undertaken a testing program of slurry pH and will further determine the correlation of this property with bulk density.

Finished Resin

1. Columbia Records Preshipment Samples (H. R. Horton)

Due to recent difficulties in gaining approval of contamination-free homopolymer and copolymer preshipment samples at Columbia Records, a revised preshipment sample procedure has been written, released and incorporated in the Q.C. manual to govern the proper selection, testing and submittal of preshipment samples to customers.

2. Dispersion Resin Control Chart Review (E. L. Kanyok, F. W. Kanzler)

Dispersion resin quality performance has been steadily improving during the first quarter of 1972 and attained a 90% combined Grade I and IS during March. A control chart review, however, indicated that there were property areas (principally rheology) requiring attention. These areas were highlighted to P.E. and Manufacturing for their attention.

3. Customer Data Sheets (E. L. Kanyok)

Marketing requires updated Customer Data Sheets for the dispersion and blending resin product mix. In a joint program conducted with the Resins Group, Quality Control has provided 50 lb. bag samples of each resin type where Q.C. testing results represented ±1 sigma of the specification mean. These samples will be tested by R&D to generate current physical and rheological data.

4. 200/12R Heat Stability (M. C. Spalding)

200/12R resin is used in a number of critical clear formulations in the Burlington Compound Plant. Heat stability of 200/12R requires careful control in that it is known that 100% minimum heat stability (compared to standard) is required for acceptable compound performance. 200/12R heat stability drifted downwards (below 95%) and Q.C./P.E. requested Manufacturing to increase their attention of Ionol. Heat stabilities are now running better than 100%.

General

R&D Time Accounting

The R&D time accounting system was circulated to all R&D supervisors in the division with a request that time sheets dating back to 1/1/72 be completed utilizing the new system by 5/5/72. The Piscataway Systems Department has been requested to have computer programs completed with an on-stream target for report printout of 6/1/72.

COMPOUND PLANT

1. Color Matching

a. Color Seminar (P. Gawason, R. J. Eckman)

On 4/20-21/72, P. Gawason and R. J. Eckman attended a color seminar presented by the Diano Corp. in Edison, New Jersey.

b. Color Matches (R. J. Eckman)

The following is a list of color matches performed:

(1) Dark-light Limits - Customer Approvals

2300 Red 73 Pacific Electricord
2300 Green 104 Pacific Electricord
3200 Tan 2E Circle F

(2) Color Matches - Customer Submittals

3078 Clear 11 General Plastics
3078 Clear 11 Superior Plastics
3066 Clear 14 General Felt
2580 White 244 Cerro Wire and Cable
2580 Grey 150 Cerro Wire and Cable
2580 Beige 145 Cerro Wire and Cable
3086 Clear 13 Production Adjustment
3066 Clear 14 Production Adjustment
2602-1 Gray 150 Olin Conductors, New Sample

c. Laboratory Mill

A CAR approval has been obtained to transfer the Reliable (3" x 9") mill from Flemington R&D to the Burlington Compound Plant. On-stream target is the end of May.

2. Raw Materials

a. The program coordinated with Purchasing mentioned in the March report is proceeding quite well. Several vendors have reported with their specifications, test methods and technical literature. These will be used to upgrade our compound plant raw material specifications.

b. V-1562 (F. W. Kanzler, M. C. Spalding)

Variability of V-1562 quality may be contributing to poor color hold on the 3098 Clear 6 formulation. A joint program with the Additives Group, Piscataway Analytical and the A&E Group is being pursued to define quality parameters in V-1562. Thus far, an infrared absorbance at 1545 $cm.^{-1}$ (tentatively attributed to monobutyltin tris(isooctylthioglycolate) is being investigated as a control property in various shipment samples of V-1562 that led to varying color control in 3098 Clear 6.

c. National Lead Stabilizers

National Lead stabilizers CR-1 and DS-207 are suspected to be related to our recent plateout problems at All-Disc and Sonic. In a coordinated program with the Compound Development Group, we are attempting to establish meaningful tests to properly assess the quality of these lead stabilizers. The degree of agglomeration is currently thought to be a key property and R&D is currently investigating a mill test procedure for characterizing this property.

A&E

1. Packard Electric

Packard Electric currently buys our 200-1 resin and has advised us that they are updating their specifications. They will insist on the reporting of Inherent Viscosity (ASTM D-1243). A&E has established a correlation between relative viscosity (our test) and inherent viscosity such that we may report inherent viscosities to Packard.

2. Cerro Wire and Cable

Cerro Wire and Cable complained about poor low temperature properties, high torques during processing and plugged screen packs. A&E analysis of screen pack samples indicated a very high filler ratio to resin (50/50). We have attributed this problem to the Flemington plant's problems with fines in 250 resin. Since our improvements in control of 250 resin, Cerro has run successfully with our product.

3. BD-100 Analysis

Lab extrusion tests on BD-100 and K-120N have indicated differences in torque among the samples. The Additives Group requested solution viscosity measurements on a number of previously extruded samples to determine whether the differences were due to variation in molecular weight or in melt viscosity. A correlation did not exist between torque readings and dilute solution viscosity and hence the conclusion indicated is that the differences are more related to variation in melt viscosity among these processing aids.

4. Hooker VM 8-430 Compound Analysis

At the request of Marketing, Hooker VM 8-430 record dry blend from Sonic Records was analyzed to determine whether we may provide a comparative analog. Analysis revealed that the resin system was 91% PVC and contained 9% acetate (most likely a blend of copolymer with some homopolymer). The relative viscosity of the resin system was 1.62 and extraction analysis indicated the presence of an amide wax and some calcium stearate.

5. A summary of physical testing efforts during April is attached.

H. B. Carr

HBC:em
Att.

DATE: 4-25-72

PHYSICAL TESTING - April 1972

Work Requests Received (March 21 to April 20 incl.)

Product Development Group

Resins	2
Flexible Compounds	2
Rigid Compounds	2
Rheology	0

Additives Group

Flexibles	2
Total	8

Work Requests Completed (March 21 to April 20 incl.)

Product Development Group

Resins	2
Flexible Compounds	3
Rigid Compounds	1
Rheology	0

Additives Group

Flexibles	2
Total	8

 4/25/72

Physical Testing Report - April 1972

WR No.	Compound	Reason for Test	No. of Specimens	Calcul. Operations	Total Hours
2926	Wire & Cable Insulation	Confirm air agings of LMP mixed compounds	18	84	3.0
2931	Wire Insulation	Equivalent low-cost and non-UL compound to compete with Goodrich.	24	114	4.5
2936	Rigidsols	Evaluate first production batch	89	504	15.0
2937	Cable Jacket	Data required by General Cable Corp.	8	42	3.5
2942	Flexible	Promote Nuoplex R-254 - Tech. service for Ford	15	63	3.0
2943	Flexible	Verify Pilot Plant Process on R-244 in PVC	15	63	3.0
2944	Non-electrical Injection Molding	Results to be compared with Bell Lab. Specs.	12	40	6.5
2946	Blending Resins.	Data for Marketing Brochure	63	252	11.0
		Total	244	1162	49.5