

INTER-OFFICE MEMO **TENNECO CHEMICALS, INC.**

TO M. W. Williams
FROM H. B. Carr
SUBJECT Quality Control and
A&E Monthly Report -
July, 1972

AT Piscataway
AT Flemington

DATE July 26, 1972

COPY TO P. Gawason
H. R. Horton
~~E. J. Hourihan~~
F. W. Kanzler
H. Landfield
J. W. McBroom
M. Rosen
M. C. Spalding
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A report summarizing the statistical quality performance of the compound and resin plants for July will issue by 8/7/72. Described below is a progress report on Quality Control and A&E projects for July.

RESIN PLANTSRaw Materials1. TCE (F. W. Kanzler)

The control of the quality of TCE (electronic grade) has previously been established as important via Pilot Plant and Process Engineering studies not only in serving its role as a chain terminator (viscosity control) but also in its effect on particle size distribution and bulk density. During June, two shipments of TCE were found to be non-electronic grade. One shipment was found to be inhibited with 180 ppm trimethylamine and the other shipment was off color. Both shipments were returned, replaced and appropriate corrective action coordinated with the vendors through Purchasing.

2. DHW-80 (F. W. Kanzler)

In the May and June reports it was mentioned that the Q.C. bottle polymerizer test had indicated "slow" DHW-80 lots which was subsequently verified in the plant. Analytical results on samples forwarded to Piscataway thus far have not indicated discernible differences, however, a more definitive response will be forthcoming in August. In the interim, Q.C. and P.E. are optimizing bottle polymerizer and plant results to establish a means of adjusting initiator level prior to plant runs which will result in more controllable kinetics.

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3. Lucidol 2-EHP (F. W. Kanzler)

The concentration of Lucidol 223M (2-EHP) has been shown by P.E. to be related to reaction times on a 1:1 basis. Lucidol's control on assay had been poor until the last few shipments; namely, ranging from 39-42%. As a result of a coordinated program with Lucidol including testing correlation and a highlighting for them of our plant experience, the assay of 2-EHP has been tightened to a range within 1% which will lead to more consistent kinetics as far as initiator concentration as a variable is concerned.

In-Process

Cal Ink Division Metallic Separator (H. B. Carr, F. W. Kanzler)

The Cal Ink metallic separator mentioned in the June report was not received until July 24 and hence the joint Q.C./Engineering evaluation program will not be included until the latter part of August.

Finished Products

1. Homopolymer Specifications (H. B. Carr)

Revised homopolymer specifications were issued at the end of July. These specifications represent a consideration of both field requirements and process capability and have removed previous customer instruction sheet areas which represented target shifts from the specifications. Of importance is the fact that the plant will now be able to target on the midpoint of these specifications at a savings in handling and operating costs.

2. Haze and Gloss Determination of Dispersion Resin Films (F. W. Kanzler, H. R. Horton)

A program has been instituted to collect data using the Gardner Haze and Gloss Meter for the evaluation of haze and gloss values for all dispersion resins. The goal is to establish grading specifications which will be of particular significance for our flooring wear layer resins. These specifications will be coordinated with R&D, Manufacturing and Marketing.

3. T-382 Copolymer (F. W. Kanzler)

This high relative viscosity (1.89-1.96), TAIC modified copolymer has a cycle time of 11.9 hours vs. an 11 hour cycle time for 314/315 copolymer. To assist P.E. in reducing 382 cycle time to 11 hours while maintaining the same relative viscosity controls, a series of bottles were run with varying levels of TAIC to determine the point at which reaction temperature increase associated with TAIC increase is at an optimum. It was found that with each 0.005% increase in TAIC to the total charge, the relative viscosity increased by 0.02. Armed with this data, P.E. now plans to make a run at increased reaction temperature to optimize 382 kinetics.

General1. Method Development (F. W. Kanzler)a. Polychlorinated Biphenyls

Through coordination with Piscataway Analytical, a gas chromatographic method for the analysis of PCB's (Arochlor 1264) has been developed that provides sufficient resolution and separation for the analysis of ppm levels in FDA resins.

b. Bisphenol A

A gas chromatographic method has been developed for the determination of Bisphenol A content in "iso" type plasticizers (DIDP, DTDP, TIOTM, etc.). This capability will be utilized as a raw material control test to provide assurance that these plasticizers are properly stabilized and hence are not a factor in deleteriously affecting compound heat stability.

2. Dispersion Resin Disposition

As follow-up to the E grade disposition procedure described in the June report, a meeting was held in Burlington on 7/13/72 with Manufacturing, Burlington Inventory Control and Marketing. A rapid and efficient telephone communication route has been established with Marketing to disposition off-specification dispersion resin lots on a daily basis. This system has been in effect for two weeks with outstanding success.

COMPOUND PLANT1. Compound Specifications (P. Gawason)

Revised compound specifications were coordinated with Marketing, Manufacturing and R&D and will issue at the end of this month. The specifications will be part of a complete updated and revamped compound Q.C. manual which will also include significantly improved raw material specifications, control procedures and test methods. As a separate issuance, color book manuals were issued to the R&D and Piscataway locations to provide a vastly improved means of communicating off color compound for disposition purposes.

2. 3098 Clear 6 (P. Gawason)

A 54 mix run of 3098 Clear 6 was made at the end of July. The first 46 mixes contained T-66 and the last 8 mixes contained V-1562, lot 64187. No color differences were noted when switching stabilizers and hence the coordinated program between Piscataway and Flemington R&D and the Elizabeth plant was successful in optimizing V-1562 quality. More significant than the quality of V-1562, however, was the reaffirmation that proper manufacturing attention is the key requirement to successfully making on target 3098 Clear 6.

A&E (M. C. Spalding)Business Development Support

At the request of Business Development, a blue, vinyl egg tray was analyzed in support of the Nixon plant effort to produce a competitive analog. The resin system accounted for 86.8% of the egg tray formulation of which 97% was a 1.80 PVC homopolymer and 3% was an Acryloid process aid. A tin stabilizer accounted for 2.9% of the formulation and TiO_2 the remainder.

Compound Support1. Ethyl 2007 Analysis

Analysis of Ethyl 2007, a non-UL flexible jacket compound obtained from Anaconda revealed the following:

42.6% (2.27 RV PVC homopolymer)
30.3% (83% DOP/17% secondary)
27.1% (lead stabilizer, filler)

This analysis was performed in support of Compound Development's effort to match Ethyl's compound.

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2. Apex 77-2-061A

This "non-migrating" compound obtained from Industrial Plastics was analyzed to contain 47.5% of a 2.34 RV PVC homopolymer, 35.4% of G-54 type plasticizer and 16.8% stabilizer and filler.

Resin SupportAllied SR-414P3 Analysis

At the request of the Resins Group, this resin was analyzed for the possibility of low incorporated levels of DOP. The resin was extracted and after a concentration step, GC analysis revealed that the Allied resin contained 0.3% DOP which probably has been used to improve fluxing characteristics. This will be investigated by the Resins Group.

Plant Support

A trend towards lower hardness since the first of the year on 3200 compound has been noted. A&E analyzed three samples of 3200 compound to assess formulation integrity: a control 50 hardness, Shore D, 10 sec. and two with a 45 hardness rating. The samples were consistent with the formulation and in good agreement with each other. Since a similar review of PVC 150 which is utilized in this compound did not indicate any change over the same period, it is felt that the hardness decline is perhaps a processing related problem.

Physical Testing

Attached is a summary of physical testing performed during July.



H. B. Carr

HBC:em

Att.

DATE: 7/24/72

PHYSICAL TESTING - JULY 1972Work Requests Received (June 21 to July 20 incl.)Product Development Group

Resins	3
Flexible Compounds	8
Rigid Compounds	0
Rheology	1

Additives Group

Flexible Compound	2
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Total	14
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Work Requests Completed (June 21 to July 20 incl.)Product Development Group

Resins	3
Flexible Compounds	7
Rigid Compounds	0
Rheology	0

Additives Group

Flexible Compound	2
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Total	12
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Physical Testing Report - July 1972

<u>WR No.</u>	<u>Compound</u>	<u>Reason for Test</u>	<u>No. of Specimen</u>	<u>Calculated</u>	<u>Total Hours</u>
3036	Copolymer Dispersion Resins	Evaluation of Stauffer vs Tenneco Resins.	105	588	18.5
3039	Mechanical Foams	Do higher acetate blending resins contribute to fusion.	65	276	9.0
3046	Blending Resins	Do higher acetate blending resins contribute to fusion.	40	224	8.5
3027	Flexibles - Elec. Molding	Submit a report to Western Electric for T-3125.	30	132	5.0
3028	Flexibles - Out-door Telephone Cable	Establish physical properties data for W.E. approval.	11	26	2.5
3033	Flexibles - Jacket Compound	Improve oil aging properties of T-2022.	30	144	7.0
3038	Flexibles - Wire Insulation	Marketing support.	20	96	4.5
3042	Flexibles - Wire Insulation	Effect of pigments on tensile properties retention.	24	108	3.5
3047	Flexibles - Jacket Compound	Develop oil immersion Q.C. test.	46	210	6.5
3049	Flexibles - Low Temp. Jacket Compound	Confirm physical properties of LMP mixed sample prior to shipment of sample.	6	24	1.5
3030	Flexibles - Calendered Sheetting	Effect of various polymeric plasticizers	66	294	20.0
3043	Flexibles - Calendered Sheetting	Provide data for final plant process of polymeric plasticizers.	33	159	7.0
Total			476	2281	93.5

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