

PLASTICS AND RESINS

MONTHLY REPORT

August, 1969

AP00046339

ESCAMBIA CHEMICAL CORPORATION
INTEROFFICE MEMORANDUM

To: T. L. Carey

Date: September 5, 1969

From: C. L. Wallace

Copies:

Re: PVC Monthly Summary
August, 1969

SUMMARY

Total shipments for the month were 3,918 M pounds of prime resin, of which 1,396 M pounds were specialties. This ratio (35.6%) is the highest yet this year and occurred in the 3000 and 6000 resin series. Profits for the month are estimated at \$27,000.

MARKETING

Gross shipments for the month were 4,064 M pounds, of which 145 M pounds were off grade, tailings, etc. Sales outages were noted in chiefly three areas; 340 M pounds to accounts serving the shoe trade, 290 M pounds to two accounts on credit restrictions, and one (150 M pounds) to a customer who is shut down because of the recent flood in Virginia.

There is continuing industry talk concerning a general purpose price increase; some predict an October 1 price increase of 1/2¢, while others indicate it may be in January.

PRODUCTION

Production of prime resin was 4,037 M pounds, exceeding budget by 377 M pounds. Tailings and off grade totaled 220 M pounds, or 5.4% of production.

Production variance for August is estimated at \$7,000 favorable. Production for September is estimated at 3,600 M pounds.

No major breakthroughs have been demonstrated on the 2185 and 6180 problem resins in production, with bulk density on 2185 and heat stability on 6180 being the chief problems.

Production was affected during the month by some mechanical problems and a steam outage on August 24. A two-day shutdown is planned about September 15 to allow for scheduled deferred maintenance.

AP00046340

September 5, 1969

R&D SUMMARY

Considerable time was spent during August on PVC 2185 and 6180. Because of the recurring nature of these problems, activities in both the Pilot Plant and the Properties Laboratory were redirected in order to provide maximum support.

Results of Pilot-Plant studies directed towards the development of a process for manufacturing PVC 2185 with reduced volatiles through the elimination of the chain-transfer solvent have been most encouraging. Additional Pilot-Plant trials are currently underway.

Considerable data was obtained in the Properties Laboratory during August on the heat stability of recently produced PVC 6180 with the two-fold objective of 1) determining the basic cause of the resin sensitivity to heat aging, and 2) developing a process for pre-stabilizing the resin during its manufacture. Both laboratory and Pilot-Plant studies will continue during September.

Work continued on the evaluation of a new family of suspending agents based on PVP (polyvinyl pyrrolidone), and its copolymer for preparing PVC micropearls and plastisol extenders. Several promising recipes are being investigated further in the Pilot Plant.

TECHNICAL SERVICE

This function was separated from R&D on August 1, each function now reporting separately to Dr. Smith. Service requests for the month were routine in nature.



C. L. Wallace

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ESCAMBIA CHEMICAL CORPORATION
INTEROFFICE MEMORANDUM

To: C. L. Wallace

Date: September 5, 1969

From: G. B. H. Speed

Copies:

Re: **PVC Production Report**
August, 1969

SUMMARY

Production of prime resin was 4037 M pounds, exceeding budget by 377 M pounds. Tailings and off-grade totaled 220 M pounds, or 5.4% of production. High sediment PVC 6180 accounted for 63% of the off-grade production.

The low production for the month was due to mechanical problems and an extended boiler outage on August 24. Reactor availability was 81.9%.

An improvement in monomer efficiency was achieved for the month. The efficiency was 96.4%.

No major breakthroughs have been made on our two problem resins, PVC 2185 and PVC 6180. A production run of PVC 2185 was terminated after 18 batches when attempts to raise the bulk density were unsuccessful. The production of PVC 6180 can be ranked as good. All production except experimental batches gave good Tenak pressed plaque, but the heat stability is still questionable. Work continues to identify the cause for the poor heat stability.

Production and variance estimates for August and September are as follows:

	<u>August</u>	<u>September</u>
Production (prime) M pounds	4037	3600
Variance (favorable) \$	(7000)	0

A two-day shutdown is scheduled for September 15 and is the reason for the low production and variance estimated for September.

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STATISTICS

	<u>August</u>		<u>July</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
<u>Prime Production, M lbs.</u>				
Month	4,037	3,542	4,164	3,764
Year to Date	32,652	21,316	28,615	24,990
<u>Off-Grade Production</u>				
<u>% of Total</u>				
Month	5.4	4.0	3.4	4.0
Year to Date	5.1	4.0	5.0	4.0
<u>Bulk Production, %</u>				
<u>of Prime</u>				
Month	45.7	43.8	51.4	43.8
Year to Date	38.5	43.8	46.6	43.8
<u>Shipments, M lbs.</u>				
Month - Prime	3,663	-----	3,891	-----
Month - Off-Grade	105	-----	276	-----
Year to Date - Prime	32,297	-----	28,634	-----
Year to Date - Off-Grade	1,818	-----	1,713	-----
<u>VCI Efficiency, %</u>				
Month	96.4	94.5	94.4	94.5
Year to Date	95.0	94.5	94.8	94.5
<u>Reactor Availability, %</u>				
<u>of Available Hours</u>				
Month	81.9	-----	83.6	-----
Average Year to Date	84.4	-----	84.8	-----

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STATISTICS (Cont'd)

	<u>August</u> <u>Actual</u>	<u>July</u> <u>Actual</u>
Cleaning &		
Washing Reactor	7.4	8.0
Scheduling Charges	3.5	3.4
Changing Types	0.4	0.4
Slow Recovery	0.2	0.5
Low Drying Rates and Dryer Line		
Cleanout	2.0	0.7
Hydraulic Motor		
Repairs	0.1	0.5
Instrument		
Maintenance	0.1	-----
Reactor		
Maintenance	-----	2.5
Boiler Failure	3.9	
Miscellaneous	0.5	0.4
	<u>18.1</u>	<u>16.4</u>

	<u>August</u>		<u>July</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
<u>Product Mix, M lbs.</u>				
<u>Prime Resin</u>				
Group I	1,478	1,489	1,894	1,489
Group II	582	635	234	635
Group III	298	278	621	278
Group IV	235	409	0	409
Group V	1,444	741	1,415	741
Group VI	103	122	122	122
	<u>4,140</u>	<u>3,674</u>	<u>4,286</u>	<u>3,674</u>

Off-Grade and TailingsOff-Grade

<u>Type</u>	<u>Quantity, M lbs.</u>	<u>Reason Off-Grade</u>	<u>% of Total Production</u>
2160	10	Contamination	0.2
6180	96	High Sediment No.	2.4
<u>Tailings</u>	104		2.6
<u>Floor Sweeps</u>	10		0.2
Total	220		5.4

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DISCUSSION1000 Series

Types produced - 1200, 1225, 1230, and 1250

Production runs were normal. No changes were made in recipes or procedures.

2000 Series

Types produced - 2185, 2200, 2225, and 2250.

Production runs were normal, and no recipe changes were required on PVC 2200 or 2225. A recipe change was successfully made on PVC 2250 to increase the bulk density as requested by Sales. A slight increase in tailings yield was noted with the new recipe. A production run of PVC 2185 was terminated after 18 batches. All attempts to increase the bulk density from 27-28 to 30-32 were unsuccessful. A new recipe supplied by Research is being tried at month's end.

3000 Series

Types produced - 3225 and 3250.

Production runs were normal, and no changes in recipes or procedures were required.

4000 Series

Types produced - 4185-2S and 4185-3S.

The grinding of PVC 3185 continued through the month with good results. A total of 93 M pounds of ground produce was produced.

6000 Series

Types produced - 6180 and 6240.

The production of PVC 6240 was routine. The production of PVC 6180 can be ranked as good. All production except experimental batch gave good Tenak pressed plaques. Volatile levels were generally low. Work continues by Research and Production to find the cause for the poor heat stability of the resin. Results this month indicate that residual VCl, vinyl acetate, or TCE in the levels experienced have no effect on the stability of the resin. The effect of VCl insoluble impurities taken out by the filters is currently being evaluated.

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DISCUSSION (Cont'd)

8000 Series

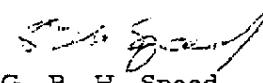
Types produced - 8200 and 8217.

Production was normal with no changes in recipe or procedures.

Maintenance

Major maintenance incurred during the month is as follows:

1. Cleaned VCl evaporator and weigh tank of polymer.
2. Rebuilt north line rotary valve.
3. Installed new agitator in No. 3 reactor.
4. Replaced plugged filters in south recovery compressor.
5. Replaced valves in north recovery compressor.
6. Replaced motor on No. 1 reactor.
7. Made temporary repairs to air slides on south product collector.


G. B. H. Speed

AP00046346

ESCAMBIA CHEMICAL CORPORATION
INTEROFFICE MEMORANDUM

To: G. B. H. Speed

Date: September 5, 1969

Copies:

From: D. V. Lowe

Re: Progress Report - August, 1969
PVC Process Improvements

August progress on PVC process improvements is reported below:

PVC Quality Improvement - PVC 2185, 4185-SP, 6180

- A. The August production run of PVC 2185 yielded 145 M pounds of resin prior to its early termination. The run was cut off because bulk density with the J9c recipe fell under the acceptable minimum of 30.0 just as it had done once previously. However, unlike the one previous run, the low density could not be corrected by any obvious change. All process conditions were held equal to those of several runs earlier when the J9c recipe yielded ten of eleven acceptable lots. However, there was evidence of intermittent loss of refrigerated cooling water during the run. There were no changes of any raw materials while the run was in progress. Particle size and relative viscosity of the resin yield were good. The initial production was contaminated, but this was corrected prior to the end of the run. Due to the bulk density variation and the early termination of the run, there was no opportunity to attempt the planned reduction of residual volatiles via elevated drying temperature.

Another run of 2185 is planned for early September. As no concrete reasons for the August difficulty are apparent, recipe J9c will be investigated briefly once again. This recipe has now succeeded three times and failed twice to produce a finer 2185 resin with low fisheyes and moderately high bulk density. An alternate recipe has been devised which might produce a resin with a) slightly larger particle size, b) higher bulk density, and c) lower residual TCE. In addition, it is anticipated that R&D personnel will recommend one or two changes prior to the September run to accomplish these objectives.

- B. No 4185-SP production run was attempted during August. Recipe T14-1n, which was very successful in July, will be utilized once again when 4185-SP production resumes.

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PVC Quality Improvement - PVC 2185, 4185-SP, 6180 (Cont'd)

- C. PVC 6180 was produced from July 31 to August 14. Quality was acceptable for bag and bulk truck shipment, but appearance of Tenak plaques was not so good as to hazard a return to bulk rail shipment. There is still a question concerning the long-term heat stability of our 6180 copolymer in bulk shipment, but quality appears to be gradually improving. The south line was converted to 6180 production again late in August, and Tenak plaques are good. The current production is being stored for further bulk shipment to Nixon-Baldwin. A new recipe, Y8a, is also being evaluated; and its heat stability and plaque appearance will be compared to that of standard resin.

Purification of Recovered VCl

An investigation is underway to determine feasibility and cost of adapting the "Peewee" refrigeration package unit currently out of service on the MMA site to the VCl vapor condenser in our purification system for recovered monomer. If the job can be justified, it may be possible to eliminate much maintenance expense in unplugging the entire evaporation system. This is due to frequent polymer formation in the equipment when evaporating at temperatures as high as 120-125°F. The package refrigeration unit would send cold methanol to the shell side of the VCl condenser and thus permit evaporation and condensation of our recovered monomer at low pressures and temperatures as low as 40-50°F. A listing (Reference 1) of all jobs to be estimated was made and forwarded to maintenance engineering.

RFE - "Quality Control" Automatic Samplers

To improve accuracy and reliability of PVC samples obtained from the finishing lines, costs were collected and an economic analysis was conducted for purchase and installation of devices which will extract more representative samples automatically. The equipment would be such that resin from throughout a cross-section of the conveying duct could be extracted. An RFE was prepared (Reference 2) which sought \$4040 to cover the project and which projected a payout of the investment over 2.0 years.

Gravity Feed Chutes - PVC Dryers

A proposal was requested from the manufacturer of our PVC rotary dryers for replacement of existing screw conveyor systems for feeding wet cake from the centrifuges to the dryers with teflon-lined gravity feed chutes. Moist resin would slide directly from the centrifuge hoppers into the revolving dryers by gravity, eliminating the recurring contamination and maintenance problems experienced with the screw feed conveyors. Further action on this project awaits the vendors reply with appropriate drawings and a quotation.

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Study of Reaction Capacity Increase

A complete survey of plant reaction and drying capacities of all PVC resin types was carried out and then updated to include the increases claimed by AFE 6914, "Additional Monomer Compressor", and AFE 6917, "PVC Dryer Modifications and Improvements". Next, the production yields to be expected with addition of a 5000-gallon reaction vessel to the PVC plant were calculated. It was necessary to include in the study installation of several attendant items of equipment for de-bottlenecking.

The cases considered were a) installation of a 5000-gallon reactor, 10,000-gallon stripper, new electrical substation, new refrigerated water capacity, and a large post-blending facility, b) all of the above plus a new rotex screener and additional 600 psig steam coils for the north drying line, and c) only the rotex screener and additional coils without additional reaction capacity.

Case c) was totally unattractive with no yield forthcoming for the additional investment of \$26,000. Case a) was also unattractive, with only a 4.5% return on the estimated fixed investment of \$436,000. Case b), however, yielded a 16.7% return on the estimated \$462,000 of fixed investment and a tentative payout of 3.3 years. The yield for case a) was 2.7 MM pounds of incremental bulk production versus 6.25 MM pounds per year of incremental production for case b). Yield calculations for a 5000-gallon reactor were considered firm whereas the fixed cost estimates are considered rough.

All cost estimating for new reaction capacity assumed the more expensive alternative, a glass-lined reaction vessel. Use of a stainless steel vessel in case b) in place of a glass-lined type would reduce the fixed investment from approximately \$462,000 to \$409,000. Return on investment would then move from 16.7% to 18.9% and payout time from 3.3 years to 3.0 years.

Alpine and Product Collector Bags

Some evidence has appeared recently for minute quantities of fibre contamination inherent in several of our PVC resins. Speculation as to the source of such contaminants brought up the possibility of "lint-out" from the filter bags in both the Alpine collector and drying line product collectors. To rectify this, special dacron spun multifilament bags have been located and specified and will be used exclusively as changeouts are required. The new cloth is specified for equal particle size retention and air porosity but should give improved particle "release" with no linting. One bag is on order for our initial approval.

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New VCI Unloading Stand

The newly constructed VCI unloading structure south of the damaged structure is nearing completion. The primary jobs as yet uncompleted are the tie-ins of process pipelines and completion of the counterbalance system under the walkway. It is estimated that these jobs will be finished after the first week of September, and the new structure may then be put in service.

Monomer Compressor (AFE 6914)

Assistance was provided the engineering department in further specifying the equipment requirements pertinent to the instrumentation for this job. As a result, the instruments for metering water, vinyl acetate, and trichloroethylene have been put on order by the instrument engineer. It was learned that automatic temperature compensators are not available with the particular Brooks oval gear meters which we are to purchase.

Van-Air Process Air Dryer

To effect a lower air temperature in the Van-Air dryer and thus reduce consumption of Dry-O-Lite dessicant, the shell side of the air aftercooler was thoroughly flushed to increase heat transfer, the Van-Air dryer and air receivers, etc., were painted white to reflect the rays of the sun, a sheet metal sun shield was constructed over the Van-Air dryer itself, and a new drain valve was installed on the large air receiver for good moisture removal. The temperature of compressed air into the dryer still exceeds 100°F on occasion, and it is apparent that the only further reduction available during the hot months of the year is a larger air aftercooler between the Joy compressor and the Van-Air dryer.

Automatic PVC Bag Palletizer

Investment economics for purchase and installation of the Sheehan R-66 bag palletizer were recalculated to include provisions for the rising costs of labor in the bagging room. It was thought that such reconsideration of the project might reflect a more favorable return on investment. A report (Reference 3) issued on August 13 detailed an investment of \$41,000, a return on investment of 18.8%, and a payout period of 3.47 years. Several days later it was learned that the basic purchase cost of the equipment had risen from approximately \$30,000 to about \$35,000. This was contrary to what we had been earlier told by the vendor. No further action is planned at this time.

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Increase in Vinyl Acetate Transfer Rate

Currently, the time required for transferral of raw vinyl acetate from field storage to the process is not critical because it is held on the third floor of the reactor building until needed. However, when the new metering system is installed, there will be no such intermediate storage; and the transfer rate from field storage will contribute to the overall cycle time of each batch of copolymer. Due to this fact, the vinyl acetate transfer rate was increased by replacement of the supply pump impellor with an impellor of a larger diameter. The rate was increased from approximately 11 minutes per batch of vinyl acetate to about six minutes per batch.

Review of PVC Safety Procedures

Recent events within the PVC industry have spurred Escambia to investigate safety instructions and emergency procedures for all eventualities which we may be faced with. All existing procedures are being updated as necessary, and several new ones are being prepared which had not been considered previously. A completed set of emergency instructions will be submitted to the Production Manager early in September.


David V. Lowe

- | | |
|-------------|---|
| Reference 1 | Memorandum to S. L. White, J. D. Evers, and J. B. Clark from D. V. Lowe, regarding "Cost Estimates for VCl Purification", dated August 18, 1969 |
| Reference 2 | Memorandum to G. B. H. Speed from D. V. Lowe, regarding "RFE - Automatic Samplers for PVC Finishing Lines", dated August 12, 1969 |
| Reference 3 | Memorandum to G. B. H. Speed from D. V. Lowe, regarding "Automatic Bag Palletizer", dated August 13, 1969 |

AP00046351

ESCAMBIA CHEMICAL CORPORATION
INTEROFFICE MEMORANDUM

To: Dr. W. M. Smith	Date: September 5, 1969 C. L. Wallace
From: D. J. Mann	Copies: G. J. Mantell G. E. Schmauch F. L. Riddle W. K. Clark
Re: Monthly Summary PVC Research & Development August, 1969	

OPERATIONS

1. Polymerization Laboratory

A. 4185-M and 8200

Extensive bottle polymerizations were carried out to evaluate PVP (polyvinylpyrrolidone) type suspending agents for possible micropearl or plastisol extender applications since PVP had previously demonstrated its ability to produce resins with good fusion properties. Both uses require small particle sizes with the major difference being in the bulk density. Plastisol extenders are high whereas micropearls are low bulk density resins. The PVP suspending agents evaluated were

PVP K-90 (20% aq. sol'n.)
PVP K-60 (45% aq. sol'n.)
PVP/VA:70/30 I-735 (50% isopropanol sol'n.)
PVP/VA:50/50 I-535 (50% isopropanol sol'n.)
PVP/VA:30/70 I-335 (50% isopropanol sol'n.)

These suspending agents were evaluated in several different types of recipes at different levels. They were evaluated as the sole suspending system in combination with pearl ingredients (Sulframin 85 and monobasic calcium phosphate), in combination with the micropearl ingredients (Sulframin 85, MBCP, and Geon 450X3), and with nonionic wetting agents.

When used alone, PVP K-90 gave good particle size reduction with high bulk density. This is desirable for plastisol extender resins and was studied further in the pilot-plant reactor. Several other resins were prepared with bulk densities as low as 17.0-19.0 with good particle size reduction and some PVP polymers produced resins too coarse in particle size. Evaluations (fusion, etc.) are still in progress on some of these PVC resins.

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OPERATIONS (Cont'd)

In combination with Sulframin and MBCP, some degree of additional particle size reduction was noted with all of the PVP suspending agents. However, the bulk density was also quite low in practically all cases.

In micropearl-type recipes, several resins were produced with good particle reduction (definite improvement noted by the addition of Geon 450X3). PVP K-90 gave a promising candidate with a bulk density of 23.1, and I-735, I-535, and I-335 gave interesting resins for further micropearl studies.

The use of secondary nonionic wetting agents with PVP suspending agents did not produce resins with significant differences.

To summarize, although the PVP-type suspending agents offer excellent compatibility with PVC and thereby improve fusion, none tried to date gave significant particle size reduction in a pearl-type recipe without producing unacceptably low bulk densities. However, in several cases, addition of Geon latex did improve the bulk density to an acceptable level for micropearls.

Several non-pearl recipes using PVP-type polymers as the sole suspending agents yielded significant particle size reduction and high bulk density.

B. 2185

The following solvents were studied in a standard PVC 2185 recipe to determine their chain-transfer efficiency vis-a-vis trichloroethylene, the present standard.

*Isobutyraldehyde	Cis-1, 2-Dichloroethylene
*Carbon Tetrachloride	Toluene
*Ethyl Acetate	Benzene
Chloroform	3-Chloro-2-Methyl Propene
Methylene Chloride	Bromochloromethane
	1, 3-Cyclohexadiene
	Acetone
	Methanol

Those marked with an asterisk were recommended by Dr. Richard Chan; the remainder were selected on the basis of

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OPERATIONS (Cont'd)

their availability and low boiling points rather than any reported chain-transfer effect on vinyl chloride.

No reaction occurred with 1, 3-cyclohexadiene, but all other recipes yielded product. The resins are currently being evaluated.

2. Pilot Plant

A. 2185

Most of the month was devoted towards improving the present 2185 recipe/process for Kerr bottle resin. The specifications and problems connected with this resin have been elaborated on extensively in previous monthly reports and will not be repeated in this report.

Using the plant recipe as a control, runs were made over the temperature range, 153°-138°F, in 5°F increments with the objective of determining the effects of higher temperature on bulk density and particle size. Although particle size appeared satisfactory, the bulk density remained in the region, 20-26 lbs./cu.ft., and no improvement occurred until the Ultrawet level was reduced from .085 to .025 at which point the bulk density rose to 37.0 even though the polymerization temperature was 153°F. The recipe was then readjusted to .035 parts of Ultrawet. This change gave a lower bulk density (33.5) and an improved particle size distribution (4% on 50 mesh, median particle diameter of 220 μ).

The fact that a high bulk density and relatively small particle size distribution could be achieved at this high a polymerization temperature is a significant finding and gives further encouragement to the belief that a bottle-grade 2185 resin can be prepared without a chain-transfer agent. Additional pilot-plant runs will be made to determine the degree of reproducibility of this recipe.

B. X-130

Two VCl/isobutylene copolymers were prepared via a micro-pearl technique that appears to have given resin satisfactory for fluidization and post chlorination studies. These have been sent to Air Products (Linwood).

AP00046354

OPERATIONS (Cont'd)C. 8200

The addition of 0.05 parts Sulframin to WP-30 stabilized PVC to study its affect on bulk density adversely affected the suspension stability and coarse particles resulted.

PVP K-90 produced a resin that offers interesting possibilities as a plastisol extender resin although its particle size as produced in the 10-gallon reactor was too coarse.

3. Properties LaboratoryA. 8200

A series of plant-produced 8200 samples was evaluated for uniformity and found to be quite satisfactory in all aspects. It was found that all 8200 plastisols exhibited very fast fusion - much faster than previously observed. This has not been completely resolved but is believed to be related to a change in Geon 121 lots. This is presently being studied further.

Two customer complaints regarding 8200 were studied. Vinatex reported poor air release in their formulation, but efforts to reproduce their results were unsuccessful. Based on our laboratory tests, 8200 appears to give satisfactory air release.

Granet reported strike-through with 8200 but not with VR-10. This test was reproduced and gross strike-through was observed with all Escambia and competitive extender resins. Further clarification of this discrepancy is required.

B. 6180

In early August, quality control tests on newly manufactured PVC 6180 showed an increase of specks in both the dry resin and pressed plaques. This problem did not appear as severe as that occurring several months ago when entire plaques were blanketed with black specks. But, nevertheless, the speck count was high enough to eliminate most lots from bulk-car shipment, since experience had already shown that a marginal speck level would probably grow to an unacceptable level during such shipment.

AP00046355

OPERATIONS (Cont'd)

Considerable effort was therefore devoted to laboratory studies with the dual objectives of 1) finding the root cause of the specks, and 2) developing a process for pre-stabilizing the resin to mitigate the effects of heat history.

The tentative conclusions derived thus far are as follows:

1. Recent production is more adversely affected by heat-aging than that produced during June, 1969, as measured by speck growth in dry resin, although speck growth levels out after ~48 hours in each case.
2. The dry-speck count correlates reasonably well with plaque speck count. If anything, there is an increase in speck level in the plaque, probably due to resin discoloration during plaque fusion and/or greater visibility of specks when viewed in the transparent plaque.
3. Whereas the ability of an epoxy-type stabilizer to prevent the gross formation of black specks during plaque fusion was reasonably well established in earlier work, its role in reducing the growth of specks during the heat-aging of resin is still to be determined.

SAMPLES

A 55-gallon drum of PVC 2185 wet cake was obtained from a recent production run, two pounds of which was shipped to Williams C&M Company for their preliminary evaluation. If found worthy of further study, the remainder of the resin will be shipped.

MEETINGS

Weekly scheduled coordination meetings among Production, R&D, and Technical Service, were instituted during August. At these meetings, plant problems are discussed, and assignments undertaken towards their solution. Thus far, these meetings appear to be serving a timely and useful function.

AP00046356

FUTURE PLANS

1. Pilot-Plant studies will be continued towards the preparation of PVC 2185 without the use of a chain-transfer agent.
2. Laboratory and Pilot-Plant studies will be continued on PVC 6180, with the objective of eliminating the cause of the reduced heat stability or, at minimum, providing a method for pre-stabilizing the resin during manufacture.
3. Studies will continue on the evaluation of PVP-type and hydroxy-alkyl cellulose suspending agents for both micropearls and plastisol extenders. Several recipes will be tested in the Pilot Plant.
4. Work will continue on the evaluation of WP-30 in the Pilot Plant. Two-hundred pounds of resin (R. V. = 2.0) with a bulk density of 35-40 lbs./cu. ft. will be prepared for shipment to Williams Patent Crusher and Pulverizer Company.
5. A report on the evaluation of additional competitive plastisol extender resins will be prepared and distributed.
6. Efforts will continue to prepare a vinyl chloride copolymer containing 5% isobutylene. Resin characterization will be initiated.
7. The evaluation of Vazo 52 catalyst will be undertaken.

D. G. Mann
D. G. Mann

AP00046357

ESCAMBIA CHEMICAL CORPORATION
INTEROFFICE MEMORANDUM

To: Dr. W. M. Smith

Date: September 5, 1969

From: W. K. Clark

Copies:

Re: Monthly Summary
Technical Service
August, 1969

1. Customer Service

- a) E. F. Whitmore - Revolan. Recommendations for formulations and procedures to obtain intumescent-sprayed solution coatings. (Reference 1)

John Harper - Memorandum on the non-feasibility of PVC hot-melt coatings. (Reference 2)

Dynatherm Company - Subject company interested in use of PVC resins as waterproofing additives. More information was requested. (Reference 3)

Revolan - Customer is having problems with staining and aging of PVC 9010 solution coatings on concrete. Formulation recommendations and procedures were made. (References 4 and 5)

- b) Jarrow Products - Customer desired solvent formulations for swelling shrink rings of flexible PVC. Recommendation of basic solvents composed of mixtures of ketones, aromatics, and low-boiling paraffinic hydrocarbons were briefly discussed in a letter and subsequent telephone conversation. (Reference 6)
- c) General Binding Corporation - Customer desired start-up and formulation information on the use of PVC 6180 in a sheet extrusion application. In a telephone conversation, the differences of homopolymer and copolymer compounding and procedure were discussed. (Reference 7)
- d) Vogt Plastics Division - Customer desired technical information on extruded foam wetting. Starting point formulations pitfalls and ground rules for die design were discussed in letter of reference. (Reference 8)

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September 5, 1969

- e) Norton Company - This company desired compounding information to enable them to supply Leeds Travelware with suitable dry blends for rotational castings. Formulations were discussed and information sent. (Reference 9)

- f) Zapata Industries

Bulk density test method and drawings were requested by this company. (Reference 10)

- g) Tenneco/Nixon-Baldwin Division

Samples of PVC 6180 received from our Flexi-Flow Terminal in New Jersey were tested for this customer. The samples came from bulk car #52214 of which we rejected two compartments and okayed two compartments based on the visual dry speck count. The two compartments released to this customer were accepted. (Reference 11)

- h) Penn Color and Chemicals

This customer complained of gels in one lot of PVC 2185. Being unable to locate a sample of this particular lot, no further work was done. (Reference 12)

- i) Armstrong Flooring Plant

Listed physical data on Opalon 610 and Cary 175 versus our PVC 2170 and PVC 1185. (Reference 13)

- j) United States Crown Company

This company was sampled with eight pounds of dry blend using formulation and resin submitted by Mr. F. A. Arndt. (Reference 14)

- k) Leeds Travelware Division, Rapid American Corporation

This company was sampled with 37 pounds of dry blend for rotocasting using our PVC 2160. (Reference 15)

2. Customer Service to Air Products and Chemicals

- a) W. M. Smith - Desirability of purchase of Hesta blow-molding machine was discussed in memorandum of reference. (Reference 1-A)

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- b) W. M. Smith - Feasibility of producing conductive vinyl components for medical applications by the Medical Products Division, APCI, was discussed in memorandum of reference. Further discussions were held at Pace with Messrs. D. G. Manly and M. Schugerts. We are awaiting specifications and other cost information preparatory to a request for project approval. (Reference 2-A)

3. Customer Complaints

a) Un-numbered Complaint - Ohio Sealer and Chemical Company

This customer is experiencing problems with our PVC 4185-2S, namely, particle size bag-to-bag variability with many coarse particles and foreign matter such as fibrous-lint. Production is now scalping with a 60-mesh screen (as of August 1) instead of 40 mesh to try to eliminate the coarse particles. Production is also investigating the use of lint-free product collector bags as a substitute for the bags now being used. (Reference 1-B)

b) Un-numbered Complaint - Jarrow Products

Customer complained of large imperfections in extruded flexible compounds based on PVC 3225. The large imperfections were found to be primarily caused by tramp shavings and fines of rigid compounds and some particles of rigid dry blends. Suggestions were made in a telephone conversation with customer. (Reference 2-B)

c) Un-numbered Complaint - Tenneco/Nixon-Baldwin Division

This customer rejected approximately 11,000 pounds of bagged PVC 6180, Lot 4719. A 50-pound bag was sent to us and inspected which resulted in confirmation of the customer's rejection. (Reference 3-B)

4. Test Method Development

V. J. Grande has requested we develop a method of testing the quality of resins intended for blow-molding applications with respect to volatiles and other imperfections. A memorandum discussing the feasibility of such a test via dry blend extrusion of blown film has been issued. Quotes on equipment necessary have been requested of Killion extruders. (Reference 1-C)

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5. Samples

A total of six PVC samples (30 pounds) was sent to five customers.

Forty-five pounds of dry blends were sampled to two customers.

W. K. Clark

Reference 1	Letter to Mr. E. F. Whitmore from W. K. Clark, dated August 5, 1969
Reference 1-A	Memo to W. M. Smith from W. K. Clark, dated August 8, 1969
Reference 1-B	Memo to G. B. H. Speed from W. K. Clark, dated August 18, 1969
Reference 1-C	Memos to V. J. Grande from W. K. Clark, dated August 21, 1969, and File - Jarrow, Chicago from W. K. Clark, dated August 27, 1969
Reference 2	Letter to Mr. John Harper from W. K. Clark, dated August 8, 1969
Reference 2-A	Memo to W. M. Smith from W. K. Clark, dated August 14, 1969
Reference 2-B	Call Report dated July 14, 1969 from P. F. Baker Memo to P. F. Baker from P. R. Browne, dated August 6, 1969 Memo to G. B. H. Speed from W. K. Clark, dated August 18, 1969
Reference 3	Letter to Mr. E. F. Whitmore from W. K. Clark, dated August 11, 1969
Reference 3-B	Memo to A. R. Donaghy from P. R. Browne, dated August 6, 1969
Reference 4	Letter to E. F. Whitmore from W. K. Clark, dated August 11, 1969

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- Reference 5 Memo to File from W. K. Clark, dated August 18, 1969
- Reference 6 Memo to File from W. K. Clark, dated August 12, 1969
- Reference 7 Memo to File from W. K. Clark, dated August 13, 1969
- Reference 8 Letter to Mr. L. B. Updegrove from W. K. Clark,
dated August 14, 1969
- Reference 9 Letter to Mr. Dale Renner from W. K. Clark, dated
September 2, 1969
- Reference 10 Letter to Henry Dorn from P. R. Browne, dated
August 4, 1969
- Reference 11 Memo to A. R. Donaghy from P. R. Browne, dated
August 5, 1969
- Reference 12 Memo to F. G. Mendrey from P. R. Browne, dated
August 6, 1969
- Reference 13 Memo to F. G. Mendrey from P. R. Browne, dated
August 6, 1969
- Reference 14 Letter to Mr. F. A. Arndt from P. R. Browne, dated
August 7, 1969
- Reference 15 Letter to Mr. M. Schneider from P. R. Browne, dated
August 8, 1969

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