

BUSINESS CONFIDENTIAL

MONTHLY REPORT

MEMORANDUM

TO: Dr. C. K. Fink

FROM: W. H. Bauer

DATE: June 27, 1967

SUBJECT: Vinyl Resin and Plasticizer Summary - Tarrytown Technical Center,
June, 1967

RECEIVED

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R. N. Wheeler

CALENDERING, FLOORING & RECORDS

RESINS FOR C. F. & R. (333A90)

1. HAMPSHIRE MANUFACTURING, NASHUA, NEW HAMPSHIRE

The ultimate stability characteristics of QYSC-7 are under investigation to determine the cause of failure of Blend 69 at subject company. A successful solution of the problem will also aid in serving the Globe Rubber account where QYSC-7 has previously been rejected on ultimate stability or excessive color development.

This investigation is also tied in the study of the zinc sensitivity of the Process 7 resins.

(P. T. McCoy)

2. INTERCHEMICAL CORPORATION, TOLEDO, OHIO

No assistance could be provided at this account in introducing an existing UCC resin to replace Trulon 690. This is a high molecular weight, low apparent density, blotter resin required in their unheated blenders.

(P. T. McCoy)

3. ROSS & ROBERTS, STRATFORD, CONNECTICUT

Specialty Quality Requirements for QYSJ (QSAH-7), QYTQ-7 and QYSC-7 have been suggested as a means to increased resin sales at this account. While past problems in the handling of QYTQ-7 (poor resin dry flow) have been attributed to high volatiles, other factors such as apparent density, particle size characteristics and particle geometry were equally responsible.

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The subject was visited to discuss torque-rheometer techniques utilizing their newly-purchased Plastograph. They are in dire need of assistance and a seminar at Tarrytown is being arranged.

(P. T. McCoy)

4. RCA, INDIANAPOLIS, INDIANA

The subject customer is providing two samples of record preblend assessed as "too stiff" and "too soft" in melt for torque-rheometer characterization by RCA and UCC techniques. RCA plans to utilize the torque-rheometer in the selection of vinyl resins as either a supplement to or in replacement of their present Tinius-Olsen flow test. The program at Tarrytown will evaluate other vinyl samples (both suspension and solvent types) of known performance at RCA in addition to the two round-robin samples.

This program has been assigned a top priority at Tarrytown. Assistance and cooperation of all departments will be necessary if we are to maintain our posture/business at RCA.

(P. T. McCoy)

5. COMPETITIVE RESIN ANALYSIS - RAVINIL PVC

A sample of this resin, manufactured by Sovieta Chemica Ravinnia (Italy) and obtained from Plicoflex (Houston), has been identified as a suspension polymerized PVC similar to QYTQ-7 but slightly higher in molecular weight. The resin has inferior particle geometrics and poorer resin dry flow than QYTQ-7. Dry blend characteristics are equivalent or slightly better than QYTQ-7.

(P. T. McCoy)

6. PLATE OUT - FORD MOTOR COMPANY (QYTQ-7)

The expanded program to determine the factors influencing plate-out continues. The Ford test was run on a series of six resins:

- | | |
|-----------------------|---------------------|
| (a) Old Ford standard | |
| (b) New Ford standard | |
| (c) QYTQ-7 (Bl. 284) | } all with 0.1% DOP |
| (d) QYTQ-7 (Bl. 286) | |
| (e) QYTQ-7 (Bl. 288) | |
| (f) QYTQ-7 (Bl. 211) | |

A qualitative rating of the wash plaques indicate the new Ford standard superior to the old standard and all QYTQ-7's containing DOP to be considerably poorer than either standard. QYTQ-7 (Bl. 211) is about equivalent to the old Ford standard. These results confirm the data from the customer.

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The second phase of the program is now in progress. Three experimental resin samples are being made in the pilot plant autoclave by Mr. D. E. Richardson. These will include:

- (1) QYTQ-7 (0.1% DOP) - washed
- (2) QYTQ-7 (0.1% 10-10) - washed
- (3) QYTQ-7 (0.1% EPO) - conventional

These will be evaluated by the standard Ford procedure as soon as received. Meanwhile, test procedure variations are being studied using dry-blend technique rather than preblend replacement of 10-10 with NHDP and variation in lubricant level. The feasibility of determining color using a spectrophotometer (at $585m\mu$) rather than visual rating is being assessed.

(W. H. Bauer, W. B. Drozdowski)

CALENDERED FILM & SHEETING (333B50)

1. NON - FOGGING PLASTICIZERS

In view of some increased interest in premium-priced plasticizers for non-fogging automotive applications, the several Technology Managers have been requested to determine the level of R & D effort they may wish to expend to develop candidate plasticizers. As an adjunct to this program, we have also requested an assessment on whether we wish to participate in the trimellitate ester market as these materials may be used in this area (e.g. Hatcol 210) as well as in high temperature wire and cable applications.

(W. H. Bauer)

FLOORING PLASTICIZERS (333D50)

1. ACETOXYETHYL, 2-ETHYLHEXYL PHTHALATE

The sample of plant run material is in transit from South Charleston to Tarrytown. This will be evaluated as a replacement for butyl benzyl phthalate in vinyl asbestos floor tile as soon as received. Data will be available approximately six weeks after receipt.

(L. G. Krauskopf)

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2. DI (TETRAHYDROFURAN-2-METHYL) PHTHALATE

There is some renewed interest in this material as a non-staining plasticizer for use in resilient flooring and in organosol overlay roll goods. New economic appraisals are in progress.

(W. H. Bauer)

MOLDING & EXTRUSION (211E50)

1. KESSLER PRODUCTS, YOUNGSTOWN, OHIO

Three projects have been active for this customer during the month:

(a) A sample of an unknown vinyl solvent was submitted for structural identification and found to be tetrahydrofuran.

(b) Optimization of formulating costs for vinyl weatherstrip compositions meeting Commercial Standard CS-230-60 were derived by computer. Technical Service Bulletins were prepared showing suggested formulations for Grade 70, 80 and 90 weatherstrip.

(c) A sample of vinyl sewer pipe gasket will be subjected to tests specified by ASTM C-425-66T to determine if customers present formulation based on FLEXOL® 426 and "Escoflex" 125 meet the chemical resistance requirements.

(L. G. Krauskopf)

2. AMERCOAT CORPORATION, SOUTH GATE, CALIFORNIA

After solving the formulating problem originally defined, it was learned that the "knob-lock" application required different physical properties than the vinyl tank lining. Hence, a revised formulation was forwarded to the customer for use in the "knob-lock" product. Additional plaque samples are being prepared for the customer's low temperature testing.

(L. G. Krauskopf)

3. W. R. GRACE & COMPANY, CHICAGO, ILLINOIS

A revised formulation designed to meet exceptionally high tensile and elongation requirements in waterstop compound was developed by computer and forwarded to W. R. Grace and Company. The compound is based on QSAP-7 and FLEXOL plasticizers DOP and NODP. No filler is utilized. It is expected that high raw material costs will preclude wide acceptance of the product.

(L. G. Krauskopf)

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4. INDUSTRIAL RUBBER GOODS, ST. JOSEPH, MICHIGAN

The request to provide suggested formulations for vinyl weatherstrip in automobile windows was satisfied by the computer. Window weatherstrip having Durometer A hardnesses of 50 and 60 were met utilizing QSAM-7 and FLEXOL plasticizers 10-10 and EP-8. A softer formulation (A=40) was judged to be potentially incompatible.

(L. G. Krauskopf)

5. THERMOPLASTIC PROCESSES, INC., STERLING, NEW JERSEY

A sample of clear, plasticized vinyl granules, prepared by the customer, was subjected to hardness, tensile, brittle temperature and specific gravity tests. Results were forwarded to this plasticizer account in a Technical Service Bulletin.

(L. G. Krauskopf)

6. POLYMERS, INC., MIDDLEBURY, VERMONT

The physical and melt characteristics of several UCC vinyl chloride resins are being compared with those of "Geon" 106, the preferred resin at the subject account for use in producing 17.5 mil Christmas tree filaments of rigid vinyl. QYSA and QXAF-5 (QEX -1280) have been previously rejected as candidates by the customer on two counts, poor heat distortion and poor acetone resistance after fusion; QYSJ was unsatisfactory in processibility (too stiff) and acetone resistance.

QSAH-7 and QSOL-7 are being studied as possible candidates for sampling this account. The influence of particle size, molecular weight distribution and apparent density on the processibility of the "Geon" and UCC candidate resins are being studied.

A sample of QXAG to duplicate the "Geon" resin as nearly as possible has been requested from Dean Richardson. Several pertinent aim properties of such a resin are:

Inherent Viscosity	0.73
Apparent density	40
Resin flow	3.5 max.
Particle size, median	130
through 40	100
through 200	8 max.
Hard resin particles	
1.75 mil.	0
10 mil.	50 max.
Dry blend time, min.	10 max.

(P. T. McCoy)

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WIRE & CABLE (223C50)

1. CAROL WIRE AND CABLE, PAWTUCKET, RHODE ISLAND

Attempts to obtain approval of FLEXOL 63 at this account have not yet been successful. Although there is some confusion in the customer's evaluation, first results indicate that poor plasticizer efficiency is the stumbling block. The more rigid compound (based on FLEXOL 63) slows the stripping operation; increasing the plasticizer concentration increases the pound-volume cost above the competitive formulation. Two samples from Carol are being checked for critical physical properties to determine if the problem relates to the plasticizer or if there was a production error.

(E. B. Harris)

2. GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

Infra-red curves and resistivity measurements were obtained for production samples of FLEXOL plasticizers DOP, 10-10, 10-10 (X), 13-13, 13-13 (X) and EPO. These will be submitted to the customer at his request, as a sales aid.

(E. B. Harris, T. Hazen)

3. DRYBLEND WIRE AND CABLE RESINS

Only eight competitive wire and cable dryblend resins have been received to date at this laboratory. While these are under test, additional materials must be obtained if the performance of competitive products is to be accurately assessed.

Meanwhile, efforts at Texas City are being addressed to the use of Process-7 resins in this application. Samples of QYAN-7, in their various process modifications, have been requested.

(E. B. Harris)

PLASTISOLS (343G50)

1. FOY-JOHNSTON COMPANY, CINCINNATI, OHIO

A plastisol formulation based on QYKV, FLEXOL plasticizers 426 and GPE and "Ircogel" 901 was submitted to the customer. This is to replace a competitive system used in the hot dip coating of tool handles.

(E. B. Harris)

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GENERAL PROGRAMS

1. n-ALKYL PHTHALATES

Samples of n-alkyl phthalates prepared from mixed n-alkanols have been received and are being evaluated in vinyl compounds. These plasticizers are a critical part of the study aimed at the total utilization of the n-alkanol product stream (including n-hexanol) and to obtaining a broad assessment of the influence of composition on end-use properties. The target for completion of this phase of the program is August 1.

(E. B. Harris)

2. COMPUTER PROGRAM

This program is now operational at Tarrytown. Under ideal conditions, the turn-around time is one day for most problems. We are still concerned over a mechanism to get the maximum sales benefit from this program.

(E. B. Harris)

3. POLYMERIC PLASTICIZERS - R3M

Two samples of R3M, a candidate medium molecular weight polyester plasticizer, have been received from Bob Kelso. These will be immediately tested for heat stability. If this property is satisfactory, critical screening tests will be run on the selected composition.

(E. B. Harris)

4. TV TAPING

Two sets of video tape have been prepared for inclusion in the Coatings Intermediate Division training course. Mr. Krauskopf presented a two-hour lecture on the physical testing of plasticized vinyls and Mr. Bauer a 50 minute presentation on plasticizer theory and function.

H. H. Bauer

WHBauer:ccb

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