BUSINESS CONFIDENTIAL

MONTHLY REPORT
GROUP I SUPPORTED PROGRAMS

TO: Dr. F. E. Bailey, Jr.

FROM: Dr. J. J. Brezinski

DATE: February 14, 1968

689G13 EXPLORATORY VINYL RESIN SCREENING

Porosity of Vinyl Resins. Mercury intrusion porosimetry measurements conducted with older samples of the Process-5 r sins (QYSA-5 through QYSC-5) reveal that the interior pore volum increased with increasing inherent viscosity. This phenomenon is also observed with the three Lucovyl (Pechiney-St. Gobain) resins evaluated. The UCC non-solvent resins, VYNW and QYNA, are characterized by high interior pore volume and unique apparent pore-size distribution.

The study confirms what has been suspected, that the presence of ethylene results in increased interior pore volume at all molecular weight levels. The total pore spectrum (definition at increments over the pressure range) is required to define the nature of the apparent pore-size distribution; however, for routine monitoring of a given resin type, it appears possible to define the total interior pore volume from two point measurements: one at 56 psia, where a reasonable demarcation between external (between particles) and internal voids appears to exist - both from recent studies and earlier investigation using glass beads - and the second point at 5000 psia.

The relative simplicity of the modification as well as the excellent precision of measurement suggests future consideration for routine monitoring of suspension resins.

J. J. Brezinski, J. E. Conley

ISO Round-Robin Study. The International Standards Organization (ISO) is conducting a round-robin test program of several procedures for the definition of specific properties and characteristics of powdered vinyl resins. Our participation involves definition of the viscosity number (related to inherent viscosity), total non-volatile content, including water (similar to the procedure under study at ASTM), and definition of the ash and sulfated ash values for resins. Three Pechiney-St. Gobain PVC resins are being used in the round-robin.

RESEARCH AND DEVELOPMENT DEPARTMENT
CHEMICALS AND PLASTICS
UNION CARBIDE CORPORATION
SOUTH CHARLESTON, WEST VIRGINIA

333A13 CALENDERING, FLOORING, AND RECORD PRODUCTS, MISCELLANEOUS EVALUATION

Water-Slurry Process. Approximately 40 pounds of the vinyl resin sound record compound based on the VYCR-10 and QYAC-10 resins has been prepared in the laboratory (eight 5-lb. lots); the homogenized dried compound will be shipped to Steve Krumm at Bound Brook. Future scale-up studies of water-slurry compounds will be conducted at Texas City.

The pre-ground slurry of carbon black and lead stabilizers (ball-mill using glass beads) required the use of a small amount of isopropanol (2% of the liquid in the premix; approximately 0.6 weight per cent of the total water used) to wet the solid stabilizers and obtain a uniform dispersion. Future studies of the process should relate to materials of construction best suited for the preparation of the mildly basic initial dispersion.

J. J. Brezinski, J. E. Conley

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Mr. J. W. Fields, 515
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UNION CARBIDE INTERNAL CORRESPONDENCE

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R. N. Wheeler

RFD

CHEMICALS AND PLASTICS

P. O. BOX 471, TEXAS CITY, TEXAS 77590

TO (NAME) Dr. G. R. Toy
COMPANY UCC Food Products Division
LOCATION CHICAGO, ILLINOIS 60638

DATE March 10, 1967

COPY TO
Dr. F. E. Bailey, Jr. - 511
Mr. G. P. Bigelow - 501
Mr. O. T. Carlisle
Mr. J. F. Erdmann/Mr. N. A. Gimber
Dr. W. R. Manning - 511
Mr. F. E. Schrage - 312
Dr. E. A. Shiner, FPD - Chicago
Mr. D. Tijunelis, FPD - Chicago
Mr. R. N. Wheeler - 514
Mr. C. E. White - 312

SUBJECT Corporate PVC Resins for Use in Plasticized Vinyl Film for Fresh Meat Wrap

Dear Dr. Toy:

I have read with interest Mr. J. E. Brown's report ZF-176(R) on "Status of the Fresh Meat Wrap Film Project", dated January 9, 1967. While I am in general agreement with the conclusions reached, I feel that one facet of the work needs to be placed on a more current basis. The report states that formulations were based on Escambia 3250 or Marvinol VR-22 because of the high gel level found in Corporate resins, and as late as 6 months ago, this would have been true. However, I am pleased to be able to report that fisheye levels in all of UCC's suspension vinyls have improved substantially within the last three months. While we have not produced QYTQ-7 recently, January production of QSAN-7 (the homopolymer resin just higher in inherent viscosity than QYTQ-7) showed excellent fisheye levels, and quality control tests showed that virtually the entire 1 MM lbs. produced had fisheye levels satisfactory for extruded film (Respro 0/50 maximum). Current production of QSAN-7 is equally as good, and we expect resin quality to continue in this bracket.

Accordingly, I take the liberty of suggesting that Corporate PVC resins be re-evaluated for the meatwrap extrusion application, and we'll be pleased to work with Mr. Tijunelis in resin selection.

Yours very truly,

Dean E. Richardson

DER/sj

UCC
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UNION CARBIDE

INTERNAL CORRESPONDENCE

CHEMICALS AND PLASTICS

P. O. BOX 471, TEXAS CITY, TEXAS 77590

TO (NAME) Mr. K. D. Cavender
COMPANY
LOCATION TECHNICAL CENTER

DATE February 27, 1967

COPY TO
Dr. F. E. Bailey, Jr. - 511
Mr. G. P. Bigelow - 501
Dr. J. J. Brezinski - 511
Mr. A. R. Bullman - 312
Mr. O. T. Carlisle
Mr. J. F. Erdmann/Mr. J. C. Schlichter
Mr. J. H. Field
Mr. N. A. Gimber/Mr. H. H. Savage
Mr. J. L. Hockersmith
Mr. T. R. Smith/Mr. A. A. Peterson
Mr. R. N. Wheeler - 514

SUBJECT QXPM-4 Plastisol Additive Resin Samples for Test Standardization

Dear Doug:

As per our agreement during my Charleston visit February 17, I shipped you today by Air Parcel Post approximately 2.5 lb. each of four QXPM-4 resins. These samples are designated Pilot Plant Runs 10-66-5, 10-66-6, 10-66-7, and 1-67-23. These particular samples do not represent any special combination of properties. Rather, they represent good-to-mediocre QXPM-4 as it has been produced here.

We understand that you will determine 1) MSA particle analysis and 2) Rigidsol viscosity by your new proposed method, using as base resin Blend B-7675 of QYNV-3. Meanwhile, Jim Hockersmith will carry out the same determinations here, and will report his results to you by letter. In this way, we hope to obtain good correlation between rigidsol viscosity data determined at the Tech Center and at Texas City.

When the desired correlation has been obtained, we need to reconsider your previously-suggested target properties for QXPM-4, re-defining the resin quality required in terms of the new plastisol viscosity test. At that point, we at Texas City will be able to take another look at our position in the resin development program and decide on a further course of action.

Yours very truly,

Dean E. Richardson

Dean E. Richardson

DER/sj

RECEIVED
AUG 1 1968
R. N. Wheeler

UNION CARBIDE INTERNAL CORRESPONDENCE

CHEMICALS AND PLASTICS

P.O. BOX 471, TEXAS CITY, TEXAS 77590

TO (NAME) Mr. Steve Krumm
LOCATION BOUND BROOK PLANT

DATE July 26, 1968

Copy
Mr. J. H. Barrett
Mr. C. E. Bowman/Mr. W. D. Bush
Mr. O. T. Carlisle
Mr. A. J. Costantin - 312
Mr. J. H. Field
Mr. L. D. Harris - 501
Mr. J. L. Hockersmith, et al
Dr. C. W. McGary - 511
Mr. D. E. Richardson
Mr. R. N. Wheeler - 514
Mr. W. E. Whitehurst
Mr. J. R. Wilkinson - 501

Subject: Suspension Vinyl Resins: Spherical Copolymer VXKF-4 (QEX-1373) for Sound Record Powderblend Evaluation

Dear Steve:

In response to your request for 200 pounds of resin like QEX-1368 for evaluation by Capitol Records, we produced several runs for this purpose, attempting to improve the fines level at the same time. Of the three additional runs we picked the best to send to you for experimental evaluation by Capitol. This resin we shipped to you air freight today.

It now appears that a Self Directed Optimization will be necessary to decrease fines, improving flow properties and bulk density simultaneously. This technique should quickly optimize this variable, especially since we are as close as we are with the existing recipe. Such a program would take about a month at most. The quality control data attached does not show a high weight per cent of fines, but visually these fines show up in a relatively high volume. They are not spherical and this tends to degrade both bulk density and flow properties.

Yours very truly,

A. A. Peterson

A. A. Peterson

AAP/sj

Attachment

UCC
041841

QUALITY CONTROL ANALYSES

Blend	QEX-1373
Resin	VXKF-4
Inherent Viscosity	0.52
Melt Viscosity	2000/152°C
% PVC	88.8
Columbia Heat Stability	47
Whiteness Index	77
Bulk Density W/C.B.	47
% Process F	0.11
Dry Resin Flow, sec/400cc	2.6
1/8-inch Funnel Flow, sec/gm	1.8
% Volatiles	1.7
% Residual VAc	1.0
Screens: 40 mesh	100.0
60	96.5
80	56.4
100	33.6
140	14.9
200	5.7
Median Particle Size, microns	160