



INTERNAL CORRESPONDENCE

PLASTICS DIVISION

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Company
Location TEXAS CITY PLANT

Date March 21, 1966

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Report

Subject Status Report, Initial Production
Run, QXOS-7

In the attached report Mr. H. H. Savage presents the detailed work done on the recent initial commercial-sized production run of QXOS-7, produced for the calendering and extrusion markets. Approximately 300M pounds of resin was produced with an ethylene concentration range of 1.53% to 2.06%. This was a fine piece of work.

Process Development and Laboratory Groups are to be commended for their valuable and timely assistance.

N. A. Gimber
N. A. Gimber

NAG:sh
Attachment

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SUSPENSION VINYL RESINS

TEXAS CITY PLANT

Status Report

Initial Production Run, QXOS-7

Author: H. H. Savage

Date: March 21, 1966

Summary

The initial production run of QXOS-7 has been completed--producing 298,280 pounds of resin. The maximum ethylene content attainable with existing equipment is 1.6%. Pending customer acceptance, this resin could be produced at reasonably good rates. Substantial equipment additions would be required to produce QXOS-7 at the 2% ethylene level.

Discussion

The QXOS-7 run was started on March 4 and completed on March 10. Production loss caused by this experiment amounted to 270,000 pounds. Four blends totaling 298,280 pounds were produced. Blend analyses are shown in Table I. The first 21 autoclave batches were included in B-1 and B-2. These batches were made with an ethylene charge that resulted in a final pressure requiring significant autoclave venting at the end of the reaction. The ethylene content was 1.7%.

In an effort to increase the ethylene content to the desired 2%, the autoclave charge (except for ethylene) was reduced for the five batches in B-3. This blend contained only 1.5% ethylene. This was caused by a difference in the proportion of the ethylene in the vapor and liquid phases. The final pressures of these batches averaged 290 psig and no venting was required.

The last five batches were charged with a 1/3 increase in the ethylene charge and were recovered as B-4. This blend contained 2.1% ethylene, but the autoclaves required a considerable amount of venting. In two cases the amount of venting was so great that foaming plugged the 1/2" valve being used, and it was necessary to crack the hand vent valve to keep the pressure under control. Recipes used during the run and the recommended recipe for any future run at 1.6% ethylene are attached as Table II.

Other than obtaining the desired level of ethylene content in the resin, the only difficulty encountered was in attaining a reasonable reaction time at the very low reaction temperature of 41°C. Fifteen pounds of IPP (75 lb. of solution)

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Status Report on QXOS-7

were used per batch. This is more than a reasonable amount for the manual operation presently employed. Incidentally, the usage during full scale production would be about 50% of the Non-Solvent usage.

As in the case of the QXOM-7, the resin particle size was rather large, the dry blending times were excellent, and the bulk densities lower than the comparable homopolymer. Fisheye ratings were good except for B-3 which was unaccountably high. ICMT color was good and ASTM conductance very poor. Melt viscosity results are not yet available.

The work of the Development Department in preparing the individual autoclave samples, and the many extra hours of analytical effort by the Resins Laboratory are gratefully acknowledged.

Recommendations

QXOS-7 cannot be considered satisfactorily scaled-up since the ethylene content that can be attained in the present system is less than the aim of 2%. For routine production, 1.6% is the maximum that can be promised. The South line is the only line on which QXOS-7 can be produced.

If full scale production at the 1.6% ethylene level is contemplated, a charging system for the IPP catalyst system will be required. A batch charging meter and an extension of the Non-Solvent IPP circulating system would be required.

Production of QXOS-7 at the 2% level would require facilities for handling the vented ethylene and instrumentation for controlling the venting.

TABLE I
QXOS-7 BLEND ANALYSES

	<u>B-1</u>	<u>B-2</u>	<u>B-3</u>	<u>B-4</u>
Pounds	94,480	118,540	43,520	41,740
Ethylene, %	1.74	1.72	1.53	2.06
Total Solids, %	99.6	99.5	99.4	99.4
Inherent Viscosity	1.34	1.32	1.28	1.31
Screens, 40 mesh	100	100	100	100
60 mesh	97	98	90	82
80 mesh	32	32	29	32
100 mesh	11	12	15	22
140 mesh	5	2	4	5
200 mesh	2	0	0	2
Median Particle Size	194	195	205	215
ICMT Color	112	110	115	114
Contamination	3	1	1	2
Respro 17.5 Mil/10 Mil	0/52	0/53	6/1792	0/83
Bulk Density	27.0	27.0	29	27
ASTM Absorption	112	118	108	115
Clear HRP	3	2	3	2
Dry Blend, Min. /Temp.	2.4/78	2.8/78	2.3/79	2.0/77
ASTM Conductance	1.45	1.85	1.00	2.10
Melt Viscosity	-- Not Available --			

TABLE II
QXOS-7 RECIPES

	Batches			
	<u>3-21</u>	<u>22-26</u>	<u>27-31</u>	<u>Future</u>
Water, Gal.	2,800	2,400	2,400	2,800
Methocel-15, Lb.	6.0	5.2	5.2	6.0
Cellosize WP-300, Lb.	18.0	15.5	15.5	18.0
Sodium Bicarbonate, Lb.	13.0	11.2	11.2	13.0
Vinyl Chloride, Lb.	10,850	9,310	9,310	10,850
Ethylene, Lb.	625	600	800	575
IPP, Lb.	15	13	14	16
Termination Press Drop, psi	25	25	25	25
Reaction Temp., °C.	41	41	41	41

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