

MONSANTO CHEMICAL COMPANY
Plastics Division**MASTER COPY**

Limited Procedure for Process Modification

TO BE RETAINED IN
STANDARDS DEPT. FILES

Requested byR. A. Coffey.....

Number ...P.88-53-1....

Technical Supervision
and Reporting ByA. P. Torrenzano.....

PlantSpringfield.....

Product GroupVinyl.....

Plant Dept. No833.67.....

Limited to: Amt. of Material 100,000 #.

or Expiration Date

Modification of SDPOpalon X-62.....

Reason for Requested Variation

	Date	Approval
P.T.S. Supv. Eng.	10/6/66	R. Coffey
Research Grp. Lead.	10/7/66	A. Coaker
Oper. Supt.	10/6/66	R. Perry
*Gen. Mfg. Supt.		
*P.T.S. Manager		
Standards Dept.	10/11/66	A. Ericksberg

*Approval required when segregation
of expense is specified.

To manufacture low viscosity resin for use in 85 Building calendering operations. This materialsfills a temporary need, until a suitable new resin is developed, rising the methocel suspending system.

Details of Modified Procedure

- (1) See attached TOP for "Experimental Line" operations.
- (2) The "Opalon X-62 TOP" will be modified by the use of 0/2% GMS and an increased final vent in order to improve resin porosity and initial color.
- (3) Target Specifications

Specific Viscosity: 0.29 to 0/33
 Dry Time: 12:00 max. (Read Mixer)
 Contamination: 8 - 45 max.
 Moisture: 0.3% max.
 Particle Size: Trace max. on 40 mesh.

Reference to Previous Work

1. Final Report "PVC Resin for Rigid Sheetting", C.G. McCubbin, May 19, 1954.
2. Final Report "Opalon X-62, Limited Procedure P88-53, A. Torrenzano, Aug. 30, 1960.

ISSUED Oct. 11, 1960
STANDARDS DEPARTMENTBY *A. O. Ericksberg*

RSV0026392

Safety Hazards and Precautions (Including Toxicity, Air, and Steam Pollution)

Use protective equipment when handling TCE.

Product Testing Required and by Whom

Control Lab. - Specific viscosity, drytime, contamination, moisture, particle size, Robbin color, and heat stability.

Identification and Disposition of Material

Segregation of Product	Keep segregated
Labeling of Product	Plain bags, lot number only
Approval for Shipment	PTS (A. Torrenzano, R. Coffey)

Costs

A. Estimated effect on manufacturing costs, if successful

Opalon X-62 - 12/44¢/lb. as compared to	Opalon X-70 - 12/3¢/lb.
	Opalon X-69 - 11/9¢/lb.
	Opalon Suap - 12/4¢/lb.
	Res.

B. Estimated extra manufacturing cost of this experiment

Negligible

C. Segregation of Costs (by Operating Superintendent)

☒	No segregation of Costs required
☐	Special Accounting number will be required

D. If costs are segregated, accounting number assigned (by P.T.S. Manager)

Informational Copies to: (To be filled out by Standards Department)

Plant Laboratory Supervisor
Planning and Control Supt.
Marketing Technical Service Mgr.
General Mfg. Supt.
P. T. S. Manager
Accounting Dept.
Product Administrator
Research Asst. Dir.
Overseas Mfg. Dept.
Other Domestic Plant

Foreign Plants

Other

_____	L. Louraine
_____	J. Minchen
_____	C. Hamlin
_____	W. Willis
_____	R. Dunlap
_____	J. Crabtree - P. Pastuszek
_____	R. Clark
_____	O. Cohen
_____	H. Armstrong
_____	C. Aldeb
_____	J. Shriver - Oper. Supv.

MONSANTO CHEMICAL COMPANY
Plastics Division
Limited Procedure for Process Modification

Requested by *R.A. Coffey*

Number ... *P. 88-53-1*

Technical Supervision
and Reporting By *A.P. Tannenbaum*

Plant *Springfield*

Product Group *100*

Plant Dept. No ... *833.67*

Limited to: Amt. of Material *100,000 lbs*

or Expiration Date

Modification of SDP ... *Opal on X-62*

Reason for Requested Variation

	Date	Approval
P.T.S. Supv. Eng.	<i>10/6/60</i>	<i>R.A. Coffey</i>
Research Grp. Lead.	<i>10/7/60</i>	<i>John T. ...</i>
Oper. Supt.	<i>10/6/60</i>	<i>R. King</i>
*Gen. Mfg. Supt.		
*P.T.S. Manager		
Standards Dept.		

*Approval required when segregation of expense is specified.

*To manufacture low viscosity resin for use in
85 Building calendaring operations. This material fills
a temporary need, until a suitable new resin is
developed, using the methacel suspending system.*

Details of Modified Procedure

Same as P88-53 (copy attached)

Reference to Previous Work

- 1. Final report "PVC Resin for Rigid Sheetting," C.D. McCulloch
May 19, 1954.*
- 2. Final report "Opal on X-62, Limited Procedure P88-53,"
A.P. Tannenbaum Aug. 30, 1960*

RSV0026394

Safety Hazards and Precautions (Including Toxicity, Air, and Steam Pollution)

Product Testing Required and by Whom

Identification and Disposition of Material

Segregation of Product
Labeling of Product
Approval for Shipment

Same as
P 88-53

Costs

A. Estimated effect on manufacturing costs, if successful

B. Estimated extra manufacturing cost of this experiment

C. Segregation of Costs (by Operating Superintendent)

☒ No segregation of Costs required
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Manager)

Informational Copies to: (To be filled out by Standards Department)

Plant Laboratory Supervisor
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General Mfg. Supt.
P. T. S. Manager
Accounting Dept.
Product Administrator
Research Section Leader
Overseas Mfg. Dept.
Other Domestic Plants

Foreign Plants

Other

MONSANTO CHEMICAL COMPANY
Plastics Division
Limited Procedure for Process Modification

Requested by ... A. E. TorrenzanoNumber ... P 88-53Technical Supervision
and Reporting By ... A. E. Torrenzano ..Plant Springfield

	Date	Approval
Product Group ... <u>Vinyl</u>	P.T.S. Supv. Eng.	8/11 R.A. Coffey
Plant Dept. No ... <u>88</u>	Research Grp. Lead.	8/11 A.W. Coaker/HI
Limited to: Amt. of Material <u>20,000 lbs</u>	Oper. Supt.	8/11 R.K. Perry
or Expiration Date	*Gen. Mfg. Supt.	
Modification of SDP <u>Opalon X-62</u>	*P.T.S. Manager	8/11 R.T. Dunlap
Reason for Requested Variation	Standards Dept.	8/12 A.O. Erickson

*Approval required when segregation
of expense is specified.

To manufacture a low viscosity resin
for evaluation in 85 bldg. calendering operations.

ISSUED AUG 12 1960
STANDARDS DEPARTMENT

BY *A.O. Erickson*

Details of Modified Procedure

- (1) See attached TOP for "Experimental Line" operations.
- (2) The "Opalon X-62 TOP" will be modified by the use of 0.2% GMS and an increased final vent in order to improve resin porosity and initial color
- (3) Target Specifications

Specific Viscosity:	0.29 to 0.33
Dry Time:	12:00 max. (Read Mixer)
Contamination:	8 - 45 max.
Moisture:	0.3 % max.
Particle Size:	Trace Max. on 40 Mesh

Reference to Previous Work

1. Final Report "PVC Resin for Rigid Sheetting", C.O. McCubbin, May 19, 1
Job No. 1583

Safety Hazards and Precautions (Including Toxicity, Air, and Steam Pollution)

Use protective equipment when handling TCE.

Product Testing Required and by Whom

Control Lab. - Specific viscosity, drytime, contamination, moisture, particle size, Robbin color, and heat stability.

Identification and Disposition of Material

Segregation of Product	Keep segregated
Labeling of Product	Plain bags, lot number only
Approval for Shipment	PTS (A.P. Terrenzano, R. Coffey)

Costs

A. Estimated effect on manufacturing costs, if successful
Opalon X-62 - 12.44¢/lb. as compared to Opalon X-70 - 12.3¢/lb.
Opalon X-69 - 11.9¢/lb.
Op Susp Res - 12.4¢/lb.

B. Estimated extra manufacturing cost of this experiment
Negligible

C. Segregation of Costs (by Operating Superintendent)

☒ No segregation of Costs required
☐ Special Accounting number will be required

D. If costs are segregated, accounting number assigned (by P.T.S. Manager) ~~890.42~~

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W. F. Willis
H. I. Dunlap
J. M. Crabtree - F. Pastuszak
R. T. Clark
O. F. Cohen
H. F. Armstrong
C. E. Alden
Operating Supervisor - J. Shriver

Tentative Operating Procedures

Opalon X-62

August 12, 1960

The procedure described below will be employed to manufacture two batches of modified Opalon X-62, a low viscosity homopolymer resin for evaluation in 85 Bldg. calendering operations.

Briefly, the modifications include the addition of glyceryl monostearate, GMS, and a lower conversion level, approx. 87%, in order to improve the resin porosity. The 1% trichloroethylene in the formulation is used to obtain a 0.30 specific viscosity at the 60°C reaction temperature.

I. Batch Formulation

<u>Raw Material</u>	<u>Parts</u>	<u>Weight</u>
Water	135	14,850 lbs.
VCM	100	11,000 lbs.
PDR-1	0.15	16.5 lbs.
GMS	0.20	22.0 lbs.
L ₂ O ₂	0.15	16.5 lbs.
TCE	0.99	108.9 lbs.

II. Charging Raw Materials

1. Charge 1700 gallons of water to the kettle at 54-56°C. Correct dipstick outage is 75 3/4 inches.
2. Start up kettle agitator. Adjust agitator speed to 121 RPM (approximately 7.7 rheostat setting on the variable speed controller).
3. Filter the PDR-1 solution into kettle.
4. Add the GMS and L₂O₂ solids.
5. Close manhole and draw a 24" vacuum purge.
6. Add TCE using kettle vacuum to draw in material via a straw arrangement.
7. Adjust instrument set point to 60°C and switch instrument to automatic control.

8. Position the Reset Cut-Out controller to the manual position using a 13.5 psi bias level.
9. When temperature has leveled out, switch Reset Cut-Out to the automatic position.

III. Polymerization

1. The reaction is held at 60°C for the entire cycle.
2. After approximately 8 hours the batch will heat kick. Use full cold water at 61°C and water injection at 62°C.
3. Start the final vent when the pressure has dropped to 115 psi.
85
4. Vent the unreacted VCM to the gasholder as rapidly as possible without foam carry-over. Use sterox 110 antifoam if necessary.
5. Take a two gallon sample of the slurry.
6. Dump batches into a cleaned #1 slurry tank. Dry as a two batch blend.

IV. Centrifuging and Drying.

1. The No. 1 dryer is to be cleaned out thoroughly before starting to dry Opalon X-62.
2. Operating Conditions:
 - a. Centrifuge - Feed compartment - #3
Pool depth - #5
Feed rate - as necessary to maintain dryer temperature
Wash water - none
Dilution water - 10 gpm
 - b. Dryer - Retention ring - none
Outlet air temp. - 150-155°F (64-66°C)
Inlet air temp. - 280-310°F (136-153°C)
Air velocity - 100 FPM
3. Line up equipment for direct bagging.
4. Package material using plain bags marked only with lot number.
5. Take a 5 lb. bag sample from each blend.

MONSANTO CHEMICAL COMPANY
SPRINGFIELD, MASSACHUSETTS

cc: W. W. Alexander
V. P. Brower
A. W. Coaker
F. A. Duston
O. Ericksberg (15)
R. K. Perry

May 22, 1961

TO: R. A. Coffey

SUBJECT: FINAL REPORT: OPALON X-62
LIMITED PROCEDURE P-88-53-1

I. PURPOSE

The subject Limited Procedure authorized the manufacture of a low viscosity resin for use in 85 Bldg. calendering operations. The Opalon X-62 resin was manufactured successfully on a previous occasion, Ref. 1, and the same procedure was employed again during this run.

II. SUMMARY

A. Two batches of Opalon X-62 were produced on October 6 and 7, 1960 using the following conditions:

1. Formulation:

VCM	100
Water	135
PDR-1	0.15
GMS	0.20
LiO ₂	0.15
TCE	0.99
2. Reaction Temp: 60°C
3. No slow vent
4. Final vent: 80 psig

B. Operational: No difficulty was encountered in the polymerization or drying operation.

C. Quality: The two batches were blended together and the blend was acceptable in all respects.

<u>Property</u>	<u>Target Spec.</u>	<u>Blend 19039</u>
Specific Visc.	0.29 - 0.33	0.326
Dry Time, Read	12:00 max.	7:45
Contamination	8 - 45	6 - 16
Particle Size, 40 mesh	Trace, max.	T
60 mesh	-	T
80 mesh	-	12
100 mesh	-	24
140 mesh	-	40
200 mesh	-	19
Pan	-	8
Robbin Color	-	Better than std.
Heat Stability	-	Better than std.

D. Quantity: Cycle times for the two batches were 10.3 and 10.4 hours. No unusual delays were encountered.

III. CONCLUSION

This experiment successfully achieved the objective of providing 85 Bldg. with a low viscosity resin (for evaluation purposes).

Archie P. Torrenzano
Archie P. Torrenzano

Ref. 1 Final Report "Opalon X-62, Limited Procedure P88-53",
A. P. Torrenzano, 8/30/60.