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Escambia
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Air Products and Chemicals
INC.

ESCAMBIA PLANT
INTEROFFICE MEMORANDUM

To: R. R. Spiegelhalter

Date: 4 April 1978

From: K. J. Femrite

Copies:

Re: Monthly Report,
March, 1978

Analytical procedures to determine low level impurities and the active oxygen content of PVC initiation catalyst were obtained from the manufacturer. The AO content of several different lots has been determined. The results agree to those reported by the manufacturer. A VPC method for the minor impurities has not been fully implemented.

A series of samples of recovery system water were analyzed for hydroquinone. The samples were taken to determine if hydroquinone is being distributed throughout the recovery system to minimize polymerization in transfer lines.

A customer complaint from Clopay was investigated. The customer's complaint was foreign contamination. The compound sample returned from Clopay contained blue crystalline particles along with material that looked similar to polyethylene. Both particles are foreign to the Pace PVC plant. Clopay is reputed to use a blue toner when compounding resin.

A customer complaint from Premier was also investigated. The customer claimed an excessive or high gel count. The samples returned from Premier were analyzed, and a much higher gel count was found than on the original compartment and composite samples. Pace results follow those of Premier but are about twice as high. Allentown technical services determinations are higher still.

The fisheye (gel count) control resin average this month is 154 ± 28 gels per square foot. At the 95% confidence level the precision of the determination is ± 56 gels per square foot or $\pm 36\%$ relative. These values are the same as those of last month.

The dry blend time (DBT) control resin average this month is 253 ± 16 seconds. At the 95% confidence level the precision of the DBT determination is ± 32 seconds or $\pm 13\%$ relative. These values are the same as those of last month.

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The inherent viscosity (IV) control resin average this month is 0.930 ± 0.006 units. At the 95% confidence level the precision of the determination is ± 0.012 units or $\pm 1.3\%$ relative. The 95% confidence level values are the same as those of last month.

A series of "blind" samples were introduced this month in an effort to help define the reproducibility and precision of the PVC analytical tests. All samples were taken from a 50 lb. bag of resin and submitted for analysis periodically during the month. The results from only nine analyses are:

Analytical Test	Range of Results	SD at 95% Confidence Level	Average	Relative ⁽²⁾ Standard Deviation
(1) IV	0.922-0.953	± 0.020 units	0.936	± 2.1
DBT	228-270	± 26 seconds	256	± 10.2
FE	102-246	± 110 gels/sq. ft.	169	± 65.1
Dry Cont.	56-120	± 44 particles	85	± 51.8

(1) IV determinations were run in duplicate.

(2) Standard deviation/average $\times 100$

This data along with the data for control analyses from previous months suggests that the reproducibility and precision of the PVC analytical tests at the 95% confidence level for IV is ± 1 to 2%, FE is ± 30 -60%, DBT is ± 10 -15%, and DC is $\pm 50\%$. Screen (PSD) determinations on the same resin show the following data:

Screen Mesh Number	Percent Retained, Avg.	Standard Deviation at 95% Confidence Level	Relative Standard Deviation
60	1	2	200
80	32	6	18.8
100	32	4	12.5
120	23	4	13.0
140	6	2	33.0
200	5	2	40.0
PAN	1	2	200

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Working Atmosphere Monitoring

Personnel monitoring samples for VCM consists of an 8-hour time weighted average (TWA) sample and a 15-minute TWA sample per man per month assigned to PVC production. Laboratory and maintenance personnel are monitored by a single 8-hour TWA sample per man per month.

Ninety-one percent of the 8-hour TWA samples analyzed were below OSHA standards for VCM exposure. Eighty-six percent were below the OSHA action level of 0.500 ppm. All but one of the 15-minute TWA samples were below OSHA standards for VCM exposure. Exhibit I details VCM exposure and its frequency of occurrence.

Analytical and sampling problems have arisen for monitoring MNBA and DNBA in the Amines No. 2 unit. Work is underway to resolve the sampling and the analytical problems. The VPC analytical column was inadvertently ruined. The column packing has been on backorder, but the supplier has been out for some time as the column packing is in great demand.

Area monitoring samples for trichloroethylene (TCE) in PVC were taken this month. Eight samples were taken on the reactor floor of the old PVC production building during a 2160-0 production run. All of the samples were 8-hour TWA samples with a sample taken at each end of the reactor floor. All of the determinations were less than 5 ppm. Draeger tubes for TCE in air were also used throughout the production run. These showed no detectable levels of TCE. Personnel monitoring is planned during the next 2160-0 production run.

Personnel samples for carbon monoxide in the MeOH synthesis portion of the compressor house were taken this month. The determinations all show levels below 10 ppm in air. More monitoring is planned. Monitoring uses a long duration Draeger tube for the evaluation. Exhibit II details CO exposure.

Monitoring for particulates in Area B again shows personnel exposure that exceeds OSHA standards for respirable nuisance dust. Area samples were taken inside the bulk warehouse and above the bulk car loading system. Personnel monitoring of the men at work in these locations was carried out at the same time. Exhibit III details particulate exposure.

Monitoring for alcohols, DMF (Chemical Cleaning) and ammonia were not scheduled for this month. DMF production was not in operation.

K. J. Femrite

KJF:yt
Attachments

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Exhibit I

Personnel Monitoring for VCM

OSHA Standard: 1 ppm 8-hour TWA
5 ppm 15-minute TWA

Fifteen-minute TWA

<u>Concentration Range</u> <u>PPM VCM</u>	<u>Frequency</u> <u>(Percent)</u>	<u>Number of Samples</u> <u>Analyzed</u>
>5	4	1
1.01-5	4	1
0.51-1	11	3
0.0-0.50	<u>85</u>	<u>23</u>
Total	<u>100</u>	<u>28</u>

Eight-Hour TWA

<u>Concentration Range</u> <u>PPM VCM</u>	<u>Frequency</u> <u>(Percent)</u>	<u>Number of Samples,</u> <u>Analyzed</u>
>5	0	0
1.01-5	9	4
0.51-1	5	2
0.0-0.50	<u>86</u>	<u>38</u>
Total	<u>100</u>	<u>44</u>

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Exhibit II

CO in Air

OSHA Standard: 50 ppm

<u>Date</u>	<u>Location</u>	<u>CO, PPM</u>
3/8	MeOH Synthesis	9.0
3/10	MeOH Synthesis	3.4
3/16	MeOH Synthesis	4.8
3/21	MeOH Synthesis	5.2
3/28	MeOH Synthesis	1.9
3/29	MeOH Synthesis	0.7

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Exhibit III

Respirable Dust in Area B

OSHA Standard: 5 mg/m³

<u>Date</u>	<u>Location</u>	<u>mg/m³</u>
3/17	Bulk car loading platform	8.59
3/17	Bulk warehouse	12.11
3/17	Bulk car loading personnel	8.47
3/17	Bulk warehouse loader personnel	5.21

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