

CELANESE CHEMICAL COMPANY
Chemcel Plant
Bishop, Texas

Laboratory Department Summary
- December, 1972 -

RGB 2-73

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CELANESE CHEMICAL COMPANY

Chemcel Plant

Bishop, Texas

To: Mr. L. L. Schweers

From: R. G. Brandt

RGB 2-73

January 15, 1973

Laboratory Department Summary

- December 1972 -

Status of Laboratory Department projects active during December are described below. Current priorities and department statistics are attached.

MO Support - Becker, Harris, Dupree

As a result of a high AMR shutdown on December 18, 1972, MO II blew 3 reactor beds (Nos. 3, 6, 7) and melted one (No. 1). All 12 reactors were charged with new catalyst and 10 out of the 12 used monel support screens instead of copper. Plans are to evaluate the effect of monel support screens on carbon make and efficiency when the unit is lined out.

An analytical method for determining parts per billion (ppb) iron pentacarbonyl in liquid methanol samples has been developed and will be used to define the source of MO catalyst iron contamination.

Formalin Ion Exchange Resin - Harris, Heinz

Dow's XFS-4048 resin has been in 50% + formalin ion exchange service for two months and is performing well. An additional 150 ft³ of resin has been ordered and preshipment samples evaluated for putting a second anion into service with the XFS-4048 resin. A resin status report will be issued.

1,3 BG By-Product Butanol Recovery - Dupree

Batch distillation of 1,3 BG by-product butanol was found to yield a satisfactory grade of butanol for acetate production. A letter will be issued.

Paraform Quality - Kerr

Additional work is in progress to determine the effect of sodium content on the rate of insoluble polymer formation and foaming characteristics of paraform.

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This work is a continuation of studies aimed at resolving Monsanto's (St. Louis) quality complaints.

Formalin Quality - Kerr

Analyses of MO product formalin for carbon content have shown typical levels of 5-10 ppm with excursions exceeding 100 ppm. Analyses of PE and Paraform show that significant amounts of this carbon carry through to the finished product.

Since Paraform generally received VPO formalin which contains less than 1 ppm carbon, a paraform quality stepchange is anticipated with the VPO shut-down. Carbon in paraform is expected to increase from <1 ppm to 10-20 ppm after the unit converts to MO formalin feed.

Propanol Quality - Lease

The concentrated residual odor of VPO propanol has increased with the introduction of Carbide propionaldehyde as feed to utility aldol hydrogenation. Utility Aldol product combines with AL Hydrogenation product prior to propanol purification. G.C. analysis fails to show any new impurities.

Pentaerythritol Quality - Kerr

PE (Tech grade) quality declined during the first week of January. Natural color has been borderline. Studies are in progress to locate the cause of the problem.

Propionaldehyde Storage Stability - Kerr

Lab storage data show incoming propionaldehyde is easily oxidized by air (causing high acidity buildup) and should be stored under methane. A report has been issued.

Molybdenum Promoted Nickel Catalyst - Jackson

Lab batch hydrogenation runs with the molybdenum nickel catalyst (Raney 4300) and acetaldehyde are complete. The results show the Raney 4300 to be more active than Raney 4200 (presently used) for converting acetaldehyde to 1,3-B.G. Analytical data show a reduction in 1,3 BG heavy ends and butanol make using the Raney 4300. A report will be issued. Plans are to evaluate the Raney 4300 catalyst for propionaldehyde hydrogenation next.

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TMP Debottlenecking - Castoro, Prinz

Lab glassware piloting of the TMP extractor (T-312) is continuing. Work is in progress to determine if extractor rates can be increased while decreasing the solvent to feed ratio.

Sodium Formate for Virginia Chemical Co. - Prinz, Dow, McGehee

A sample of "A" Mother Liquor from the PE process was sent to Virginia Chemical Co. for evaluation as an alternate sodium formate source, (RGB 121-72).

Evaluation of Japanese PE - Dow, McGehee

Two 50-lb samples of KOEI PE (Pure and Tech grade) were evaluated. The pure grade material was comparable to our mono PE, but the Tech grade sample was inferior (low mono PE content, high ash, high formal content).

Waste Treatment Studies - McReynolds

The activated sludge waste treatment plant continued to experience foaming and flocculation problems most of the month. Outfall water quality was poor with BOD's of 100-400 ppm, COD's of 1000-1800 ppm, and suspended solids of 130-270 ppm.

Ticona reports serious foaming problems are caused by trioxane at the 0.1% level. We have experienced levels of 0.03 to 0.20%. Most recent concentrations have been in the range of 0.07%. Butyraldehyde heels from tankcar washings were found to cause significant foaming in Lab tests. All detergent usage is also suspect. Efforts are being made to identify the foaming sources and eliminate them from BOD plant feed.

Lab tests are continuing to evaluate biodegradability of PE acrylate by-product streams.

Additional tests on trioxane indicate that it is aerobically biodegradable in the absence of other organics. We still do not know if it can be degraded under actual plant conditions.



R. G. Brandt

EJH/bb

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CURRENT PROJECT PRIORITIES

<u>Project</u>	<u>Priority</u>	<u>Chemist</u>
BOD Plant Rates	1	Mc Reynolds
Acrylates Biodegradability	2	Mc Reynolds
Tertiary Effluent Treatment	3	Mc Reynolds, Prinz
TMP De-bottlenecking	1	Prinz, Castoro
Formalin Quality	1	Kerr
Pentaerythritol Quality	1	Kerr
Paraform Quality	1	Kerr
Post Aldol T-135 Res Recovery	2	Kerr
Celcon Support	1	Gary
Molybdenum Promoted Nickel Catalyst	1	Jackson
Air Emission	1	Dupree
MS Steam Savings	2	Becker
New Silver Catalyst Supplier	3	Becker
MO Optimization	1	Harris, Becker, Dupree
Sodium Formate lbs/gal Table	3	Harris

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STATISTICS

	<u>December</u>	<u>YTD</u>	<u>Prev. YTD</u>
Chemical Section Samples	5,769	60,851	59,814
Instrument Section Samples	3,145	29,938	24,044
Celcon Section Samples	<u>1,669</u>	<u>20,971</u>	<u>18,705</u>
Total	10,583	111,760	102,563
Sample Shipping - Domestic	79	1,810	2,670
- Export	35	117	436
- Celcon	12	138	1,292
- Other	<u>14</u>	<u>178</u>	<u>381</u>
Total	140	2,241	4,779
Technicians Overtime - Hours			
Chemical	135	854	499
Instrument	19	428	253
Celcon	44	395	1,060
Special Problems	<u>0</u>	<u>201</u>	<u>117</u>
Total	198	1,878	1,929
Shipments (No. of orders)	699	8,990	7,857
Delayed Shipments	0	34	14
Quality Waivers	0	13	5
Customer Complaints	2	21	8
Customer Complaints Accepted	1	16	5

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