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CEL-393

CELANESE CHEMICAL COMPANY
Chemcel Plant
Bishop, Texas

Laboratory Department Summary
- May 1973 -

RGB 43-73

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CELANESE CHEMICAL COMPANY
Chemcel Plant
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To: Mr. L. L. Schweers

From: R. G. Brandt RGB 43-73 June 7, 1973

Laboratory Department Summary
- May 1973 -

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

MO Support - Becker, Harris

Optimization studies of MO II and MO IV vaporizer blowdowns (to minimize iron entrainment) are complete (AFB 5,6-73, BPH 14,15-73). Work will be directed at evaluating the new high efficiency demister pad and methanol feed purification in the reflux of MO IV finishing column next month.

Water recycle from MS T-280 to T-279 is at the 18 gpm level (a 66% reduction in water recycle) with iron in the finished methanol at the 10-18 ppb level. This is probably the lower limit that can be maintained without sacrificing methanol quality. A report will be issued.

Seven samples of Engelhard silver catalyst were received and will be evaluated (sinter test and bench scale reaction efficiency) to determine if Engelhard can be approved as an alternate catalyst supplier.

Formcel Color Problem - Prinz, Kerr

Formcel colors continue to be a problem in spite of the fact that T-185 overhead methanol is being tanked. Current efforts are focused on condensate quality as the probable cause.

Weak Formaldehyde Quality - Castoro, Harris

A report (CC 4-73) was issued recommending installation of static mixers for the TMP Unit and an oil decanter system for the weak formaldehyde unit to reduce unsaturates in the weak formaldehyde.

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Paraform Support - Prinz, Lease, Harris

Analytical work is in progress to define which variables affect paraform production rates and quality.

A scale sample from the third stage evaporator reboiler tubes (obtained during boil-out) was identified as polymerized methocel (formalin stabilizer).

Samples of current paraform flake were forwarded to MTDL for applications testing. These tests are being conducted to determine if current flake quality is any different from VPO derived flake.

PE Quality - Kerr

PE color remains marginal as it has since start-up of the weak formaldehyde unit. The colored compounds were identified as polyhydroxy, unsaturated, carbonyl compounds. Formaldehyde and acetaldehyde feed quality are being evaluated.

PE Debottlenecking - Castoro

An analytical method is being developed for the PE-AML stream to measure PE and by-product losses during EVOP studies.

Molybdenum Promoted Nickel Catalyst - Jackson

R-4300 catalyst has been used successfully in 1,3 B.G. for two months. A status report will be issued.

Air Emissions - Jackson

Additional analyses planned to meet TACB reporting requirements include particulates on the PE scrubber (T-299) vent and bag house exhaust. Ash analysis of incinerator feed will also be required to calculate particulate emissions from this source.

In OSHA areas, air analyses for asbestos, MDI, and formaldehyde will be made in the Celcon area.

Analyses of butanol vent scrubber (T-192) vent were reported in JMJ 7-73.

Analysis of incoming acetaldehyde tankcar vents after unloading shows that the AcH content varies from 1.6 to 12.7 mole %. A report will be issued

ASTM Support - Dow

Analyses of several urethane grade esters were performed in support of ASTM.

Propyl Acetate Quality - Brandt

A recent evaluation of propyl acetate produced from Carbide propanol in January shows that long term storage stability is poor. Even the best ester we made during this run developed considerable concentrated residual odor after four months. Re-examination of propyl acetate retains from the last three runs show that the last run had worse storage stability than the first two. These findings aren't too surprising since the propanol being purchased from Carbide was getting progressively higher in α methyl valeraldehyde content.

We cannot recommend any further propyl acetate runs using Carbide propanol unless a significantly better grade can be obtained.

Condensate Reuse - Harris

MS process condensate was evaluated and found acceptable for boiler feed after de-aeration (CO_2 removal).

Weak formaldehyde pressure column (T-275) residue was evaluated. The stream contains 0.27% acid, 2500 ppm carbon, and 9 ppm iron which appears to rule out further reuse.

Waste Treatment Studies - Mc Reynolds

Bench scale studies on six plant sumps were completed during the month. Four sumps representing about 10 gpm effluent were found acceptable as feed to the BOD plant. These were MH-2 Sump, TO-2 Sump, Celcon Pilot Plant Sump, and MO III Sump. Two additional sumps representing about 45 gpm were unacceptable as BOD plant feed. These two were Polyol Sump ($\sim$25 gpm) and TO-1 Sump ($\sim$20 gpm). A report will be issued.

Future work will be directed toward identification of the individual streams which make the Polyol and TO-1 sumps unacceptable. The Main sump will also be evaluated after it has been cleaned of nickel catalyst.

Anaerobic tanks are being fed a mixture of polyol, paraform, and Celcon sumps to determine effectiveness of this pre-treatment approach. One

anaerobic system was constructed with packing to support the bacteria. The second anaerobic system was constructed without packing and utilizes a stirred vessel to maintain bacteria in suspension.

R. G. Brandt

RGB/bb
Attachments: 2

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CURRENT PROJECT PRIORITIES

	Priority	Chemist
Waste Treatment	1	Mc Reynolds
Formalin Quality	1	Lease
Paraform Debottlenecking and Quality	1	Lease, Prinz
Pentaerythritol Quality (Color)	1	Kerr
Formcel Color Problem	1	Kerr
Propanol Support	2	Kerr
Post Aldol T-135 Res. Recovery	2	Kerr
Pentaerythritol Debottlenecking and Efficiency	1	Castoro
TMP Debottlenecking	2	Castoro
Weak Formaldehyde Recovery	2	Castoro
Celcon Support	1	Gary
MO Optimization	1	Becker, Harris
New Silver Catalyst Supplier	1	Becker, Harris
MS Steam Savings	2	Becker
Molybdenum Promoted Nickel Catalyst	1	Jackson
T-135 Chloride Balance	1	Jackson
Air Emissions	1	Jackson

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STATISTICS

	May	YTD	Prev. YTD
Chemical Section Samples	4,637	23,642	24,062
Instrument Section Samples	1,873	10,807	11,190
Celcon Section Samples	2,267	8,175	9,663
Total	8,777	42,624	44,915
Sample Shipping - Domestic	175	843	842
- Export	5	28	32
- Celcon	10	75	42
- Other	30	141	64
Total	220	1,087	980
Technicians Overtime - Hours			
Chemical	21	375	367
Instrument	0	65	259
Celcon	311	866	241
Special Problems	16	34	187
Total	348	1,340	1,054
Shipments (No. of orders)	942	3,919	3,567
Delayed Shipments	0	11	16
Quality Waivers	0	0	13
Customer Complaints	2*	6	9
Customer Complaints Accepted	1	4	8

* 44% HCHO to Carbide - Resin made from the material had a red color.

50% HCHO to Georgia Pacific, Albany, Ore. - High paraform content in the formalin.

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