INTER-OFFICE MEMO **TENNECO CHEMICALS, INC.**

TO	W. Miringoff	AT	Burlington	DATE	January 2, 1975
FROM	J.W. Poarch	AT	Burlington	COPY TO	H.B. Carr W.C. Champion W.F. Gabel Dr. R.T. Gottesman Dr. L. Gross Dr. P.A. Lobo R.S. Miller Dr. M. Rosen G.I. Rozand P.R. Scarito A.C. Siegel J.T. Sweeney C.G. Thompson T.T. Zuhl J.J. Zullo P.E. - Burlington Pilot Plant - Flemington File
SUBJECT	PROCESS ENGINEERING MONTHLY REPORT December, 1974				

I. BURLINGTON

A. Suspension

1. Comprehensive Stripping Program

Process Engineering joined forces with the R&D Polymer Group to run a rigorous stripping program on both homopolymer and copolymer in the Burlington Homopolymer Plant Reactors #10 and #11 were coupled with stripper #3 for type 315 copolymer evaluations and the remaining Homopolymer Plant with stripper #4 was used for type 10.5R and 501 homopolymer formulations. The results which will be reported in detail on a separate report were quite encouraging. The following is a summary:

a. Homopolymer Type 10.5R

(1) Four hours in the stripper at 165°F produced slurries ranging from 19 to 87 ppm VCM with product averaging 29 ppm. Color was good.

(2) Forty-five minutes in the stripper under full recovery at 210°F with post cooling produced a product which was only slightly more colored than the above. Slurry analyses were N.D. to 10 ppm.

b. Homopolymer Type BR-501

(1) Four hours in the stripper at 165°F produced slurries averaging 6 ppm with dried product ranging from 1.6 ppm to 3.0 ppm. Color was good.

(2) The higher temperature technique described above produced slurries with N.D. levels. The dry product showed levels of 0.9 to 1.9 ppm. Color was only slightly worse than above. This apparent contradiction could be due to the differences in analytical techniques between slurry and dry product.

c. Copolymer Type 315

(1) Ten batches of 315 (in five-batch lots) were treated with vinyl acetate following a 1.5-hour stripping at 165°F. A one-hour soak period was then followed by a two-hour strip at 165°F. This technique produced slurry ranging from 42 ppm to 277 ppm. The dryer samples ranged from N.D. to 105 ppm. Color was good.

(2) A ten-batch "control" was run for the above technique consisting of four hours in the stripper at 165°F under full recovery. Slurries ranged from 1.8 to 36 ppm with dryer samples ranging from 6 to 84 ppm.

The great variation in results with the copolymer stripping is typical of past efforts and still cannot be explained.

2. Further Stripping Tests

Following the above program, the plant agreed to strip BR-501 for thirty minutes wunder full recovery at 210°F followed by cooling to 165°F. Results to date indicate N.D. in the slurry.

3. Special Copolymer 391 - LOP 1040

The above LOP is being run to satisfy a customer request for higher bound acetate type 315. Close attention will be given to the bound acetate in the first two lots to try to target for 15.5%.

4. Reactor Recovery Evaluation - LOP 1034 (L. Medeiros)

A repeat "bottom recovery" (with intermediate nitrogen purge) was accomplished. Final residual VCM averaged 1440 ppm (see November report for tabulated results of all runs). Duplicate runs of the "water fill", "top recovery" and "bottom recovery" indicate the ability to reduce reactor vapor to an area of 500 to 1500 ppm of VCM. The residual VCM retained in the glass and wall build-up may be limiting.

The jacket fill at 170°F - 180°F approximates the heated jacket (170°F - 180°F) with either top or bottom recovery with the one advantage of requiring only a small fraction of the nitrogen usage of the latter two. A combination of the bottom recovery followed by a water fill probably would yield the best results. A bottom recovery system with steam injection in the top may yield better results than attained to date and could be the only change of attaining near "0" ppm. No run of this type is scheduled because there is some question as to whether it is safe to inject steam into a vessel containing VCM and water vapor.

5. Vent Condenser Totalizer Meter (L. Medeiros)

All components for the installation of the vent condenser metering/totalizing were assembled and installation begun. All that remains in the installation is the tie in.

6. Set-Up Batch Investigation

During the special stripping tests, copolymer formulation C-3360-134 for type 315 was run in reactors #10 and #11. Toward the end of the evaluation program, two batches set up in these reactors. A third batch charged between these two did not set up but was a "floater" indicating failure of the suspension system. The above three batches were all charged with a new lot of gelatin.

Investigation of this occurance points to a general problem with the suspension system in that the particle size was finer than normal. The Pilot Plant experience with type 315 copolymer indicates problems with the suspension system. These factors combined with the change in lot of gelatin point to the cause of the set-up batches. Analytical results confirm that gelatin had been charged.

B. Dispersion

1. Variation in DHW-80 Quality

Henkel supplies us with DHW-80 made from two separate sources of oleic acid - Darling and Groz. A recent shipment of DHW-80 was received made entirely from Groz-supplied oleic. A sudden shift to high Severs visocisty resulted in "A" Plant with "B" Plant Severs being marginally acceptable on the high side. The effect was also felt on AR-901 when two batches charged with this lot of DHW-80 also gave out-of-specification high Severs.

A change was made to six-hole plates in "A" Plant but slop resulted. The plant was brought under control when a shipment of all Darling type DHW-80 was mixed with the Groz material.

Production is now specifying that all subsequent DHW-80 be from a mixture of oleic acid sources.

Process Engineering has recommended that Henkel develop a gas chromatography scheme to analyze the emulsifier for the various fatty acid fractions. A specification should be established on these fractions. Our Quality Control group should be involved in this effort.

II. FLEMINGTON

A. Recirculation Heat-Up and Stripping (L. Medeiros)

Process Engineering and Pilot Plant joined in a program evaluating the recycle steam stripping loop. W. Miringoff and R.S. Miller have assembled resulted from the runs accomplished.

The runs included eight batches recycle heated to 165°F for four hours with jacket cooling (several of which had high water dilution from a leaking pump seal), three batches recycle heated to 210°F for fifteen minutes then evaporative and jacket cooled to 165°, a half batch recycle heated to 165° for four hours and a half batch with normal stripping (no heat, but excessive agitator splash) and finally a batch run which included one pass through the heaters after normal recovery down to full vacuum.

The low temperature stripping produced slurries with residual VCM ranging from 19 ppm to 275 ppm. Dryer results were 1.4 to 20 ppm. Color was good.

The high temperature batches had slurry values of 86 to 145 ppm with the product ranging from 5.1 ppm to 16 ppm.

B. Waste Treatment

A letter is being sent to Elam and Popoff detailing the waste treatment instrumentation. It is our understanding that formal approval for our system will be received following their review of instrumentation.

C. Centrifuge Modifications

The conversion of "B" side centrifuge is scheduled for Monday, January 6, 1975. None of the spare parts ordered have been received as yet. L. Iszak will supply necessary parts which we will replace. All efforts to expedite these parts have failed to date.

D. Solids Waste Disposal

We have received a proposal from Rollins Environmental. Costs seem

very high. A second source, Gaess Environmental Service, has been in and presented with the problem. We are awaiting a proposal from Gaess.

E. Steam Sparging

Steam sparging via a straight downcomer and deflector did not prove operable due to a high degree of rumble and vibration encountered with low steam flows. This open 4" steam line was then modified such that a flange with three 1-1/2" 45° ells was attached to the bottom of the pipe. Once again, rumble and vibration were encountered at low steam flow. The steam valve was slowly stroked open with little increase in vibration. This multiple elbow system has been replaced with a 2" Schutte-Koerting steam sparge nozzle. Tests are to begin shortly.

III. GENERAL

L. Medeiros and J.W. Poarch will be leaving for the Pasadena start-up on January 12, 1975.

Mr. Larry Schappell will join the Process Engineering group on January 6, 1975.

H.H. Duhamel submitted his resignation effective December 31, 1974.

J.W. Poarch (jst)

J.W. Poarch

JWP/jst

TO L. Medeiros FROM December 1, TO December 31, 1974

TENNECO INTERMEDIATES DIVISION ENGINEERING TIME DISTRIBUTION - MONTHLY (SALARY)

PROJECT NUMBER	ACCOUNT NUMBER	JOB DESCRIPTION	SUN	MON	TUE	WED	THU	FRI	SAT	TOTAL
		Flemington Recycle Steam Stripping		24	16	8	16	16		80
		Burlington Special Recovery & Vent Condenser		8	8	8	8	8		40
		Holidays			8	16				24
		Vacation		8	8		8	8		32
		TOTALS		40	40	32	32	32		176

ENG. FORM #29

COLORITE 011000

NAME J.W. March FROM December 1, TO December 31, 1974

TENNECO INTERMEDIATES DIVISION ENGINEERING TIME DISTRIBUTION - MONTHLY (SALARY)

PROJECT NUMBER	ACCOUNT NUMBER	JOB DESCRIPTION	SUN	MON	TUE	WED	THU	FRI	SAT	TOTAL
DEI-377		Stripping								112
		Meetings								16
		Burlington Plant Support								16
		Fixed Monitoring System								16
		Holiday								16
		TOTALS								176

ENG. FORM #29

COLORITE 011001

NAME M. S. Wilkenfeld FROM December 1, TO December 31, 1974

TENNECO INTERMEDIATES DIVISION ENGINEERING TIME DISTRIBUTION - MONTHLY (SALARY)

PROJECT NUMBER	ACCOUNT NUMBER	JOB DESCRIPTION	SUN	MON	TUE	WED	THU	FRI	SAT	TOTAL
4600	CAR 74 - 014	Flemington Conversion		24	32	16	24	32		128
DEI - 377		Steam Stripping Evaluation		8		8	8			24
		Holiday			8	8				16
		Vacation		8						8
ENG. FORM #29		TOTALS		40	40	32	32	32		176

COLORITE 011002