

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

TO Distribution List AT DATE June 25, 1974
FROM Dr. R. T. Gottesman AT Piscataway COPY TO
SUBJECT MONTHLY SUMMARY - JUNE 1974

Attached are copies of the Monthly Summary reports for June 1974 covering the activities of the Piscataway laboratories and associated pilot plants at Piscataway and Flemington.

R. T. Gottesman
R. T. Gottesman

RTG/ec

Attachments

Distribution List

Dr. G. Baum
Mr. H. Carr
Mr. M. Freifeld
Dr. D. A. Keyworth
Dr. P. A. Lobo
Dr. T. E. Maggio
Mr. W. Miringoff ✓
Mr. F. X. Ritter
Dr. M. Rosen (2)
Mr. G. I. Rozand
Mr. D. I. Smalley
Mr. C. G. Thompson
Mr. M. E. Wagshul
Dr. L. A. Wigdor
Mr. T. T. Zuhl

COLORITE 011640

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

TO Dr. R. T. Gottesman

AT Piscataway

DATE June 24, 1974

FROM Dr. F. J. Buono

AT Piscataway

COPY TO

SUBJECT

MONTHLY SUMMARY - JUNE 1974NOTICE:**CONFIDENTIAL**

These papers contain confidential matters which are the exclusive property of Tenneco Chemicals, Inc.

No extracts therefrom or any use or disclosure thereof may be made except upon proper authorization and for the sole benefit of Tenneco Chemicals, Inc.

I. COATINGS INDUSTRYA. Microbiocides

1. Biocide and Compatibility Screening (E. DiBella, P. Minieri, G. Trautenberg, G. Tirpak)

(a) TOP Candidates

Biocide screening was completed on sixteen TOP candidates. None showed significant promise as can preservatives or fungicides.

*

Extensive evaluations have been completed on five maleimide candidates under consideration as vinyl biocides. The prime paint fungicide candidate, 2,6-Diethylphenyl maleimide, shows the most promise with efficacy superior to Fungitrol 11V, but not to Vinyzene BP-5. Should the toxicity of this material prove acceptable and current efficacy as a latex paint fungicide be maintained, limited customer sampling as a zone forming alternative to Fungitrol 11V can be initiated.

2. Can Preservative

Formal EPA efficacy, toxicity and chemistry protocols on Nuosept 95 have been submitted and are awaiting approval.

B. Driers

1. Calcium Based LOD Inhibitor (L. Schinasi, G. Kagan, M. Landau)

Drying tests in paints after two months' aging at 120°F of four TOP prepared experimental 7% calcium based loss-of-dry inhibitors, indicate a preparation of Canadian naphthenic acid and 3% Nuvis HS (D050-65) is the most promising candidate in preventing loss-of-dry (see table below).

MONTHLY SUMMARY - JUNE 1974

June 24, 1974

THRU DRY TIMES - RED ENAMEL PCL 724 (Hours: Minutes)

	<u>Blank</u>	<u>2.5% Nuact</u>	<u>2.5% Nuact NOPB</u>	<u>1.25% Canadian 14% Calcium Based LOD LN962</u>	<u>2.5% TOP 7% Calcium Candidate D050-65</u>
Initial	9:00	7:00	7:00	5:45	6:00
2 Months @ 120°F	15:45	10:00	8:30	8:15	8:35

Staining tests on the light sensitive discolored material and an unexposed sample show no appreciable differences when added to a white enamel. In addition, both samples are not photosensitive in this same white enamel.

At the request of Marketing as discussed at the recent Paint Industry Task Force Meeting, current studies on this product will be finished but no further work will be initiated.

C. Nuosperse HOH (G. Kagan, M. Landau)

In view of a potential water sensitivity problem (adhesion) with Nuosperse HOH uncovered by DeSoto with their Dew-Freeze-Vacuum test procedure, materials and equipment are being collected to evaluate Nuosperse HOH vs. Tamol 731 using this procedure. This test may also help to clarify another potential problem with Nuosperse HOH in semi-gloss (low gloss) paints reported by Sherwin-Williams.

* D. Other Additives (G. Kagan, G. Trautenberg)

During the latter part of May, Mr. Leo Feit, an independent inventor, visited the laboratory to demonstrate an additive for alkyd enamels which would permit the dilution of the paints (for substantial cost reduction) by 45% using water (30%) and mineral spirits (15%). Mr. Feit claimed that the "diluted" enamel performance would be generally upgraded by the prior addition of 5% of his additive. Evaluations have shown that most of the paint characteristics, i.e., viscosity, grind, optical characteristics and initial gloss of a commercial enamel modified with Mr. Feit's additive was comparable to that of the unmodified enamel. However, after aging for one week at 120°F, the modified material lost most of its gloss (18-20 units) while the control showed essentially no change. Exposure of these enamels in a Weatherometer for 32 hours also showed an unacceptable loss of gloss for the modified enamel.

D. Other Additives (continued)

It has been concluded, particularly in view of the unfavorable gloss responses, that Mr. Feit's additive, with respect to paint dilution, would not be acceptable for promotion to the Paint Industry. Since he also claimed that his additive would be effective as a can preservative and mildewcide, it has been evaluated in an alkyd enamel and PVA paint to determine the efficacy of the product for these applications. Results indicate that it is not effective as a can preservative and leached paint films show no fungicidal activity. Based on these results, no further work is warranted.

II. LUBRICANTS

* A. Crankcase Lubricants (M. H. Knapp, R. G. Smith)

An agreement has been reached with Chevron Chemical Company for the cooperative development and testing of an SE crankcase oil. Several oil blend samples, including engine test retains, plus used test engine parts have been sent to their research laboratory at Richmond, California, for analysis and evaluation. Initial results of these tests are expected by mid-July. At this time a cost-shared engine test program will be developed.

Ultrachem's Chemlube 10W/40 has been evaluated and is being analyzed. Initial analytical results indicate that although it is based on DTDA (as both our candidate and Amzoil are), it appears that there are significant differences in the additive system. It is possible that they are using Lubrizol additives rather than a Chevron package. The laboratory evaluation shows that the Chemlube oil has comparable physical properties to both Amzoil and low ash Anderol 472. The performance in the FL-10 bearing corrosion test appears to be significantly poorer than Amzoil. The bearing appearance was comparable to that produced by the Anderol 472 (which contains Lubrizol additives). The significance of these bench test results is not known, however, since no direct correlation between these tests and engine performance has been established.

MONTHLY SUMMARY - JUNE 1974

June 24, 1974

A. Crankcase Lubricants (continued)

EVALUATION OF CHEMLUBE 10W/40

<u>Test</u>	<u>Chemlube 10W/40</u>	<u>Amzoil 10W/40</u>	<u>Anderol 472 (Low Ash)</u>
Viscosity @100°F, cSt	86.8	84.1	94.0
Viscosity @210°F, cSt	15.0	14.4	15.6
Viscosity Index	194	190	188
Pour Point, °F	-60	-60	-50
Flash Point, °F	460	450	450
Acid Number, mg KOH	2.04	1.2	1.8
Sulfated Ash	0.7	0.9	0.8
Evaporation, 22 hours @210°F, % loss	0.3	0.3	0.9
Four-Ball EP, kg	200	170	230
Four-Ball Wear, mm	0.3	0.3	0.4
Falex EP, lbs.	1900	1150	2600
FL-10 Oxidation Corrosion, 190°C			
△ Viscosity, %	+13.4	+ 1.3	+80.3
△ Acid Number	+ 0.4	+ 0.5	+ 1.8
△ Bearing Weight, mg	+ 5.4	+ 1.6	+10
Bearing Appearance	Poor	Very Good	Poor
SOD Lead Corrosion, loss, mg/cm ²	- 0.03	- 0.01	- 0.03

B. Two-Cycle Engine Lubricant (M. H. Knapp, R. G. Smith)

The test engines and dynamometers have been received. Installation of this equipment has been tentatively scheduled by Maintenance for mid-July. Upon completion of installation, test procedure development will begin.

F. J. Buono
F. J. Buono

FJB/amp

COLORITE 011644

To Dr. R. T. Gottesman At Piscataway

DATE June 25, 1974

FROM Dr. A. J. Deinet At Piscataway

COPY TO

SUBJECT MONTHLY SUMMARY - JUNE 1974NOTICE:**CONFIDENTIAL**

These papers contain confidential matters which are the exclusive property of Tenneco Chemicals, Inc.

No extracts therefrom or any use or disclosure thereof may be made except upon proper authorization and for the sole benefit of Tenneco Chemicals, Inc.

I. CHEMICALS/SPECIALTIESA. Fuel Oil Additives (A. Fischer)

- * A successful plant run has been carried out at Elizabeth utilizing the new Manganese 12% formulation based on the use of n-heptanoic, 2-ethyl hexoic and neodecanoic acids. A sample was forwarded to Apollo Chemical for their evaluation.

A gelation problem encountered by Nutmeg Chemical Co. in blends of NuXtra Iron 9%, magnesium naphthenate 6% and calcium Naphthenate 5% (the latter not our product) was shown to be due to the calcium soap and readily correctible by addition of a small amount of 2-ethylhexoic acid. The customer was so advised. A sample of an experimental calcium naphthenate prepared from crude naphthenic acid which showed no gelation problems when blended according to the Nutmeg formulation was supplied for their evaluation.

II. PLASTICS INDUSTRYA. Additives1. Tin Stabilizers (S. Hoch, M. Spalding, E. Szabo, M. Ceprini, R. Caruso).

A dibutyltin oxide (DBTO) submitted by Albright & Wilson was evaluated as a raw material by conversion to V-1562 and BD-600. Functional evaluations against our standard products indicated the DBTO to be suitable.

The direct blending of V-1420, I-167 and V-1562 at ambient temperature was found to yield an acceptable V-1766 equal to that previously prepared from V-1420 and V-1528. This represents a simpler procedure and may be of use in avoiding the periodic haze problem encountered in plant preparations of V-1766.

A drum of functionally acceptable R-322 (dibutyltin bis dodecylmercaptide) was prepared in the pilot plant and shipped to Hampshire Manufacturing for evaluation.

- * A BD-602 (match to Argus Mark 1044) prepared from Conoco's Alfol 1216 yielded a product of equivalent functionality. A tridecyl alcohol based version was also prepared and is being evaluated. A shortage of Neodol 25 normally used in BD-602 has prompted this investigation for alternate alcohols.
2. Liquid Stabilizers (S. Hoch, R. Lally, J. Dunn)
 - * A barium stabilizer of 23% metal content based on a barium nonylphenate-tallate-carbonate system in which Ultrol 8 (a mineral oil type) is utilized as a diluent was developed as a replacement for Lubrizol 2106, a product in short supply. Evaluation on an equal metal content basis indicated comparable functionality (including plate-out characteristics) to the Lubrizol product which shows a 27% barium content. Attempts will continue to attain a 27% metal product to allow substitution on a pound for pound basis.
 3. Powder Stabilizers (S. Hoch, S. Kaplan)
 - * The Piscataway Stearate Plant carried out a preparation of I-282 (cadmium pelargonate) based on a recent R & D procedure without any processing problems. A sample of this product was blended in the laboratory to I-237 and I-248 types and these were found functionally equivalent to control samples when evaluated at Flemington. Since this approach represents simpler processing, its use in the stearate plant has been recommended.
 - * As a result of a shortage of N-99, a surfactant utilized in the Piscataway Stearate Plant to control extrusion characteristics, the laboratory has undertaken an evaluation of surfactants to develop alternates for this use. BASF-Wyandotte's Pluronic 104 was found to give excellent results with both calcium and zinc stearates. Atlas's Renex 20 and Brij 96 in a 1:1 mix gave good results with zinc, but poor with calcium stearates.
 4. Flame-Retardants (E. DiBella, M. Reale, H. Sidi, H. Gould, R. Caruso)
 - * The pilot plant has prepared 131 pounds of our R-525 candidate for flexible polyurethane foam, viz. bis(1,3-dichloropropyl tribromoneopentyl phosphate). Product properties including functional evaluation in foam were satisfactory and the material has been sent to Foam and Plastics for lab-line evaluation.

Our evaluation of Thermolin 101, ethylenedioxy bis(bis(2-chloroethyl)phosphate) in both high and low density polyether and polyester foams indicate that this new product offering by Olin is about twice as efficient as Fyrol-2. Further testing of this material at Foam and Plastics has been recommended.