

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

TO W.C. Champion

AT Flemington

DATE January 9, 1974

FROM F.W. Kanzler

AT Burlington

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SUBJECT Defoamer Evaluation

A total of seven defoamers were evaluated in the search for an acceptable FDA-sanctioned defoamer. The test was accomplished with the newly-set up apparatus in Burlington.

Test results, listed in Table I, list foam break ranges and foam build-up ranges and times. The ranges are arbitrarily assigned numbers from 0 to 100 on the test vessel. The foam break range is established after the "as is" run (re-cycle of a 1% sodium lauryl sulfate solution in water) has been completed and the defoamer solution has been added in 25 ml increments. The solution re-cycle is then started to establish foam build-up range and time. The re-cycle is stopped at 90 to eliminate overflow of the test vessel and to guarantee the uniformity of the test results.

The tabulated data gives rise to the following:

1. Foam Breaking Characteristics

Aside from tributyl phosphate, the Nopco Foamaster B, TDB and Hercules 845 showed good foam breaking properties.

2. Antifoam Characteristics

Excellent foam retardants were Nopco TDB and Hercules 845, while Nopco Foamaster NS-1 showed antifoam properties better than TBP.

3. Solubility

All defoamers tested showed good solubility with the exception of Nopco TDB. In addition, Nopco TDB showed accumulation of solids on the liquid surface of the test solution after re-cycling.

Based on the above, it is suggested that Process Engineering institute further evaluation of Nopco Foamaster B and Hercules 845.

Fred W. Kanzler
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Attachment.

FWK/jst

TABLE I
DEFOAMER EVALUATION

	<u>Cumulative Addition</u> ml	<u>Foam Break Range</u>	<u>Foam Build-Up</u>	
			<u>Range</u>	<u>Time secs.</u>
Tributyl Phosphate (TBP)	as is	-	42-90	39.7
	25	100-65	52-90	62.8
	50	93-63	50-90	55.0
	75	62-62	50-90	93.4

Remarks: After the 75 ml addition, foam broke immediately after stopping the re-cycle

Nopco Foamaster B	as is	-	42-90	43.5
	25	100-65	45-90	184.4
	50	98-72	60-90	155.2
	75	95-70	60-90	155.1

Remarks: Good foam breaking characteristics, large bubbles, very active break-up, good antifoam

Nopco Foamaster NS-1	as is	-	45-90	37.8
	25	100-65	45-90	208.8
	50	98-75	60-90	157.3
	75	98-75	65-90	128.3

Remarks: Poor foam breaker, good antifoam

Nopco TDP	as is	-	45-90	36.3
	25	96-65	46-90	279.2
	50	98-65	48- no foam build-up	
	75	not run		

Remarks: Excellent defoamer, excellent antifoam, however, not very water soluble, leaves agglomerates on liquid surface

Hercules 845	as is	-	45-90	43.4
	25	100-60	45-60	300.0
	50	65-58	45-52	300.0
	75	not run		

Remarks: Excellent defoamer, excellent antifoam, no solubility problem

Hercules 831

<u>Cumulative Addition</u> ml	<u>Foam Break</u> <u>Range</u>	<u>Foam Build-Up</u> <u>Range</u>	<u>Time</u> <u>secs.</u>
as is	-	45-90	36.2
25	100-68	50-90	55.1
50	100-65	50-90	80.2
75	100-77	60-90	92.3

Remarks: Not as good as TBP

Hercules 4142

as is	-	45-90	44.8
25	98-70	50-90	87.8
50	98-73	55-90	155.0
75	98-83	70-90	86.9

Remarks: Poor defoamer, antifoam characteristics equal to TBP

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1/9/74