



NAVAL RESEARCH LABORATORY

WASHINGTON, D.C. 20375

IN REPLY REFER TO:
6180-292:EJJ:jl
NRL Prob 61C05-19J

4/27/79

From: Commanding Officer, Naval Research Laboratory
To: Commander, Naval Ship Engineering Center (6124B)
Subj: Qualification testing of aqueous film forming foam
liquid concentrate fire extinguishing agent manu-
factured by the 3M Co.; results of

Ref: (a) NAVSHIPENGCCN ltr Ser 6124B/PAP 4123/24385
06N2 Ser 610

Encl: (1) Two copies of subject report

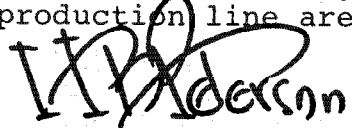
1. In accordance with reference (a), the subject product has been tested in order to determine compliance with the requirements of MIL-F-24385B. A report covering the work is forwarded herewith as enclosure (1).

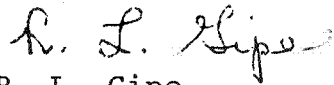
Copy to: (w/1 cy encl (1))
NAVSHIPENGCCN, (SEC6101F)
NAVSEASYS COM (09G3, 06N2)
Naval Weapons Support Center,
Crane, IN. (Code 304E)

Subj: Qualification testing of aqueous film forming foam liquid concentrate fire extinguishing agent manufactured by the 3M Co., results of

Ref: (a) Military Specification MIL-F-24385B dated 25 May 1978

1. An AFFF concentrate manufactured by the 3M Co. designated FC-780B Lot 501 was tested in accordance with the requirements of reference (a).
2. The test results obtained are summarized in Table I.
3. From the test data, it was concluded that the product met the stipulated requirements.
4. The torque required to remove the 5-gallon container caps exceeded the specified limit, paragraph 4.17.2. It is strongly recommended that the torque test be included in the quality conformance testing wherein random containers coming off the production line are tested for cap removal torque.


H. B. Peterson, Head
Fire Suppression Section
Combustion & Fuels Branch
Chemistry Division, Code 6180


R. L. Gipe
Fire Suppression Section
Combustion & Fuels Branch
Chemistry Division, Code 6180


E. J. Jablonski
Fire Suppression Section
Combustion & Fuels Branch
Chemistry Division, Code 6180


C. L. Whitehurst
Fire Suppression Section
Combustion & Fuels Branch
Chemistry Division, Code 6180

Encl (1) to NRL ltr.
6180-292:EJJ:jl
Prob. No. C05-19J

TABLE I

[illegible]

NAVAL RESEARCH LABORATORY
FIRE SUPPRESSION SECTION
WASHINGTON, D.C. 20375

Test Results for MIL-F-24385B Qualification (cont)

PARAG	REQUIREMENT	VALUE	3M FR-7808 LOT 501
3.3.2	Stability		
	(a) spreading coefficient		
	concentrate	> 3	4.80
	fresh premix	> 3	6.87
	sea premix	> 3	7.46
	(b) foamability		
	fresh water exp	> 6.0	8.5
	drain time	> 2.5	4.4
	sea water exp	> 6.0	8.5
	drain time	> 2.5	5.3
	(c) film formation		
	6% fresh water	no ignit	no ignit
	6% sea water	no ignit	no ignit
	3% fresh water	no ignit	no ignit
	3% sea water	no ignit	no ignit
	6% fresh premix	no ignit	no ignit
	6% sea premix	no ignit	no ignit
	(d) fire performance		
	3% fresh water ext time	< 65	65
	burnback	> 240	245
	3% sea water ext time	< 65	44
	burnback	> 240	370
	6% fresh premix ext	< 30	30
	burnback	> 320	345
	6% sea premix ext	< 30	28
	burnback	> 320	450
	(e) stratification		
	concentrate	none	none
	fresh premix	none	none
	sea premix	none	none
	(f) precipitation		
	concentrate	< 0.05	< 0.05
	fresh premix	< 0.05	< 0.05
	sea premix	< 0.05	< 0.05
	SHEET 2 of 4		

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FIRE SUPPRESSION SECTION
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Test Results for MIL-F-24385B Qualification (cont)

PARAG	REQUIREMENT	VALUE	3M FC-780B LOT 501
3.3.3	Compatibility (see attached sheets)		
3.3.4	Total fluorine content	report	0.791%
3.4	Fire performance		
	28 ft ²		
	3% fresh water ext	<65	59
	burnback	>240	340
	3% sea water ext	<65	53
	burnback	>240	492
	6% fresh water ext	<30	28
	burnback	>320	516
	6% sea water ext	<30	28
	burnback	>320	480
	50% sea water ext	<55	48
	burnback.	>150	150
	50 ft ²		
	6% sea water ext	<50	47
	bb	>300	350
	40 s	>300	317
	1260 ft ²		
	3% sea water 85% ext	<40	25
	Σ 40 s	>285	295
	6% fresh water 85% ext	<30	20
	Σ 40 s	>300	342
	6% sea water 85% ext	<30	18
	Σ 40 s	>300	354
	50% sea water 85% ext	<55	18
	Σ 40 s	>225	347
4.17.2	Cap removal torque	<50	95 Ave. (68-105)
	SHEET 3 of 4		

**FIRE SUPPRESSION SECTION
WASHINGTON, D.C. 20375**

Test Results for MIL-F-24385B
Qualification (cont) 246

MIXTURE:

Qualification (cont)

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