

AR 226-1651

FC-143
AMMONIUM PERFLUORO OCTANOATE
IN TEFLON®

M. A. Forte
A. M. Mokhtar
6/10/81

SPR000212
EID714129

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INGREDIENTS

Dispersion Process PPR

Level $\mu\text{g/g}$.

- Polymerization 3000
- Decantation:
 - Supernatant 2000
 - Dispersion as shipped to Spruance Fibers 1000

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EID714130

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FINISHED PRODUCT
EXPOSURE POTENTIAL
TEFLON® PRODUCTS

Yarn

	<u>Phosphoric Acid Distillation</u>	
	<u>Found</u>	<u>Theoretical</u>
Bleached	ND (<5)	1600
Sintered	ND (< 5)	1600

I Products

	<u>Phosphoric Acid Distillation</u>	<u>Methanol Soxhlet Extraction</u>	
	<u>Found</u>	<u>Found</u>	<u>Theoretical</u> *
I only 9450 Denier	320	475	660
I only 8100 Denier	250	355	700
I and T 9450 Denier	280	595	560
Kevlar® I and T	380	400	700

Key: I - Impregnated with Teflon® dispersion

T - Coated with Silicone oil

* - Based on Teflon® dispersion added

WATER EXTRACTION AT 37°C

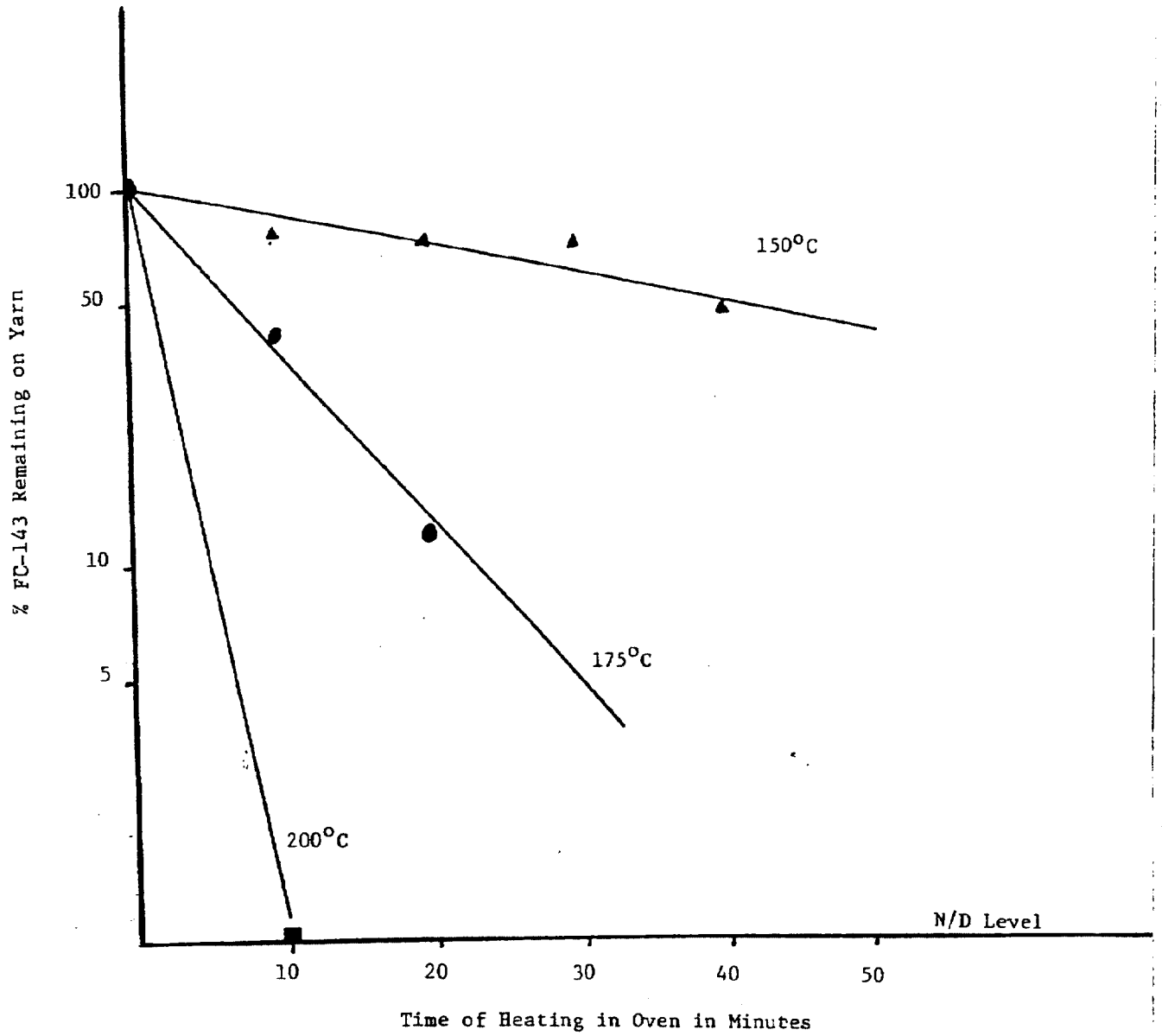
<u>Yarn ID</u>	<u>ppm Extracted from Yarn</u>	<u>% Extracted*</u>
I and T 9450 Denier	180	30
I only 9450 Denier	130	27
I only 8100 Denier	130	37
I and T Kevlar®	180	45

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LEVEL OF DEGRADATION

1 & T 9450d Yarn



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THE EFFECT OF HEAT
ON EXTRACTABILITY OF
FC-143 FROM YARN

<u>Time of Heat in Minutes</u>	<u>% FC-143 Remains on Yarn</u>		
	<u>150°C</u>	<u>175°C</u>	<u>200°C</u>
10	75	41	N/D
20	72	12	N/D
30	72	N/D	N/D
40	47	N/D	N/D

N/D Not Detectable < 5 ppm

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AIR ANALYSES LEVEL IN OPERATING AREA

PROVISIONAL LIMIT - 0.5 ppb

	<u>Location</u>	<u>Level PPB, V/V</u>
Spinning	SM-2	ND < 15
	SM-3	ND < 15
Scrubber Water (Calculated)		< 0.006
I Production		
	Kevlar®	ND < 15
	North of Machine	ND < 15

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EID714135

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EXTRACTABILITY OF FC-143 IN SPINNING

	<u>Level ppm</u>	
	<u>Washed Yarn</u>	<u>Wash Water</u>
SM-2	490	~ 1
SM-3	~ 60	4

Calculated FC-143 to BTS - 2.2 lb./day

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EID714136

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PROGRAM

Confirm levels of PC-143 in process streams
and effluents.

6/19/81

Perform additional air sampling in "I" production
area to insure compliance with 0.5 ppb provisional
limit

7/1/81

Establish procedure with increased sensitivity for
air and blood analyses

9/1/81

SPR000220
EID714137

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WATER EXTRACTION AT 37°C

FOR 64 HOURS

<u>Yarn ID</u>	<u>ppm Extracted from Yarn</u>	<u>% Extracted*</u>
I and T 9450 Denier	180	30
I only 9450 Denier	130	27
I only 8100 Denier	130	37
I and T Kevlar®	180	45

*Methanol = to 100 CF-143 on Yarn

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EID714138

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RATE OF EXTRACTION AT 37°C

FOR I AND T 9450 DENIER

Time in Hours

ppm Extracted From Yarn

2

185

3

185

4

SPR000222
EID714139

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FC-143

AIR SAMPLES

TAKEN IN OPERATOR BREATHING ZONE

<u>Spinning Machine ID</u>	<u>Roll Temperature °C</u>	<u>Level PPB V/V</u>
3 Wash Reel	177	ND < 15
	371	ND < 15
2 Wash Module	193	ND < 15
	371	ND < 15

MAF/dsa
5/7/81

SPR000223
EID714140

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PPM CF-143 IN SPINNING AREA

	<u>Wash Water</u>	<u>Washed Yarn</u>
SM-2	~ 1	490
SM-3	4	~ 60

AMM/dsa
5/7/81

SPR000224
EID714141

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I & T 94500 Yarn

