

Image Cover Sheet

CLASSIFICATION

UNCLASSIFIED

SYSTEM NUMBER

135041



TITLE

LOW SPRAYS WITH HT THICKENED TO VARIOUS VISCOSITIES \ (F.E. 67 TRIALS 1 AND 2\)

System Number:

Patron Number:

Requester:

Notes:

DSIS Use only:

Deliver to:



DOCUMENT RECLASSIFICATION RECORD

Document SIR 10 Title Low Sprays with HT Thickened to Various Viscosities

Author(s) K. Birchall Date 17 Aug 43

Original Classification Secret

Limitation _____

Harvey Recommendation Classification Unclassified

Limitation Unlimited Clause _____

Deletions _____

Reviewed by C. Laforce Date 6/5/97

Classification Unclassified

Limitation Unlimited

Official Warning Term _____

This Document may be released as is under ATI:

Deletions required

ATI _____ Clause _____

Other Requesters _____

I concur
[Signature]
Chairman/DRP

5187
meeting

8/5/97
Date

EXPERIMENTAL STATION
SUFFIELD, ALBERTA.

9-9-10

COPY NO. *23*
DATE 17 AUGUST, 43.

SUFFIELD INTERNAL REPORT NO. 10.

LOW SPRAYS WITH HT THICKENED TO VARIOUS VISCOSITIES.
(F.E. 67 Trials 1 and 2)

S U M M A R Y

1. Comparative trials have been carried out with unthickened HT and with an HTV (alloprene) which had a viscosity of 30p. at 10°C. and 17.5p. at 20°C. (the temperature of the charging at the time of the trial).
2. The chargings were sprayed from 500 lb. S.C.I. , fitted with the Blenheim emission pipe with the fairing removed, and carried in on Boston A/C flying at 300 mi/hr. T.A.S..
3. Owing to the excessive shatter of the unthickened HT a full assessment was not carried out. The largest drops caught on the layout varied from 0.1 to 0.35 mgms. and the contamination produced was less than 0.05 gms./sq.m..
4. The thickened HT gave 23 to 24 percent efficiency in drops of 2.5 mgms. or larger.

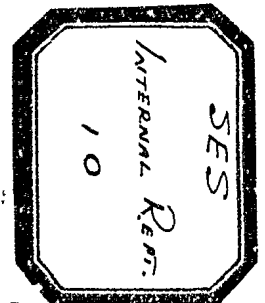
E.L. Davies

(E.L. Davies)
Chief Superintendent,
Experimental Station.

XB/JS . . .

RECEIVED
Date Recd SEP 20 1949
From
G.R.O. Lond.

Classification / Designation _____
 Changed to / Remplacée par W/H
 By Authority of _____
 Sur l'Autorisation de C. La Force
 Date 24 Feb 98 Signature D. Kuseler
 Appointment _____ Unit _____
 Fonction _____ Unité _____



SUFFIELD INTERNAL REPORT NO. 10.

LOW SPRAYS WITH HT THICKENED TO VARIOUS VISCOSITIES
(F.E. 67 Trials 1 and 2)

INTRODUCTION AND OBJECT

1. Previous low sprays with the Boston aircraft at two widely separated airspeeds (185 and 280 mi/hr T.A.S.) indicated serious shattering of HTV (6p) at the higher airspeed (See S.R. No. 4). In these trials the S.C.I. delivered 56 per cent of charging in drops of 2.4 mgm (1.5 mm.) or greater (average of two trials) onto the layout at an airspeed of 185 mi/hr T.A.S.; while at 280 mi/hr T.A.S. only 20 per cent of charging was in drops of 2.4 mgm or greater. (average of four trials).
2. In order to determine if this excessive shatter at high airspeeds could be decreased it was decided to carry out sprays with HT thickened to various viscosities.

DETAILS OF TRIALS.

3. As a possible method for decreasing the number of trials to be done it was decided to carry out the first trial with HTV at the extreme of those to be examined. Accordingly HT and HTV (30p. at 10°C.) were the first chargings to be used. Details of meteorological conditions, aircraft speeds, etc. are found in Appendix I.
4. The two chargings, HT and HTV (30p.), each dyed a different colour, were sprayed from 2 x 500 lb. S.C.I. fitted with the Blenheim emission pipe with the fairing removed, and carried in a Boston A/C flying at 300 mi/hr T.A.S.. The emissions were made on separate runs.
5. At the time of installation onto the aircraft the temperature of the 30 poise charging was 20°C. at which temperature the viscosity had fallen to approximately 17.5 poises.

RESULTS OF TRIALS

6. The HT charging, upon emission, was shattered into very fine drops. The largest drops caught on the layout were 0.35 mgms or less and gave a contamination of less than 0.05 mgm/sq.m.. An assessment of this charging was not carried out.

The S.C.I.'s charged HTV (30 p.) delivered 23.5 per cent (average of two emissions) of the charging in drops of 2.5 mgms. or greater. (29% in drops of 1.5 mm. or greater).

DISCUSSION

Comparison of the results obtained with HTV (6p.) sprayed at 280 mi/hr (F.E. No. 5, Trial 8. See S.R. No. 4) and those obtained with HTV thickened to 30 p. at 10°C (sprayed at a temperature of 20°C-viscosity 17.5 p.) and sprayed at 300 mi/hr show a slight improvement in drop size efficiency above 2.4 mgms (1.5 mm). Further trials are planned.

This report was written by S/Ldr. K. Birchall, A.F.E.O.,
Experimental Station, Suffield, Alberta.

K.B. : J.S.

H.M. Barnett
E.L. Davies)
Chief Superintendent;
Experimental Station.

APPENDIX I.
Details of Trials

No. of Trial	Date	Time of Emission	Ht. above Terrain*	Airspeed	Air Temp.	Mean Wind Speed	Charging
1.	18 May 43	(a) 17 secs.	700	298 TAS	15°C.	14 mi/hr	HTV (30p. @ 10°C)**
		(b) 17.5 secs.	700	300 TAS	15°C.	14 mi/hr	HTV (30p. @ 10°C)**

* Terrain 2500 ft. above sea level.

** Temperature of charging at time of spraying 20°C at which charging would be approximately 17.5 poises.

APPENDIX II

ASSESSMENT

No. of Trial	Charging	Time of Emission	% of charging recovered in drops of mgm. (Mass)								% Total Recovery	
			0.01-0.1	0.1-0.5	0.5-1.25	1.25-2.5	2.5-5	5-10	10-20	20-40		40-80
1.	HTV (30p)	(a) 17secs	16.4	19.9	9.8	9.1	7.4	7.7	5.5	2.7	0.1	78.6
		(b) 17.5secs	14.8	20.9	7.3	8.1	6.6	8.9	5.3	2.9	---	74.8

N.B.

HT not assessed due to excessive shattering of the emission. Largest drops caught on layout varied from 0.1 to 0.35 mgm. and gave a contamination of less than 0.05 $\mu\text{g}/\text{m}^2$.

#135041