

# HEAT FLUX CALIBRATION TASK GROUP

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Singapore

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Federal Aviation  
Administration



# AGENDA

- Updates - Aviation Heat Flux Calibration Standard Draft Document
- Recent Data
  - Paint Thickness Effects on Calibration
- Next Steps



# Draft - Aviation Heat Flux Calibration

## Structure of Document:

1. Introduction
2. Definitions
3. Calorimeter Specification
4. Data Acquisition System
5. Calibration Interim
6. Laboratory Environment
7. Calibration Setup
8. Calibration Procedure
9. Requirements / Analysis (Repeatability / Reproducibility)
10. Required Reporting Parameters

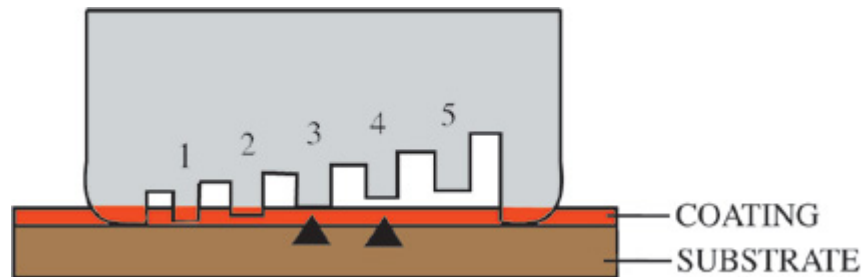


# Paint Thickness

## WET FILM THICKNESS GAUGE

Instructions For Use

1. Place gauge on wet film at 90° angle and press firm
2. Withdraw and note deepest tooth having paint on it and next higher tooth that is not coated
3. The wet film thickness lies between these two readings



Cons

- This method has a lot of tolerance
- Quick measurement is required - As solvent evaporates and the film dries, the thickness changes.

“Paint solids by volume” is required to obtain dry film thickness (e.g. if the number is 50% solids by volume, and the wet film thickness is between 3 and 4 mils, then the thickness would be between 1.5 and 2 mils)

## DRY FILM THICKNESS GAUGE

MANY OPTIONS AVAILABLE

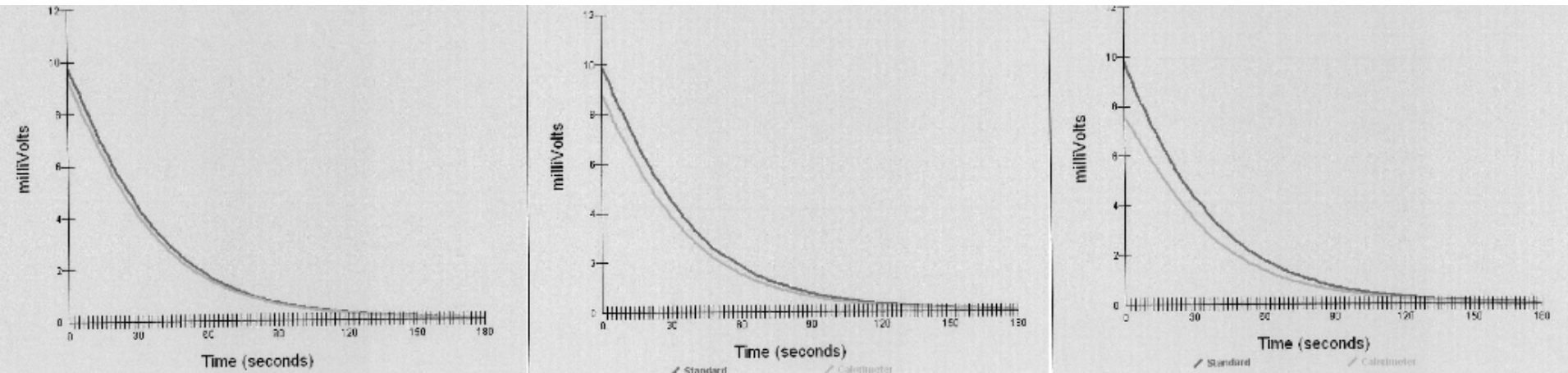
TECH CENTER PURCHASED POSITEST DFT MEASURING INSTRUMENT

# Paint Thickness

	Degrees	0	45	90	135	180	225	270	315	AVG
Mils	Reading #1	0.7	0.7	0.6	0.6	0.8	0.6	0.6	0.7	0.7
	Reading #2	1.6	0.6	0.8	0.7	0.6	0.7	0.5	0.8	0.8
	Reading #3	1.7	0.7	0.6	0.6	0.6	0.5	0.7	1.0	0.8
	Reading #4	0.7	0.6	0.8	0.7	0.6	0.5	0.8	2.2	0.9
										0.8
	Degrees	0	45	90	135	180	225	270	315	AVG
Mils	Reading #1	1.4	1.0	0.9	0.9	1.0	1.2	1.0	1.0	1.1
	Reading #2	2.1	0.9	0.9	0.9	1.0	1.1	1.5	1.2	1.2
	Reading #3	1.2	0.9	1.0	1.0	1.0	1.2	1.0	1.1	1.1
	Reading #4	1.0	1.1	1.1	1.0	1.1	1.0	1.0	1.0	1.0
										1.1
	Degrees	0	45	90	135	180	225	270	315	AVG
Mils	Reading #1	1.0	0.8	0.7	0.8	0.5	0.6	0.7	0.7	0.7
	Reading #2	0.8	0.8	0.7	0.7	0.5	0.5	0.7	0.8	0.7
	Reading #3	0.9	0.8	0.6	0.8	0.7	0.5	0.7	0.6	0.7
	Reading #4	0.8	1.0	0.6	0.6	0.5	0.5	0.6	0.8	0.7
										0.7
	Degrees	0	45	90	135	180	225	270	315	AVG
Mils	Reading #1	1.8	1.1	1.2	1.0	0.9	1.1	1.0	1.3	1.2
	Reading #2	1.4	1.1	1.2	1.2	1.0	1.0	0.9	1.5	1.2
	Reading #3	1.8	1.3	1.1	0.9	1.1	1.2	1.4	1.6	1.3
	Reading #4	1.8	1.2	1.3	1.3	1.8	1.1	1.4	1.8	1.5
										1.3
	Degrees	0	45	90	135	180	225	270	315	AVG
Mils	Reading #1	0.7	0.9	0.7	0.8	0.8	0.7	0.7	0.7	0.8
	Reading #2	0.9	0.7	0.7	0.6	0.8	0.7	0.7	0.7	0.7
	Reading #3	0.7	0.6	0.7	0.7	0.9	0.8	0.6	0.7	0.7
	Reading #4	1.0	0.9	0.6	0.6	0.5	0.6	0.9	0.7	0.7
										0.7



# Dry Paint Thickness (Mils)



0	0.5	1.8	5.7
90	0.8	2.0	5.3
180	0.5	1.5	6.0
270	0.6	1.9	6.0
Avg.	0.6	1.8	5.8
Slope	0.5182	0.5588 (+7.8%)	0.6139 (+18.5%)

# NEXT – GUIDANCE MATERIAL

## Paint / Paint Thickness / Paint Application

- Develop criteria/specifications to include in HF Document

## Round Robin Development

- How Should It Be Conducted
- Determine Variation
- Determine What Would Be Considered “Acceptable” Variation
- Determine Reasons For The Variations And Whether Some Are Correctable

