

# DIN EN 16602-70-09:2015-05 (E)

## Space product assurance - Measurements of thermo-optical properties of thermal control materials; English version EN 16602-70-09:2015

---

<b>Foreword</b> .....	<b>5</b>
<b>Introduction</b> .....	<b>6</b>
<b>1 Scope</b> .....	<b>7</b>
<b>2 Normative references</b> .....	<b>8</b>
<b>3 Terms, definitions and abbreviated terms</b> .....	<b>9</b>
3.1 Terms defined in other standards .....	9
3.2 Terms specific to the present standard .....	9
3.3 Abbreviated terms.....	9
<b>4 Requirements</b> .....	<b>10</b>
4.1 Preparatory conditions .....	10
4.1.1 Hazards, health and safety precautions .....	10
4.1.2 Preparation of samples .....	10
4.1.3 Facilities .....	11
4.2 Selection of test methods.....	11
4.3 Quality assurance .....	12
4.3.1 Data .....	12
4.3.2 Calibration.....	12
4.4 Audit of measurement equipment .....	12
4.4.1 General .....	12
4.4.2 Audit of the system (acceptance) .....	13
4.4.3 Annual regular review (maintenance) of the system .....	13
4.4.4 Special review.....	13
<b>Annex A (normative) Evaluation report of the measurement of thermo-optical properties of thermal control materials– DRD</b> .....	<b>14</b>
A.1 DRD identification .....	14
A.1.1 Requirement identification and source document.....	14
A.1.2 Purpose and objective.....	14
A.2 Expected response .....	14
A.2.1 Scope and content .....	14

A.2.2	Special remarks .....	14
<b>Annex B</b>	<b>(normative) Audit / review report for the measurement equipment of thermo-optical properties of thermal control materials - DRD.....</b>	<b>15</b>
B.1	DRD identification .....	15
B.1.1	Requirement identification and source document.....	15
B.1.2	Purpose and objective.....	15
B.2	Expected response .....	15
B.2.1	Scope and contents .....	15
B.2.2	Special remarks .....	15
<b>Annex C</b>	<b>(informative) Test methods .....</b>	<b>16</b>
C.1	Format.....	16
C.2	Solar absorptance using spectrometer ( $\alpha_s$ ).....	16
C.2.1	General.....	16
C.2.2	Configuration of samples.....	16
C.2.3	Test apparatus and setting up.....	17
C.2.4	Test process and measurement.....	17
C.2.5	Calculation of absorptance.....	17
C.3	Comparative test method ( $\alpha_p$ ).....	18
C.3.1	General.....	18
C.3.2	Configuration of samples.....	18
C.3.3	Test apparatus and setting up.....	19
C.3.4	Test process and measurement.....	19
C.3.5	Calculations .....	19
C.4	Infrared emittance using thermal test method ( $\varepsilon_h$ ).....	20
C.4.1	General.....	20
C.4.2	Configuration of samples.....	20
C.4.3	Test apparatus and setting up.....	20
C.4.4	Test process and measurement.....	20
C.4.5	Calculations of total hemispherical emittance.....	22
C.5	Infrared emittance using IR spectrometer ( $\varepsilon_h$ ).....	23
C.5.1	General.....	23
C.5.2	Configuration of samples.....	23
C.5.3	Test apparatus and setting up.....	23
C.5.4	Test process and measurement.....	23
C.5.5	Calculation of emittance .....	24
C.6	Infrared emittance using portable equipment ( $\varepsilon_n$ ).....	24
C.6.1	General.....	24

C.6.2	Configuration of samples.....	24
C.6.3	Test apparatus and setting up.....	25
C.6.4	Test process and measurement.....	25
C.6.5	Calculation of the normal emittance .....	25

**Bibliography.....26**

**Figures**

Figure C- 1: Standard sample substrate .....	21
--	----