

**Laboratory** Regional Test Cum Technological Back-Up Unit for Solar Thermal Devices, Mechanical Engineering (ME) Department, National Institute of Technology, Silchar, Assam

**Accreditation Standard** ISO/IEC 17025: 2005

**Certificate Number** TC-5725

Page 1 of 2

**Validity** 29.05.2017 to 28.05.2019

Last Amended on --

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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**MECHANICAL TESTING**

<b>I.</b>	<b>PERFORMANCE/DURABILITY/SAFETY TEST</b>			
<b>1.</b>	<b>Flat Plate Collector</b>			
<b>a.</b>	<b>Cover Plate</b>	Transmittance	IS 12933 (Part 2), Clause 5.1	70 % to 95 %
		Impact resistance	IS 12933 (Part 5), Clause 5.7	Qualitative (150 g ± 10 g, 1 m)
		Visual appearance	IS 12933 (Part 2), Clause 4	Qualitative
		Dimensions	IS 12933 (Part 1) Clause 6 IS 12933 (Part 2) Clause 6.2	0.10 mm to 3.0 m
		Visual appearance	IS 12933 (Part 2) Clause 6.1, 7.1, 7.2 & 7.3	Qualitative
<b>b.</b>	<b>Absorber</b>	Temperature test– Component Level	IS 12933 (Part 2) Clause 9.1.4	Qualitative
		Appearance	IS 12933 (Part 2) Clause 9.1.1	Qualitative
<b>c.</b>	<b>Insulation</b>	Appearance	IS 12933 (Part 2) Clause 10.1 & 10.2	Qualitative
<b>d.</b>	<b>Gaskets &amp; Grommets</b>	Thermal shock	IS 12933 (Part 2) Clause 12.1.1	Qualitative
		Appearance	IS 12933 (Part 2), Clause 11.2	Qualitative
<b>e.</b>	<b>Assembly &amp; workmanship</b>	Appearance	IS 12933 (Part 2) Clause 7.1 & 7.2	Qualitative
<b>f.</b>	<b>Routine Test</b>	Static pressure leakage	IS 12933 (Part 5), Clause 5.3	Qualitative 0.1 kg/cm <sup>2</sup> to 5 kg/cm <sup>2</sup>
<b>g.</b>	<b>Type Test</b>	Outdoor no flow exposure-Appearance	IS 12933 (Part 5), Clause 5.2	Qualitative
		External thermal shock	IS 12933 (Part 5), Clause 5.4	Qualitative (0.6 L/s to 1 L/s)
		Rain penetration	IS 12933 (Part 5), Clause 5.6	Qualitative (0.06 kg/s to 0.10 kg/s)

**Naveen Jangra**  
Convenor

**N. Venkateswaran**  
Program Director

Laboratory

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		Thermal performance	IS 12933 (Part 5), Clause 6.4	$F_{RUL} = (0.1 \text{ to } 8) \text{ W/m}^2\text{ }^\circ\text{C}$ $F_R(\alpha\tau) = 0.01 \text{ to } 1$
<b>2.</b>	<b>Box Type Solar Cooker</b>			
<b>a.</b>	<b>Cover Plate</b>	Transmittance	IS 13429 (Part 2), Clause 4.1	70 % to 95 %
		Appearance	IS 13429 (Part 2), Clause 4.1	Qualitative
		Leakage for upper side of cover plate	IS 13429 (Part 3) Clause 4.1.3.a	Qualitative
		Leakage for lower side of cover plate	IS 13429 (Part 3) Clause 4.1.3.b	Qualitative
<b>b.</b>	<b>Cooking Tray</b>	Dimensions	IS 13429 (Part 2) Clause 4.2.1	0.5 mm to 2mm
		Appearance	IS 13429 (Part 2) Clause 4.2.2	Qualitative
		Cooking Tray Leakage	IS 13429 (Part 3) Clause 4.1.1	Qualitative
<b>c.</b>	<b>Cooker Box</b>	Dimensions	IS 13429 (Part 2) Clause 4.3.1	0.45 mm to 1mm
		Appearance	IS 13429 (Part 2) Clause 4.3.2	Qualitative
<b>d.</b>	<b>Gaskets &amp; Sealants</b>	Thermal shock	IS 13429 (Part 2), Clause 5.2	Qualitative
		Rubber Gasket leakage	IS 13429 (Part 3) Clause 4.1.2	Qualitative
<b>e.</b>	<b>Insulation</b>	Appearance	IS 13429 (Part 2), Clause 4.5	Qualitative
<b>f.</b>	<b>Mirror</b>	Appearance	IS 13429 (Part 2), Clause 4.6	Qualitative
		Mirror Reflectivity	IS 13429 (Part 3), Clause 4.3	50 % to 100 %
<b>g.</b>	<b>Routine Test</b>	Slam	IS 13429 (Part 3), Clause 4.2	Qualitative
<b>h.</b>	<b>Type test</b>	Exposure	IS 13429 (Part 3), Clause 4.4	Qualitative
		Rain Penetration	IS 13429(Part 3) Clause 4.1.4	Qualitative
		Thermal performance (Stagnation temperature & Load Test)	IS 13429(Part 3), Clause 4.5	$0.11 \leq F_1 \leq 0.50$ $0.40 \leq F_2 \leq 0.80$

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