

**Laboratory** Regional Test Center-Cum-Technical Backup Unit for Solar Thermal Devices, School of Energy & Environmental Studies, Devi Ahilya University, Takshila Campus, Khandwa Road, Indore, Madhya Pradesh

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

**Certificate Number** TC-6700 (in lieu of T-1621)

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**Validity** 29.01.2018 to 28.01.2020

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**

I.	PERFORMANCE/ DURABILITY/ SAFETY TEST			
1.	<b>Solar Cooker-Box Type</b>	<b>Routine</b>	<b>IS 13429 (Part 1) Clause 7.1</b>	
		Leakage	IS 13429 (Part 3) Clause 4.1	Qualitative
		Cooking Tray Leakage	IS 13429 (Part 3) Clause 4.1.1	Qualitative
		Rubber Gasket Leakage	IS 13429 (Part 3) Clause 4.1.2	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 (a)	Qualitative
		Slam	IS 13429 (Part 3) Clause 4.2	Qualitative
		Mirror Reflectivity	IS 13429 (Part 3) Clause 4.3	≥ 65 %, Reflectance
		<b>Type</b>	<b>IS 13429 (Part 1) Clause 7.2</b>	
		Exposure	IS 13429 (Part 3) Clause 4.4	Qualitative
		Load for FRP Body Cooker only	IS 13429 (Part 3) Clause 7.2.2	Qualitative
		Thermal Performance	IS 13429 (Part 3) Clause 4.5	
		Stagnation Temperature	IS 13429 (Part 3) Clause 4.5.1	0.04 < F <sub>1</sub> < 0.16

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		Load Sensible Heating of Water	IS 13429 (Part 3) Clause 4.5.2	$0.15 < F_2 < 0.60$
		<b>Component</b>	<b>IS 13429 (Part 2) Clause 5</b>	
		Transmittance for Cover Plate	IS 13429 (Part 2) Clause 5.1	$\geq 65 \%$ , Transmittance
		Thermal Shock for Gasket and Sealants	IS 13429 (Part 2) Clause 5.2	Qualitative
2.	<b>Solar Flat Plate Collector</b>	<b>Routine</b>	<b>IS 12933 (Part 1) Clause 7.1</b>	
		Static Pressure Leakage	IS 12933 (Part 5) Clause 5.3	Qualitative
		<b>Type</b>	<b>IS 12933 (Part 1) Clause 7.2</b>	
		Outdoor No Flow Exposure	IS 12933 (Part 5) Clause 5.2	Qualitative
		External Thermal Shock	IS 12933 (Part 5) Clause 5.4	Qualitative
		Internal Thermal Shock	IS 12933 (Part 5) Clause 5.5	Qualitative
		Rain Penetration	IS 12933 (Part 5) Clause 5.6	Qualitative
		Impact Resistance	IS 12933 (Part 5) Clause 5.7	Qualitative
		Thermal Efficiency	IS 12933 (Part 5) Clause 6.4	$3.0 \text{ W/m}^2 \text{ }^\circ\text{C} < F_R U_L < 10 \text{ W/m}^2 \text{ }^\circ\text{C}$ $0.2 < F_R(\alpha\tau) < 0.90$
		Determination of Time Constant	IS 12933 (Part 5) Clause 6.5	$60 < \tau < 150$
		Incident Angle Modifier	IS 12933 (Part 5) Clause 6.6	$0.1 < b_o < 0.4$

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		<b>Component</b>	<b>IS 12933 (Part 2) Clause 5</b>	
		Transmittance	IS 12933 (Part 2) Clause 4	$0.4 < \tau < 0.95$
		Thermal Shock (Gasket and Sealants)	IS 12933 (Part 2) Clause 12.1.1	Qualitative