

Laboratory **Regional Test Centre-Cum-Technology Back-up Unit for Solar Thermal Devices, School of Energy Studies, Department of Physics, Savitribai Phule Pune University, Pune, Maharashtra**

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

Certificate Number **TC-6422**

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Validity **12.10.2017 to 11.10.2019**

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 |
|-----|----------------------------|-------------------------|---|--|
|-----|----------------------------|-------------------------|---|--|

MECHANICAL TESTING

| | | | | |
|-----------|-----------------------------------|--|---------------------------------|--|
| I. | PERFORMANCE TEST | | | |
| 1. | Solar Flat Plate Collector | Static Pressure Leakage Test | IS 12933 (Part 5) Cl.5.3 | Qualitative |
| | | Outdoor No Flow Exposure Test | IS 12933 (Part 1) Cl.7.2.1 | Qualitative |
| | | External Thermal Shock Test | IS 12933 (Part 5) Cl.5.4 | Qualitative |
| | | Internal Thermal Shock Test | IS 12933 (Part 5) Cl.5.5 | Qualitative |
| | | Rain Penetration Test | IS 12933 (Part 5) Cl.5.6 | Qualitative |
| | | Impact Resistance Test | IS 12933 (Part 5) Cl.5.7 | Qualitative |
| | | Thermal Performance Test | IS 12933 (Part 5) Cl.6.4 | $0.25 < F_R(\tau\alpha)_e < 0.95$ $2.5 < F_R U_L < 8.5$ |
| | | Time Constant Test | IS 12933 (Part 5) Cl.6.5 | $60 < \tau < 240 \text{ sec}$ |
| | | Incident Angle modifier test | IS 12933 (Part 5) Cl.6.6 | $0.1 < b_o < 0.9$ |
| | | Transmittance test on cover plate | IS 12933 (Part 5) Cl.5.1 | $0.40 < \tau < 0.90$ |
| | | Thermal Shock test for gaskets and grommet | IS 12933 (Part 5) Cl.12.1 | Qualitative |
| | | Temperature Test on absorber | IS 12933 (Part 5) Cl.9.1.4 | Qualitative |
| | | Transmittance test for cover plate | IS 13429 (Part 2): 2000 Cl. 5.1 | |
| | | Thermal shock test for Gasket, Grommet & sealant | IS 13429 (Part 2) Cl. 5.2 | |
| 2. | Solar Box Type Cooker | Cooking tray Test | IS 13429 (Part 3) Cl.4.1.1 | Qualitative |

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| | | Rubber Gasket leakage test | IS 13429 (Part 3) Cl.4.1.2 | Qualitative |
| | | Leakage Test for upper side of cover plate | IS 13429 (Part 3) Cl.4.1.3 (a) | Qualitative |
| | | Leakage Test for lower side of cover plate | IS 13429 (Part 3) Cl.4.1.3 (b) | Qualitative |
| | | Rain Penetration test | IS 13429 (Part 3) Cl.4.1.4 | Qualitative |
| | | Slam Test | IS 13429 (Part 3) Cl.4.2 | Qualitative |
| | | Mirror Reflectivity Test | IS 13429 (Part 3) Cl.4.3 | ≥ 65 % Reflectance |
| | | Exposure test | IS 13429 (Part 3) Cl.4.4 | Qualitative |
| | | Load Test for FRP body Cooker Only | IS 13429 (Part 1) Cl.7.2.2 | Qualitative |
| | | Thermal Performance Test | IS 13429 (Part 3) Cl.4.5 | |
| | | Stagnation temperature test | IS 13429 (Part 3) Cl.4.5.1 | 0.05 < F1 < 0.20 |
| | | Load Test : Sensible Heating of water | IS 13429 (Part 3) Cl.4.5.2 | 0.10 < F2 < 0.70 |
| | | Transmittance test for cover plate | IS 13429 (Part 2) Cl. 5.1 | ≥ 65 % Transmittance |
| | | Thermal shock test for Gasket, Grommet & sealant | IS 13429 (Part 2) Cl. 5.2 | Qualitative |
| 3. | All Glass Evacuated Tubes Solar Water Heating system | Pre-condition Test | IS 16544 Cl.6.1 | Qualitative |
| | | Exterior Test | IS 16544 Cl.6.2.1 (Annex. B) | Qualitative |
| | | Leakage Test | IS 16544 Cl.6.2.2 (Annex. C) | Qualitative |
| | | Stagnation Test | IS 16544 Cl.6.2.3 (Annex. D) | Qualitative |
| | | External Thermal shock Test | IS 16544 Cl.6.2.4 (Annex. E) | Qualitative |

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| | | Internal Thermal Shock Test | IS 16544 Cl.6.2.5 (Annex. F) | Qualitative |
| | | Thermal Performance Test | IS 16368 Cl. 7 | Qualitative |
| | | Resistance to Impact Test | IS 16544 Cl.6.2.7 IS 16543 | Qualitative |