

For Restricted Circulation only

 SHAKAMBHARI GROUP #SteelWithin		SHAKAMBHARI ISPAT & POWER LTD. (Formerly known as Ess Dee Aluminium Ltd.)	
STANDARD TEST METHOD			
Title: Determination of Bursting Strength			Page No. 1 of 3
STM No.	Version No.	Effective Date	Next review date
SIPL/STM/024	00	06.07.2026	05.07.2028

1.0 PURPOSE

- 1.1 To describe a standard, uniform procedure for operating, cleaning, and calibrating the Bursting Strength Tester to accurately measure the bursting capacity of aluminium foil.

2.0 SCOPE

- 2.1 This STM applies to all raw material and in-process testing of bare strip pack foils and pharma lamination foils performed by the Quality Control department. It is not applicable to pre-coated or blister pack materials.

3.0 REFERENCE(S) & ATTACHMENTS**3.1 References**

- 3.1.1 In-house

3.2 Attachments

- 3.2.1 Nil

4.0 RESPONSIBILITY**4.1 QC Analyst / Executive:**

- 4.1.1 Responsible for performing the test exactly as prescribed and maintaining the usage logs.

4.2 QC Manager / Head:

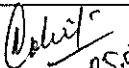
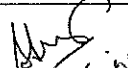
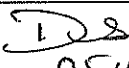
- 4.2.1 Responsible for ensuring compliance, reviewing data, and managing out-of-specification (OOS) results.

5.0 DISTRIBUTION

- 5.1 Quality Assurance
5.2 Quality Control

6.0 DEFINITION(S) & ABBREVIATION(S)**6.1 Definitions:** Nil**6.2 Abbreviations**

- 6.2.1 STM: Standard Test Method
6.2.2 QC: Quality Control
6.2.3 GSM: Grams per Square Meter
6.2.4 OOS: Out of Specification

Prepared By:	Checked By:	Approved By:
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7.0 PROCEDURE

7.1 Equipment and Materials

- 7.1.1 **Bursting Strength Tester** (digital display or calibrated analogue pressure gauge).
- 7.1.2 **Glycerine** (USP Grade, 96% pure) as the hydraulic fluid medium.
- 7.1.3 **Standard Aluminium Verification Foils** with known / certified burst ranges (e.g. $9.5 \pm 0.4 \text{ kg/cm}^2$).
- 7.1.4 Foil specimen sample cutters.

7.2 Pre-Operational Checks

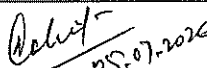
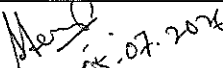
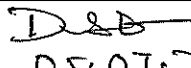
- 7.2.1 Ensure the work environment and the machine diaphragm plate are clean and free of physical debris.
- 7.2.2 Verify that the instrument's overall calibration window is active and valid.
- 7.2.3 Check the glycerine fluid reservoir. The system must be fully filled; a low fluid level or trapped air causes inaccurate, volatile readings.

7.3 Sample Preparation

- 7.3.1 Cut at least five distinct specimen sheets from the representative sample lot.
- 7.3.2 Cut each sheet to a size larger than the clamping upper structure (minimum 90 mm) to ensure adequate gripping surface area without slip.
- 7.3.3 Samples must be entirely smooth and free from watermarks, structural folds, or crease marks.

7.4 Execution of Test

- 7.4.1 Flip the main instrument switch ON.
- 7.4.2 Turn the clamping system wheel anti-clockwise to raise the upper clamping arm.
- 7.4.3 Centrally align the foil specimen smoothly over the rubber diaphragm base plate.
- 7.4.4 Tighten the clamp wheel firmly in a clockwise direction to lock the sample securely in place. Ensure zero slippage can occur.
- 7.4.5 Press the reset key or manually position the peak-hold indicator gauge back to zero.
- 7.4.6 Hold down the "PUSH FOR BURST" actuator button. The internal pump will progressively deliver hydraulic force to the film.
- 7.4.7 Release the button immediately when the specimen ruptures.
- 7.4.8 Note the maximum peak value displayed on the digital panel or analogue marker in kg/cm^2 .
- 7.4.9 Release pressure by loosening the clamp anti-clockwise and clear the ruptured foil away.
- 7.4.10 Test the remaining 4 specimens across different un-clamped positions. Disregard any highly erratic anomaly reading if it occurs near an isolated edge.

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7.5 Calculations & Acceptance

7.5.1 Calculate the arithmetic mean of all 5 uniform burst tests.

7.5.2 Formula for Bursting Factor (Optional Reference):

7.5.2.1 Burst Factor = Bursting Strength (kg/cm²) ÷ GSM (Grams per Square Meter)

7.6 Calibration & Quality Verification

7.6.1 Perform in-house verification monthly, or as defined by corporate policy.

7.6.2 Place a certified standard verification aluminium foil strip onto the rubber diaphragm.

7.6.3 Clamp down tightly, reset the readout to zero, and push the active burst actuator.

7.6.4 Document the measured burst response and confirm it falls precisely within the manufacturer's stated certificate tolerance (e.g. 10 ± 0.5 kg/cm²).

7.6.5 If the reading drops outside acceptable boundaries, mark the tester "OUT OF CALIBRATION", quarantine the system, and notify engineering.

7.7 Safety Precautions

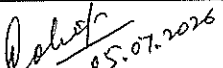
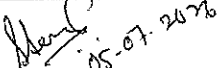
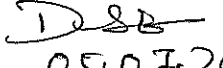
7.7.1 Never push the hydraulic actuator button if a sample is not firmly locked inside the clamping brackets.

7.7.2 Do not apply pressure beyond the marked upper limit of the target pressure gauge, to prevent internal dial rupture.

7.7.3 Turn off the electrical power completely once analytical testing concludes, and update the instrument usage logbook.

8.0 REVISION HISTORY

Revision No.	00	Effective Date	06.07.2026	CC No.	NA
Details of revision: New SOP					

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