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SHAKAMBHARI GROUP #SteelWithin	SHAKAMBHARI ISPAT & POWER LTD. (Formerly known as Ess Dee Aluminium Ltd.)		
STANDARD TEST METHOD			
Title: Surface Tension			Page No. 1 of 3
STM No.	**Version No.**	**Effective Date**	**Next review date**
SIPL/STM/013	00	06.07.2026	05.07.2028

1.0 PURPOSE

1.1 To define a test method for determination of the surface tension of Foils / Films and other substrates on which a further process such as printing, lamination, batch coding, etc. has to be carried out.

2.0 SCOPE

2.1 This STM applies to the Quality Control department.

3.0 REFERENCE(S) & ATTACHMENTS

3.1 References

3.1.1 In-house

3.2 Attachments

3.2.1 Attachment-I: Mixing Ratio for Dyne Solution.

4.0 RESPONSIBILITY

4.1 QC Department Person:

4.1.1 To carry out the testing as per the STM.

4.2 QC Department Head:

4.2.1 To prepare and ensure the implementation of the STM.

4.3 QA Head:

4.3.1 To approve the new or revised STM, and to ensure the implementation of the defined system.

5.0 DISTRIBUTION

5.1 Quality Assurance

5.2 Quality Control

6.0 DEFINITION(S) & ABBREVIATION(S)

6.1 Definitions

6.1.1 **Dynes/cm²:** Measurement of surface tension of liquids.

6.2 **Abbreviations:** Nil

Prepared By:	Checked By:	Approved By:
05.07.2026	05.07.2026	05-07-2026

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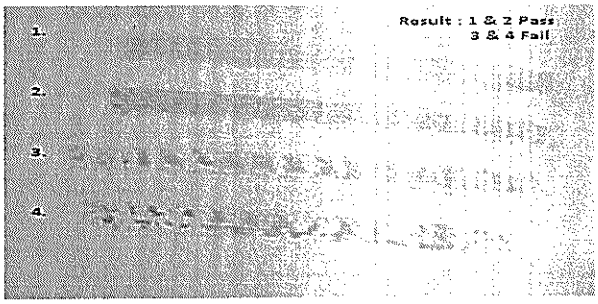
7.0 PROCEDURE

7.1 Collect samples at the incoming / in-process stage.

7.2 Make sure that the sample is dust-free and flat.

7.3 Using the Dyne Solution as per Attachment-I, or Ready-to-use Dyne Pens, determine the surface tension of the surface of Films / Foils and laminates as below. The solution must hold for at least 3 seconds to pass.



7.4 Reduce the level of dynes until the sample shows as pass. The value of surface tension is the dynes at which the sample is passing.

8.0 REVISION HISTORY

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

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Attachment-I : Mixing Ratio for Dyne Solution

Formamide (%)	Cellosolve (2-Ethoxy Ethanol) (%)	Dynes/cm
0	100	30
2.5	97.5	31
10.5	89.5	32
16.5	83.5	33
19	81	34
26.5	73.5	35
35	65	36
42.5	57.5	37
48.5	51.5	38
59	41	39
63.5	36.5	40
67.5	32.5	41
71.5	28.5	42
74.7	25.3	43

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