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Draft Indian Standard

**ALUMINIUM FOIL TAPES APPLICATION IN HVAC INDUSTRY AND WHITE GOODS —
SPECIFICATION**

(ICS 83.180)

Plastics Sectional Committee
PCD 12

Last date for comment is
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FOREWORD

(Formal clause to be added later)

Dead soft aluminium foil coated with pressure sensitive adhesive is used in different applications like heat reflecting, water proofing of roofs, moisture barrier, Sealing of Evaporator coils in Refrigerators and Bottle coolers.

It is intended to bring out a series of standards on Aluminium Foil adhesive coated tapes for applications related to Industrial purposes. This standard will cover the following in various sections.

- a) General Requirements,
- b) Methods of Test, and
- c) Specifications for Individual Materials
- d) Manufacture

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2: 2022 'Rules for rounding off numerical values (*second revision*).' The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1 SCOPE

1.1 This standard prescribes the requirements, methods of sampling and test of dead soft aluminium alloy-bare/laminated foil coated with pressure sensitive adhesives.

1.2 This standard is applicable for 0.012 mm (12 µm) to 0.100 mm (100 µm) dead soft Aluminium foil thickness.

2 REFERENCES

The following standards contain provisions, which through reference in this text constitute the provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most editions of the standards listed below:

IS No.	TITLE
IS 8402: 1987	Methods of sampling and test for pressure sensitive adhesive tapes (<i>first revision</i>)
IS 13262: 1992	Pressure sensitive adhesive tapes with plastic base specification
IS 3434: 1984	Glossary of terms for adhesives and pressure sensitive adhesive tapes (<i>first revision</i>)
IS 737: 2008	Wrought aluminium and aluminium alloy sheet and strip for general engineering purposes - Specification (<i>fourth revision</i>)
IS 16011: 2012	Aluminium and aluminium alloy foil for pharmaceutical packaging - Specification

IS 15392: 2003	Aluminium and aluminium alloy bare foil for food packaging - Specification
IS 5047 (Part 1): 1986	Glossary of terms relating to aluminium and aluminium alloys: Part 1 unwrought and wrought metals (<i>second revision</i>)
IS 7809 (Part 1): 1975	Specification for pressure sensitive adhesive tapes for electrical purposes: Part 1 general requirements
IS 7809 (Part 2): 1977	Specification for pressure sensitive adhesive tapes for electrical purpose : Part 2 methods of test

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 5047 (Part 1) and the following apply

3.1 Bare Foil — Bare foil (of thickness 12-100 µm without any lamination or coating) used for pressure sensitive adhesive tape.

3.2 Dead Soft Foil — Bare foil (of thickness 12-100 µm without any lamination or coating) is annealed (heat treated) to make it soft and flexible.

3.3 Foil Laminate — Laminated Foil (with foil thickness 20-55 µm) with one side laminated and other side pressure sensitive adhesive coated used for sealing or holding coils in Refrigeration Industry

3.4 Self Wound Tape — Foil adhesive coated tape wound on paper core without release paper or film (Inter-liner)

4 GRADES, TYPES AND CLASSES

Various types of tapes covered in this standard are classified in Table 1.

Table 1
(Clause 4, 6.9, 6.10 and 6.11)

SI No.	Typical Material	Base	Adhesive Type	Total Thickness mm (µm)	Minimum Tensile Strength N/10 mm width	Minimum Elongation, percent	Minimum Adhesion to Steel N/10 mm width
SELF WOUND TAPE WITHOUT RELEASE LINER							
1	Dead Soft bare Aluminium Foil 0.030mm (30µ)		Acrylic Adhesive	0.065 (65) ± 10 percent	13.5	3	4.8
2	Dead Soft bare Aluminium Foil 0.030mm (30µ)		Synthetic Rubber Adhesive	0.060 (60) ± 10 percent	13.5	3	7.5
3	Dead Soft bare Aluminium Foil 0.040mm (40µ)		Acrylic Adhesive	0.075 (75) ± 10 percent	18.0	3	4.8
4	Dead Soft bare Aluminium Foil 0.050mm (50µ)		Acrylic Adhesive	0.090 (90) ± 10 percent	22.5	3	4.8
5	Dead Soft bare Aluminium Foil 0.050mm (50µ)		Synthetic Rubber Adhesive	0.080 (80) ± 10 percent	22.5	3	7.5
ALUMINIUM FOIL TAPE WITH RELEASE LINER							
1	Dead Soft bare Aluminium Foil 0.030mm (30µ)		Acrylic Adhesive	0.065 (65) ± 10 percent	13.5	3	4.8
2	Dead Soft bare Aluminium Foil 0.030mm (30µ)		Synthetic Rubber Adhesive	0.060 (60) ± 10 percent	13.5	3	7.5

3	Dead Soft bare Aluminium Foil 0.040mm (40 μ)	Acrylic Adhesive	0.075 (75) \pm 10 percent	18.0	3	4.8
4	Dead Soft bare Aluminium Foil 0.050mm (50 μ)	Acrylic Adhesive	0.090 (90) \pm 10 percent	22.5	3	4.8
5	Dead Soft bare Aluminium Foil 0.050mm (50 μ)	Synthetic Rubber Adhesive	0.080 (80) \pm 10 percent	22.5	3	7.5
6	Dead Soft bare Aluminium Foil 0.080mm (80 μ)	Acrylic Adhesive	0.120 (120) \pm 10 percent	34.5	3	4.0
7	Dead Soft bare Aluminium Foil 0.080mm (80 μ)	Synthetic Rubber Adhesive	0.120 (120) \pm 10 percent	34.5	3	7.5
8	Dead Soft bare Aluminium Foil 0.100mm (100 μ)	Acrylic Adhesive	0.140 (140) \pm 10 percent	55.0	3	4.0
9	Dead Soft bare Aluminium Foil 0.100mm (100 μ)	Synthetic Rubber Adhesive	0.140 (140) \pm 10 percent	55.0	3	7.5
ALUMINIUM FOIL LAMINATED WITH POLYETHYLENE						
1	Dead Soft bare Aluminium Foil 0.030mm (30 μ) Laminate with PE Film 0.040mm (40 μ)	Acrylic Adhesive	0.110 (110) \pm 10 percent	13.5	3	4.8
2	Dead Soft bare Aluminium Foil 0.030mm (30 μ) Laminate with PE Film 0.040mm (40 μ)	Synthetic Rubber Adhesive	0.105 (105) \pm 10 percent	13.5	3	7.5

5 MANUFACTURE

Unless otherwise specified, the production and manufacturing processes shall be left to the discretion of the manufacturer.

6 REQUIREMENTS

6.1 Description

6.1.1 The Aluminium foil is coated uniformly with pressure sensitive adhesive on one side and other side is coated with release agent

6.1.2 The rolls shall be uniformly wound on cores so that each layer coincides with one below it.

6.1.3 Each roll of tape shall be reasonably free from telescoping, distortions, folds from overlapping and shall unwind without transfer of the adhesive mass on succeeding layer or tearing of base film.

6.2 Colour — Natural Aluminium Colour with two faces

- a) Matt Finish Surface
- b) Gloss Finish Surface

6.3 Printing — If required by the buyer, the printing of the tape on outer side shall be done as specified. In this case the printing shall be legible and shall not transfer to the adhesive side of the succeeding layer. Any message printed on the tape shall be matched with customer approved artwork.

6.4 Cores — All tape shall be normally wound on cores of internal diameter 75.0 ± 1.5 mm or as specified by the buyer.

6.5 Width — The width shall be in accordance with 6.2 of IS 7809 (Part 1). None of the five observations for width should fall outside the tolerance given below. The width shall be determined by taking five readings at random in a length of not less than one meter of tape from each sample roll.

<i>Nominal Width</i>	<i>Tolerance</i>
(mm)	(mm)
25 mm	-0.5/+1.0 mm
>25 mm	+1.0 mm

6.6 Length — The length of the tape roll shall be as agreed to between the buyer and the supplier and shall not vary by more than ± 1.0 m from specified length, when determined by unrolling the roll on a suitable winding machine fitted with a length meter capable of measuring to 0.1 m. The standard length of the roll is 50 m and 110 m.

6.7 Joints — A roll of tape shall not have more than one joint in 50 m and not more than two in a roll. The joint shall not separate during unwinding and its application. Preferably butt-joint shall be used with jointing tape on top and not on adhesive side.

6.8 Thickness — Thickness shall be measured in accordance with 3 of IS 7809 (Part 2). The tolerance on thickness shall be 10 percent or 0.01 mm, whichever is greater. The Preferred thickness shall be in the range 0.06 mm to 0.125 mm.

6.9 Adhesion to Steel — Adhesion to Steel shall be measured in accordance with 5 of IS 8402. Minimum adhesion to steel and unit of measurement are mentioned in Table 1.

6.10 Tensile Strength — Tensile Strength shall be measured in accordance with 6 of IS 8402. Minimum tensile strength and unit of measurement are mentioned in Table 1.

6.11 Elongation — Elongation shall be measured in accordance with 6 of IS 8402. Minimum elongation and unit of measurement are mentioned in Table 1.

7 SAMPLING AND CRITERIA FOR CONFORMITY

7.1 The scale of sampling shall be as prescribed in 3 of IS 8402

7.2 Number of Tests — Test for the determination of all the requirements of the specification given in 6 shall be performed on each of individual sample rolls separately.

7.3 Criteria for Conformity — The lot shall be declared as conforming to the requirements of the specification if the different test results as obtained in 6 meets the corresponding requirements given in the standard.

7.3.1 Number of Tests — Carry out the determination on five test specimens taken from the same roll.

8 PACKING AND MARKING

8.1 PACKING AND PACKAGING

8.1.1 The rolls shall be packed in 3 ply inner shelf unit to protect from dirt, oil and grease

8.1.2 The final packing is in corrugated box to protect form heat and humidity in transportation and from deterioration due to climatic conditions.

8.2 MARKING

8.2.1 Each Corrugated Box should be marked legibly with the following information:

- a) Name and type of material;
- b) Indication of source of manufacture;
- c) Month and Year of manufacture;
- d) Length and Width of the tape;
- e) Batch number of manufacture;
- f) Directions for storage and use; and
- g) Any other statutory requirements.

8.2.2 *BIS CERTIFICATION MARKING*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the Bureau of Indian Standards Act, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.