

## FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by Ores and Feed Stock for Aluminium Industry, its Metals/ Alloys and Products Sectional Committee Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was first published in 1962 which included various types of non ferrous scraps namely Aluminium, Copper , Brass , Bronze , Nickel and Zinc scrap .While reviewing the standard, in the light of experience gained during these years, the committee decided to revise the standard for Aluminium scrap , to bring it in line with the Institute of Steel Recycling Industries (ISRI) classification to create harmony between domestic and imported non ferrous scraps.

This revision will be called as IS 2066 Part 1 which will deal only with Aluminium and Aluminium alloy scrap , subsequent parts will deal with remaining non ferrous scraps. The second revision aims towards rationalizing the earlier version and make it more friendly and broader covering almost every possible variety of Aluminium and Aluminium Alloy scrap.

With growing urbanisation domestic consumption of Aluminium and Aluminium Alloy scraps is bound to increase, and the standard is expected to remove ambiguity and confusion that might arise from individual interpretation of different grades of scrap and terminology used in Non ferrous scrap industry.

With increasing Aluminium production and India becoming second largest Aluminium producer in the world, the stress will be on raw material to fulfill domestic demand. In such a scenario, scrap utilization to the maximum possible extent will reduce the burden not only on raw material mining but also on carbon emission and energy consumption. In order to adopt the philosophy of maximizing scrap-based Aluminium production it was envisaged to build a robust and detailed scrap standard which will be on par with all international practises.

This standard has been prepared to assist the industry in maximizing utilization of Aluminium and Aluminium Alloy scraps which is very important for circular economy and in achieving Sustainability developmental goal SDG 12: “ Responsible consumption and production”

*Draft Indian Standard*

**CODING AND CLASSIFICATION FOR ALUMINIUM AND ALUMINIUM  
ALLOY SCRAP**

**1 SCOPE**

**1.1** This standard gives coding and classification of Aluminium and Aluminium alloy scrap only.

**2 REFERENCES**

The following standards contain provisions, which through reference in this text constitute 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 recent editions of the standards listed below:

IS No.	Title
IS 1387 : 1993	General requirement for the supply of metallurgical materials
IS 5047 (Part 1) :1986	Glossary of terms relating to aluminium and aluminium alloys: Part 1 unwrought and wrought metals
IS 5047 (Part 2) :1979	Glossary of terms relating to aluminium alloys and Part 2 plant and operations, thermal treatment, control and testing, finishing

**3 GENERAL CONDITIONS**

General requirements relating to the supply of material shall conform to IS 1387.

**4 TERMINOLOGY**

4.1 Baling — Hydraulically compaction process for aggregating loose scraps having high surface area and low density.

4.2 Briquetting — Compaction process of small scraps assisted by heating depending on the type of materials.

4.3 Shearing — Slicing heavy pieces of Al scrap.

4.4 Shredding — Reduction of big size ferrous scrap into small pieces using hammer mills. Mostly automotive hulk and white goods are reduced in shredder.

4.5 Incineration — Non Ferrous scraps subjected to combustion for removal of organic/inorganic materials from surface.

**4.0 CLASSIFICATION OF ALUMINUM AND ALUMINIUM ALLOY SCRAP**

**HEAVIER PIECES OF ANY SIZE, LENGTH AND WEIGHT ACCEPTABLE UPON MUTUAL AGREEMENT BETWEEN BUYER AND SELLER.**

- 1. CLEAN ALUMINUM LITHOGRAPHIC SHEETS: TABLET**  
To consist of 1000 and/or 3000 series alloys, to be free of paper, plastic, excessively inked sheets and any other contaminants. Minimum size of 3” (8 cm) in any direction.
- 2. NEW, CLEAN ALUMINIUM LITHOGRAPHIC SHEETS: TABLOID**  
To consist of 1000 and/or 3000 series alloys uncoated, unpainted Minimum size of 3” (8 cm) in any direction.
- 3. MIXED LOW COPPER ALUMINIUM CLIPPINGS AND SOLIDS: TABOO**  
Shall consist of new, clean, uncoated and unpainted low copper aluminum scrap of two or more alloys with a minimum thickness of 0.015 inches (38 mm) and to be free of 2000 and 7000 series, hair wire, wire screen, punching’s less 1/2 inch (1.25 cm) diameter, dirt, and other non-metallic items. Grease and oil not to total more than 1%. Variations to this specification should be agreed upon prior to shipment between the buyer and seller.
- 4. CLEAN MIXED OLD ALLOYS SHEET ALUMINIUM : TAIN/ TABOR**  
Shall consist of clean old alloy aluminium sheet of two or more alloys, free of foil, venetian blinds, castings, hair wire, screen wire, food or beverage containers, radiator shells, airplane sheet, bottle caps, plastic, dirt, and other non-metallic items, Oil and grease not to total more than 1%. Up to 10% Tale permitted.
- 5. NEW ALUMINUM CAN STOCK : TAKE**  
Shall consist of new low copper aluminum can stock and clippings, clean, lithographed or not lithographed, and coated with clear lacquer but free of lids with sealers, iron, dirt and other contamination. Oil not to exceed 1%.
- 6. POST CONSUMER ALUMINIUM CAN SCRAP: TALC**  
Shall consist of old aluminum food and/or beverage cans. The material is to be free of other scrap metals, foil, tin cans, plastic bottles, paper, glass, and other non-metallic items. Variations to this specification should be agreed upon prior to shipment between the buyer and seller.
- 7. SHREDDED ALUMINIUM USED BEVERAGE CAN (UBC) SCRAP: TALCRED**  
Shall have a density of 12 to 17 pounds per cubic foot (193 to 273 kg/m<sup>3</sup>). Material should contain maximum 5% fines less than 4 mesh (U. S. Standard screen size) (6.35 mm). Must be magnetically separated material and free of steel, lead, bottle caps, Plastic cans and other plastics, glass, wood, dirt, grease, trash, and other foreign substances, Any free lead is basis for rejection. Any and all aluminum items, other than used beverage cans, are not acceptable. Variations to this specification should be agreed upon prior to shipment between the seller and buyer.

8. **DENSIFIED ALUMINIUM USED BEVERAGE CAN (UBC) SCRAP: TALDACK**

Shall have a biscuit density of 35 to 50 pound per cubic foot 562 to 802 kg/m<sup>3</sup>. Each biscuit not to exceed 60 pounds (27.2 kg). Nominal biscuit size range from 10" to 13" × 10 1/4" (25.4 × 33 × 26 cm) to 20" × 6 1/4" 9" (50.8 × 15.9 × 22.9 cm). Shall have banding slots in both directions to facilitate bundle banding. All biscuits comprising a bundle must be of uniform size. Size: Bundle range dimensions acceptable are 41" to 44" × 51" ( 104 to 112 cm ) to 54" × 54" (137 × 137 cm) to 56" (142 cm) to 56" (142 cm) high. The only acceptable tying method shall be as follows: Using minimum 5/8" (1.6 cm) wide by .020" (.05 cm) thick steel straps, the bundles are to be banded with one vertical band per bundle. Use of skids and/or support sheets of any material is not acceptable. Must be magnetically separated material and free of steel, lead, bottle caps, plastic cans and other plastic glass, wood, dirt, grease, trash, and other foreign substances. Any free leads is basis for rejection. Any and all aluminum items, other than used beverage cans, are not acceptable, Items ant covered in the specifications, including moisture, and any variations to this specification should be agreed upon prior to shipment between the seller and buyer.

9. **BALED ALUMINIUM USED BEVERAGE CAN (UBC) SCRAP: TALDON**

Shall have a minimum density of 14 pounds per cubic foot (225 kg/m<sup>3</sup>), and a maximum density of 17 pounds per cubic foot (273 kg/m<sup>3</sup>) for unflattened UBC and 22 pounds per cubic foot (35+ kg/m<sup>3</sup>), with bale range dimensions of 24" to 40" (61 to 132) cm). The only acceptable tying method shall be as follows: four to six to ten #13 gauge steel wires (aluminium bands or wires are acceptable in equivalent strength and number). Use of skids and/or support sheets of any material is not acceptable. Must be magnetically separated material and fre of steel, lead, bottle caps, plastic cans and other plastic, glass, wood, dirt, grease, trash, and other foreign substances. Any free lead is basis for rejection. Any and all aluminum items, other than used beverage cans, are not acceptable. Variations to this specification should be agreed upon prior to shipment between the buyer and seller.

10. **BRIQUETUED ALUMINUM USED BAVERAGE CAN (UBC) SCRAP: TALDORK**

Shall have a briquette density of 50 pounds per cubic foot (800 kg/m<sup>3</sup>) minimum. Nominal briquette size shall range from 12" to 24" (30.5 × 61 cm) × 12" to 24 (30.5 × 61 cm) in uniform profile with a variable length of 8" (20.3 cm) minimum and 48" (122 cm) maximum. Briquettes shall be bundled or stacked on skids and secured with a minimum of one vetical band per row and a minimum of one girth band per horizontal layer. Briquettes not to over hand pallet. Total package height shall be 48 (122 cm) wide by .020" (5 mm) thick steel strapping or equivalent strength. The weight of any bundle shall not exceed 4,000 pounds (1.814 mt). Material must be magnetically separated and free of steel, plastic, glass, dirt and all other foreign substances. Any and all aluminum items other than UBC are unacceptable. Any free lead is basis for rejection. Items not covered in the specification, including moisture, and any variations to this specification should be agreed upon prior to shipment between the buyer and seller.

**11. PAINTED SIDING : TALE**

Shall consist of clean, low copper aluminum siding scrap, painted one or two sides, free of plastic coating, iron, dirt, corrosion, fiber, foam, or fiberglass backing or other non-metallic items.

**12. ALUMINUM COPPER RADIATORS: TALK**

Shall consist of clean aluminum and copper radiators, and/or aluminum fins on copper radiators, and/or aluminum fins on copper tubing, free of brass tubing, iron and other foreign contamination.

**13. E. C. ALUMINUM CHOPS AND STRAWS: TALL**

Shall consist of clean, 1350 and/or 1050 alloy, E.C. aluminum, chops or straws, free of straws, free of screening, hair-wire, iron, copper, insulation and other non-metallic items. Must be free of minus 20 mesh material. Must contain 99.45% aluminum content.

**14. ALL ALUMINUM RADIATORS FROM AUTOMOBILES: TALLY**

Shall consist of clean aluminum radiators and/or condensers. Should be free of all other types of radiator. All contaminants including iron, plastic, and foam not to exceed 1% of weight. Any deviation to this specification, including oxidation and aluminum content, to be negotiated between buyer and seller.

**15. E. C. ALUMINUM WIRE AND CABLE: TALON**

Shall consist of new, clean, 1350 and/or 1050. E.C. aluminum wire or cable free from hair wire. ACSR wire screen, tape, iron, insulation and other non-metallic items. Must contain 99.45% aluminum content.

**16. ALUMINUM CHOPS AND STRAWS: TANK**

Shall consist of clean aluminum, chops or straws, free of screening, hair-wire, iron, copper, insulation and other non-metallic items. Must be free of minus 20 mesh material. Must contain 99% aluminum content.

**17. NEW MIXED ALUMINUM WIRE AND CABLE: TANN**

Shall consist of new, clean, unalloyed aluminum wire or cable which may contain up to 10% 6000 series wire and cable free from hair wire, wire screen, iron, insulation and other non-metallic items.

**18. CLEAN ALUMINUM PISTONS: TARRY A**

Shall consist of clean aluminum pistons to be free from struts, bushing, shafts, iron rings and non-metallic items, Oil and grease not to exceed 2%.

**19. CLEAN ALUMINUM PISTONS WITH STRUTS: TARRY B**

Shall consist of clean whole aluminum pistons with struts. Material is to be free from bushings, shafts, iron and non-metallic item. Oil and grease not to exceed 2%.

**20. IRONY ALUMINUM PISTONS TARRY C**

Shall consist of aluminum pistons with non-aluminum attachments to be sold on recovery basis or by special arrangement between buyer and seller.

**21. OLD MIXED ALUMINUM WIRE AND CABLE TASSEL**

Shall consist of old, unalloyed aluminum wire and cable which may contain up to 10% 6000 series wire and cable with not over 1% free oxide or dirt and free from hair wire, wire screen, iron, insulation and other non-metallic items.

**22. OLD PURE ALUMINIUM WIRE AND CABLE: TASTE**

Shall consist of old , unalloyed aluminium wire and cable containing not over 1% free oxide or dirt and free from hair wire , wire screen , iron , insulation and other non metallic items.

**23. NEW PRODUCTION ALUMINUM EXTRUSIONS: TATA**

Shall consist of one alloy (typically 6063), Material may contain “butts ends” from the extrusion process but must be free of any foreign contamination. Anodized material is acceptable. Painted material or alloys other than 6063 must be agreed upon by buyer and seller.

**24. ALUMINUM EXTRUSIONS “10/10”: TOTO**

Material to consist of new production and old/used 6063 extrusions that may contain up to (but not exceed) 10 percent painted extrusions and 10 percent 6061 alloy extrusions. Must not contain other alloys of aluminum. Material should be free of zinc corners, iron attachments, felt, plastic, paper, cardboard, thermos break, and dirt and other contaminants.

**25. ALUMINUM EXTRUSION DEALER GRADE:TUTU**

Shall consist of old extruded aluminum of one alloy, typically alloy 6063, 6061, or 7075. Material must be free of iron, thermos break, saw chips, zinc corners, dirt, paper, carboard, and other foreign contamination. Percentages of paint or other alloy to be agreed upon by buyer and seller.

**26. ALUMINUM WIRE AND CABLE : TEASE**

Shall consist of new, clean, aluminum wire or cable free from hair wire, ACSR, wire screen, iron, insulation and other non-metallic items, Must contain 99% aluminum content.

**TURNINGS**

Shall consist of aluminum borings and turnings of one specified alloy, Material should be free of oxide-tion, dirt free iron, stainless steel, magnesium, oil, flammable liquids, moisture and other non-metallic items. Fines should not exceed 3% through a 20 mesh (U. S. standard) screen.

**27. MIXED ALUMINUM BORING AND TURNINGS: TELIC**

Shall consist of clean, uncorroded aluminum borings and turnings of two or more alloys and subject to deductions for fines in excess of 3% through a 20 mesh screen and dirtm free iron, oil, moisture and all other non-metallic items, Material containing iron in excess of 10 % and/or free magnesium or stainless steel or containing highly flammable

cutting com-pounds will not constitute good delivery. To avoid dispute, material should be sold on basis of definite maximum zinc, tin and magnesium content.

**28. MIXED ALUMINUM CASTINGS: TENSE**

Shall consist of all clean aluminum castings which may contain auto and airplane castings but no ingots, and to be free of iron, brass, dirt and other non-metallic items. Oil and grease not to total more than 2%.

**29. AIRCRAFT SHEET ALUMINUM: TEPID**

Should be sold on recovery basis or by special arrangements with purchaser.

**30. NEW ALUMINUM FOIL: TERSE**

Shall consist of clean, new, pure, uncoated 1000 and/or 3000 and/or 8000 series alloy aluminum foil, free from anodized foil, radar foil and chaff, paper, plastics, or any other non-metallic item. Hydraulically briquetted material and other alloys by agreement

**31. POST CONSUMER ALUMINUM FOIL: TESLA**

Shall consist of baled old household aluminum foil and formed foil containers of uncoated 1000, 3000 and 8000 series aluminum alloy. Material may be anodized and contain a maximum of 5% organic residue. Material must be free from radar chaff foil, chemically etched foil, laminated foils, iron, and paper plastic and other non-metallic contaminants.

**32. NEW COATED ALUMINUM FOIL: TETRA**

Shall consist of new aluminum foil coated or laminated with ink, lacquers, paper, or plastic, PVC and other non-metallic items, This foil is sold on a metal content basis or by sample as agreed between buyer and seller.

**33. ALUMINUM GRINDINGS: THIGH**

Should be sold on recovery basis or by special arrangements with purchaser.

**34. ALUMINUM DROSSES, SPATTERS, SPILLINGS, SKIMMINGS AND SEWPINGS: THIRL**

Should be sold on recovery basis or by special arrangement with purchaser.

**35. ALUMINUM BREAKAGE : THORN**

Shall consist of aluminum with miscellaneous contaminants like iron, dirt, plastic and other types of contaminants, Material can either be sold based on aluminum recovery or content as agree upon by buyer and seller. Must contain a minimum of 33% aluminum unless otherwise agreed upon by buyer and seller.

**36. SWEATED ALUMINUM: THROB**

Shall consist of aluminum scrap which has been sweated or melted into a form or shape such as an ingot, sow or slab for convenience in shipping, to be free from corrosion, dross or any non-aluminum inclusions. Should be sold subject to sample or analysis.

**37. SEGREGATED NEW ALUMINUM ALLOY CLIPPINGS AND SOLIDS: TOOTH**

Shall consist of new, clean, uncoated and unpainted aluminum scrap of one specified aluminum alloy with a minimum thickness of 0.15" (.38 mm) and to be free of hair wire, wire screen, dirt and other non-metallic items. Oil and grease not to total more than 1%. Also free from punching less than ½" (1.27 cm) in size.

**38. MIXED NEW ALUMINUM ALLOY CLIPPINGS AND SOLIDS: TOUGH**

Shall consist of new, clean, uncoated and unpainted aluminum scrap of two or more alloys with a minimum thickness of .015' (.38 mm) and to be free of hair wire, wire screen, dirt and other non-metallic items. Oil and frease not to total more than 1%. Also free from punchings less than ½" (1.27 cm) in size.

**39. SEGREGATED NEW ALUMINUM CASTINGS, FORGINGS AND EXTRUSIONS: TREAD**

Shall consist of new, clean, uncoated aluminum castings, forging, and extrusions of one specified alloy only and to be free from sawings, stainless steel, zinc, iron, dirt, oil, grease and other non-metallic items.

**40. ALUMINUM AUTO OR TRUCK WHEELS: TROMA**

Shall consist of all clean automobile aluminum castings of sufficient size to readily identified and to be free from iron, dirt, brass, bushings, and non-metallic items, Oil and grease not to total more than 2%.

**41. ALUMINIUM AUTO CASTINGS : TRUMP**

Shall consist of all clean automobile aluminium castings of sufficient size to be readily identified and to be free from iron , dirt,brass, bushings and non metallic items.Oil and grease not to total more than 2 %.

**42. Aluminum Conductor Steel Reinforced wire (ACSR): Trill**

Aluminum Conductor Steel Reinforced (ACSR) wire is a combination of steel and aluminum wire, of various configurations, with the expected aluminum recovery agreed upon by the buyer and the seller. Material to be free of other wires and cables unless mutually agreed upon.

**43. Insulated aluminum wire TWANG**

Insulated aluminum wire, which may or may not cotain other wires of metal shielding, with the expected aluminum recovery agreed upon by the buyer and the seller. The material to be free of other wire and cables unless mutually agreed upon.

**44. FRAGMENTIZER AIRCRAFT ALUMINUM SCRAP (2000 and 7000 series): TWIRL**

The material as received must be dry and not to cortain more than 2% free zinc, 1% maximum free magnesium, and 1.5% maximum free iron and stainless with a maximum of 2% analytical iron. Not to contain more than a total 5% maximum of non-metallics, of which no more than 1% shall be rubber and plastics. To be free of excessively oxidized material. Any variations to be sold by special arrangement between buyer and seller.

**45. FLOATED FRAGMENTIZER ALUMINUM SCRAP (from Automobile Shredders): TWITCH**

Derived from wet or dry media separation device, the material must be dry and not contain more than 1% maximum free zinc, 1% maximum free magnesium, and 1% maximum of analytical iron. Not to contain more than a total 2% maximum of non-metallics, of which no more than 1% shall be rubber and plastic. To be free of excessively oxidized material air bag canisters, or any sealed or pressurized items. Any variation to be sold by special arrangement between buyer and seller.

**46. FRAGMETIZER ALUMINUM SCRAP (from Automobile Shredders): TWEAK**

Derived from either mechanical or hand separation, the material must be dry and not contain more than 4% maximum free zinc, 1% maximum free magnesium, and 1.5% maximum of analytical iron. Not to contain more than a total 5% maximum of non-metallics, of which no

more than 1% shall be rubber and plastics. To be free of excessively oxidized material, air bag canisters, or any sealed or pressurized items. Any variation to be sold by special arrangement between buyer and seller.

**47. BURNT FRAGMENTIZER ALUMINUM SCRAP (from Automobile Shredders):**

**TWIRE**

Incinerated or burned material must be dry and not contain more than X% (% to be agreed upon by buyer and seller) ash from incineration, 4% maximum free zinc, 1% maximum free magnesium, and 1.5% maximum of analytical iron. Not to contain more than a total 5% maximum of non-metallics of which non-more than 1% shall be rubber and plastics. To be free of excessively oxidized material, air bag canister, or any sealed pressurized items. Any variation to be sold by special arrangement between buyer and seller.

**48. SHREDED NONFERROUS SCRAP (predominantly aluminum): ZORBA**

Shall be made up of a combination of the nonferrous metals: aluminum, copper, lead, magnesium stainless steel, nickel, tin, and zinc, in elemental or alloyed (solid form). The percentage of each metal within the nonferrous concentrate shall be subject to agreement between buyer and seller. Material generated by eddy current, air separation, flotation screening, other segregation technique(s), or a combination thereof. Shall have passed one or more magnets to reduce or eliminate free iron and/or large iron attachments. Shall be free of radioactive material, dross, or ash. Material to be bought/sold under this guideline shall be identified as "Zorba" with a number to follow indicating the estimated percentage nonferrous metal content of the material (e.g., "Zorba 90" means the material contains approximately 90% nonferrous metal content). May also be screened to permit description by specific size ranges.