

भारतीय मानक

प्रक्रमित लौह क्षेप्य (स्क्रेप) का वर्गीकरण — रीति संहिता

(पहला पुनरीक्षण)

Indian Standard

CODE FOR CLASSIFICATION OF
PROCESSED FERROUS SCRAP

(First Revision)

(Incorporating Amendment No. 1)

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BUREAU OF INDIAN STANDARDS
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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the General Metallurgical Standards Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was published in 1963. While reviewing the standard in the light of experience gained during these years, the Committee decided to revise it to bring it in the line with the present practices being followed by the Indian Industry.

This Standard has been prepared to assist the industry in the maximum utilization of the large quantities of iron and steel scrap that are being consumed by iron and steel units. The internal consumption of iron and steel scrap is bound to increase and the standard is also expected to remove ambiguity and confusion that might arise from individual interpretation of the different grades of scrap and terminology used in the ferrous scrap industry.

The 'circulating scrap', that is, the scrap as it arises in the plant itself is not included in this standard and for trade purposes it should be considered at par with 'capital' and 'process scrap', collected by the scrap collectors. Whenever a reference to any Indian Standard appears in this code, it shall be taken as a reference to the latest version of the standard.

This edition 2.1 incorporates Amendment No. 1 (September 1994). Side bar indicates modification of the text as the result of incorporation of the amendment.

5.10 No. 2 Heavy Melting Steel, under 300 mm × 300 mm

Same as 5.6 except for length and width which are limited to 300 mm × 300 mm.

5.11 No. 3 Heavy Melting Steel

It shall consist of wrought iron and/or mild steel galvanized scrap not less than 3 mm thick, in sizes not exceeding 900 mm × 300 mm. Individual pieces shall be free from attachment and shall be so cut as to lie flat in charging box and meant only for remelting. It shall not include auto body fenders.

5.12 Cuttings of Flat-Rolled, Bars, Rods and Tubes

It shall consist of crop-ends, cuttings, shearings, forgings, plates, bar, rods, structural shapes, tubes of not less than 6 mm thick, and in sizes not exceeding 1 500 mm × 600 mm.

5.13 Cuttings of Flat-Rolled, Bars, Rods and Tubes, under 900 mm × 300 mm × 20 mm

Same as 5.12 except in dimensions which shall be limited to size 900 mm × 300 mm and thickness between 6 mm and 20 mm.

5.14 Cuttings of Flat-Rolled, Bars, Rods and Tubes, under 600 mm × 600 mm × 20 mm

Same as 5.12 except in dimensions which shall be limited to size 600 mm × 600 mm and thickness between 6 mm and 20 mm.

5.15 Cuttings of Flat-Rolled, Bars, Rods and Tubes, under 300 mm × 300 mm × 20 mm

Same as 5.12 except in dimensions which shall be limited to size 600 mm × 300 mm and thickness between 6 mm and 20 mm.

5.16 Crop-ends of Semi-finished Steel

It shall consist of billet, bloom, axle, slab, heavy plates and heavy forged crops free from alloys, with thickness/diameter not exceeding 50 mm and maximum size of 900 mm × 300 mm.

5.17 Clean Shovable Steel Scrap

It shall consist of clean steel scrap not exceeding 150 mm in any dimensions including new factory clippings, punchings and stampings of any gauge.

5.18 No. 1 Bushelling

It shall consist of steel scrap not exceeding 300 mm in any dimension including new factory bushelling such as sheet clippings, stampings, etc. It shall be free from metal coatings, such as, lime coatings, vitreous enamelling, etc. It

shall also be free from electrical sheets over 0.5 percent silicon, old automobile bodies and fender stock.

5.19 Silicon Clippings

It shall consist of clean silicon bearings steel scrap including new factory bushellings for example clippings, stampings etc.

5.20 Shredded Scrap No. 1

It shall consist of homogeneous iron and steel scrap fragmented into pieces not exceeding 200 mm in any direction magnetically separated, originating from automobiles, unprepared No. 1 and 2 Steel, miscellaneous, bailing and sheet scrap. It shall be commercially free from dirt, non-ferrous metal and foreign materials and shall exclude grindings, swarf and turnings and borings. It shall have average density 1100 kg per cubic metre minimum.

5.21 Shredded Scrap No. 2

Same as 5.20 except average density which shall be 950 kg per cubic metre minimum.

5.22 Shredded Scrap No. 3

Same as 5.20 except average density which shall be 800 kg per cubic metre minimum.

5.23 Shredded Scrap No. 4

It shall consist of iron and steel scrap fragmentised and magnetically separated. It shall be commercially free from dirt and non-ferrous metals. It shall have average density 600 kg per cubic metre minimum.

6 BUNDLE SCRAP

6.1 No. 1 Bundle (Hydraulically Compressed)

It shall consist of new black sheets, cuttings or punchings of maximum size 1 500 mm × 900 mm × 600 mm hydraulically compressed and to a density of not less than 1 200 kg per cubic metre. It shall be free from paint or coating of any kind. It may include chemically detinned material, but shall not include any material containing more than 0.5 percent silicon.

6.2 No. 1 Bundle (Hydraulically Compressed), under 500 mm × 500 mm × 400 mm

Same as 6.1 except size which is limited to 500 mm × 500 mm × 400 mm max.

6.3 No. 1 Bundle (Hydraulically Compressed), under 400 mm × 400 mm × 300 mm

Same as 6.1 except size which is limited to 400 mm × 400 mm × 300 mm.

Indian Standard

CODE FOR CLASSIFICATION OF PROCESSED FERROUS SCRAP

(*First Revision*)

1 SCOPE

1.1 This standard covers the classification of processed ferrous scrap.

1.2 It does not include the classification of scrap in the form it occurs in the steel manufacturing plants.

2 REFERENCE

IS 1387 : 1993 General requirements for the supply of metallurgical materials (*second revision*) is necessary adjunct to this standard.

3 GENERAL CONDITIONS

General requirements relating to the supply of processed ferrous scrap shall conform to IS 1387 : 1993.

4 CLEANLINESS

4.1 All grades should be free of dirt, non-ferrous metals, or foreign materials of any kind, any excessive rust or corrosion. However, the terms 'free of dirt, non-ferrous materials, or foreign material of any kind' are not intended to preclude the accidental inclusion of any negligible amounts where it can be shown that this amount is unavoidable in the customary preparation and handling of the particular grade involved.

4.2 Residual and Other Alloys

All grades must be free from alloys. However, the term 'free of alloys' is not intended to preclude the accidental and unavoidable inclusion of any negligible amounts or to preclude proportions permitted by joint agreement.

4.3 Safety

All grades to be free from pressurised gas, fuel and other sealed containers, explosives, shells, bombs and dangerously inflammable material. Any material which is potentially re-saleable be sheared or cut prior to delivery. All deliveries must comply with the statutory requirements for preservation of health and safety.

5 HEAVY MELTING SCRAP

5.1 No. 1 Heavy Melting Steel

It shall consist of reasonably wrought iron and/or mild steel scrap not less than 6 mm thick in

sizes not exceeding 1500 mm × 600 mm. Individual pieces shall be free from attachment and shall be so cut as to lie flat in the charging box and meant only for remelting.

5.2 No. 1 Heavy Melting Steel, Under 900 mm × 600 mm

Same as 5.1 except for length which is limited to 900 mm.

5.3 No. 1 Heavy Melting Steel, Under 600 mm × 600 mm

Same as 5.1 except for length which is limited to 600 mm.

5.4 No. 1 Heavy Melting Steel, Under 450 mm × 450 mm

Same as 5.1 except for length and width which are limited to 450 mm × 450 mm.

5.5 No. 1 Heavy Melting Steel, Under 300 mm × 300 mm

Same as 5.1 except for length and width which are limited to 300 mm × 300 mm.

5.6 No. 2 Heavy Melting Steel

It shall consist of wrought iron or mild steel black scrap not less than 3 mm thick, in sizes not exceeding 1500 mm × 600 mm. Individual pieces shall be free from attachment and shall be so cut as to lie flat in the charging box and meant only for remelting. It shall not include auto body fenders.

5.7 No. 2 Heavy Melting Steel, under 900 mm × 600 mm

Same as 5.6 except for length which is limited to 900 mm.

5.8 No. 2 Heavy Melting Steel, under 600 mm × 600 mm

Same as 5.6 except for length which is limited to 600 mm.

5.9 No. 2 Heavy Melting Steel, under 450 mm × 450 mm

Same as 5.6 except for length and width which are limited to 450 mm × 450 mm.

6.4 No. 1 Bundle (Hand Bundled)

Same as 6.2, but hand bundled and size as per customer's requirement.

6.5 No. 2 Bundle (Hydraulically Compressed)

It shall consist of old black sheet scrap auto-body and fender stock of maximum size 1500 mm × 900 mm × 600 mm hydraulically compressed and to a density of not less than 1200 kg per cubic metre. It may include fence wire and light coil spring with a maximum of 15 percent galvanized material but exclude more than 5 percent enamelled or other material.

6.6 No. 2 Bundle (Hydraulically Compressed) Under 500 mm × 500 mm × 400 mm

Same as 6.5 except size which is limited to 500 mm × 500 mm × 400 mm.

6.7 No. 2 Bundle (Hydraulically Compressed) Under 400 mm × 400 mm × 300 mm

Same as 6.5 except size which is limited to 400 mm × 400 mm × 300 mm max.

6.8 No. 2 Bundle (Hand Bundled)

Same as 6.6 but hand bundled and size as per customer requirement.

6.9 No. 3 Bundle

It shall consist of off-grade material, compressed to charging box and weighing not less than 1 000 kg, per cubic metre. It may include thinned cans, tinned, galvanized, enamelled and other metal coated ferrous scrap, not suited for inclusion in No. 2 Bundle grade. It shall reasonably be free from dirt, non-ferrous material and non-metals of any kind. The sizes of bundles shall be as per customers' requirements.

6.10 Detinned Bundle

It shall consist of chemically processed tinned clippings, cuttings and punchings the tin content shall not exceed 0.1 percent. It shall be hydraulically compressed to sizes as per customer's requirements and weighing not less than 1200 kg per cubic metre.

6.11 Silicon Bundle

It shall consist of silicon sheet cuttings and punchings containing over 0.5 percent silicon, hydraulically compressed to size as per customer's requirements and weighing not less than 1 200 kg per cubic metre.

7 STEEL TURNING AND BORING SCRAP**7.1 Heavy Steel Turning**

It shall consist of short and heavy steel turning shall not include light turnings. It shall weigh

not less than 800 kg per cubic metre in the original state of production.

7.2 Machine Shop Turning (Treated)

It shall consist of clean steel or wrought iron turnings, free of iron borings (maximum 2 percent allowed), non-ferrous metals in a free state and scale, and shall be free from badly rusted or corroded stocks. It shall be treated to make it oil free and crushed to small pieces.

7.3 Machine Shop Turning (Untreated)

It shall consist of clean steel turnings reasonably free from cast or malleable iron turnings (2 percent maximum allowed), non-ferrous metals in a free state, scale or excessive oil and shall be free from badly rusted or corroded stock.

7.4 Old Turning

It shall consist of old steel turnings including springy, bushy, tangled or matted materials, lumps iron borings, badly rusted or corroded stock but shall exclude grindings, scale and non-metals in a free state.

7.5 Mixed Turning and Boring

It shall consist of clean steel turnings mixed with cast iron or malleable iron borings and drillings. It shall be free from scale, non-ferrous materials or excessive oil in a free state. It shall not contain badly rusted or corroded stock.

7.6 Steel Turning Briquette

It shall consist of steel turnings, compressed into a solid mass, reasonably free from oil, iron borings, non-ferrous metals, scale and badly rusted or corroded stock. Each briquette shall weigh not more than 30 kg and shall have a minimum density of 60 percent compared to the metal.

8 CAST IRON GRADES**8.1 No. 1 Machinery Grade Cast Iron**

It shall consist of clean and close grained cast iron of low phosphorus grade used exclusively for the manufacture of soft machinable casting. It shall be more than 400 mm in any one direction and no piece shall weigh more than 40 kg.

8.2 No. 2 Machinery Grade Cast Iron

It shall consist of clean and close grained cast iron of low phosphorus grade used exclusively for the manufacture of soft machinable casting. It shall be of cupola size, not over 600 mm × 750 mm and no piece shall weigh more than 75 kg.

8.3 No. 1 Cast Iron Grade

It shall consist of clean cast iron scrap, such as pipes (excluding soil pipes), railway sleepers, chairs or plates. It shall be free from used melting pots, stove plates, grates, burnt iron, railway brake blocks or foreign material. It shall be of cupola size, not over 600 mm x 750 mm and no piece shall weigh more than 75 kg.

8.4 No. 2 Cast Iron Grade

It shall consist of cast iron scrap, such as railway brake blocks, soil pipe scrap, counter weights of lifts or cast iron scrap attached with steel materials. It may also include automobile engines and cast iron heavy piece weighing not less than 250 kg.

8.5 No. 3 Cast Iron Grade

It shall consist of radiator castings, burnt cast iron scrap, such as stove plates, grate bars and other miscellaneous burnt iron.

8.6 Cast Iron Boring

It shall consist of clean cast iron or malleable iron borings and drillings free from steel turnings, scale lumps and excessive oil.

8.7 Cast Iron Briquette

It shall consist of cast iron borings, compressed to solid masses, reasonable free from oil, each briquette shall weigh not more than 30 kg and shall have a minimum density of 60 percent compared to the metal.

9 INGOT MOULD AND BOTTOM PLATE SCRAP

9.1 Ingot Mould and Bottom Plate Unbroken

It shall consist of used, rejected unbroken ingot mould and bottom plates of mould.

9.2 Ingot Mould Semi-broken, Under 10 tonnes

It shall consist of semi-broken ingot mould and bottom plates of mould. Individual pieces are broken to size 10 tonnes and under.

9.3 Ingot Mould Semi-broken, Under 3.0 tonnes

Same as 9.2 except weight of individual pieces which is limited to 3.0 tonnes and under.

9.4 Ingot Mould Broken Under 500 kg

It shall consist of broken ingot mould and bottom plates of moulds, individual pieces shall not exceed 500 kg.

9.5 Ingot Mould Broken, Under 50 kg

Same as 9.4 except weight of individual pieces which is limited to 50 kg and under.

10 STEEL SKULL SCRAP

10.1 Steel Skull Scrap (Processed) 500 kg and Under

It shall consist of steel skull scrap produced in the process of making steel, reasonably free from slag and impurities and individual pieces weighing 500 kg and under. It may include a maximum of 3 percent slag.

10.2 Steel Skull Scrap (Semi-Processed)

It shall consist of steel skull scrap produced during the making of steel, reasonably free from slag and impurities and individual pieces weighing 2.5 tonnes and under. It may include a maximum 5 percent slag. It may also include ladle bottom.

10.3 Cast Steel Skull Scrap (Un-processed/ Semi-Processed)

It shall consist of cast steel skull scrap produced during the making of steel in un-processed and semi-processed form. The weight of individual pieces may vary widely and to be agreed upon between the buyer and seller. It may include slag of varying percentage.

10.4 Cast Steel Skull Scrap

It shall consist of cast steel skull scrap produced out of foundries, reasonably free from slag and impurities and in pieces of 2.5 tonnes and under. It may also include ladle bottom. It may also include a maximum, of 5 percent slag.

11 CAST IRON SKULL SCRAP

11.1 Cast Iron Skull Scrap (Processed) 50 kg and Under

It shall consist of cast iron skull scrap produced from the foundries and/or at the integrated steel plants, reasonably free from slag and impurities and individual pieces weighing 50 kg and under. It may also include a maximum 3 percent slag.

11.2 Cast Iron Skull Scrap (Semi-processed), 2.5 Tonnes and Under

Same as 11.1 except weight of individual pieces which is limited to 2.5 tonnes and under.

11.3 Cast Iron Skull Scrap (Un-processed)

It shall consist of cast iron skull scrap produced from foundries and/or at integrated steel plants and reasonably free from slag and impurities. The weight of individual pieces may vary widely. The slag content may also vary widely and to be agreed upon between buyer and seller.

12 ALLOY STEEL SCRAP

12.1 Stainless Steel Scrap (18/8 type)

It shall consist of clean 18-8 type stainless steel scrap clips and solids, containing a minimum of 7 percent nickel, 16 percent chromium and having a maximum of 0.50 percent copper, 0.045 percent phosphorus and 0.03 percent sulphur and otherwise free of harmful contaminants. Particulars concerning physical description, grading, additional analysis and preparation to be agreed upon between buyer and seller.

12.2 Stainless Steel Turnings (18/8 type)

It shall consist of clean 18-8 type stainless steel scrap turnings, containing a minimum of 7 percent nickel, 16 percent chromium and to be free of non-ferrous metals, non-metallics, excessive iron, oil and other contaminants. Particulars concerning physical description, assay, packaging to be agreed upon between buyer and seller.

12.3 Low Nickel Stainless Steel Scrap Solids

It shall consist of all type of clean stainless steel scrap solids, containing a minimum of 3.5 percent nickel and 14 percent chromium. It shall not contain less than 0.5 percent copper and shall be free of foreign attachments and contaminants. Particulars, concerning physical description, grading, additional analysis, and preparation to be agreed upon between buyer and seller.

12.4 Nickel Free Stainless Steel Scrap Solids

It shall consist of all types of clean stainless steel scrap solids, containing less than 1 percent nickel and minimum 11 percent chromium. It shall not contain more than 0.5 percent copper, 0.045 percent phosphorus and 0.030 percent sulphur and shall be free of foreign attachments and contaminants. Particulars, concerning physical description, grading, additional analysis and preparation to be agreed upon between buyer and seller.

12.5 High Speed Steel Scrap 6-5-2 Solids

It shall consist of 6-5-2 type high speed steel scrap solid pieces, containing not less than 5.5 percent tungsten, 4.5 percent molybdenum, 1.7 percent vanadium. It shall be free from any other alloys, foreign attachments, oil and other contaminants. Particulars, concerning physical description, grading, additional analysis, and preparation to be agreed upon between buyer and seller.

12.6 High Speed Steel Scrap 18-4-1 Solids

It shall consist of 18-4-1 type high speed steel scrap solid pieces, containing not less than 17 percent tungsten, 3 percent chromium and 1.5 percent vanadium. It shall be free from any other alloys, foreign attachments, oil and other contaminants. Particulars, concerning physical description, grading, additional analysis, and preparation to be agreed upon between buyer and seller.

12.7 Other Alloy Steel Scrap

It shall consist of alloy steel scrap of varying alloying elements contents mutually agreed between buyer and seller. It shall be free from any other alloys, foreign attachments, oil and other contaminants. Particular concerning physical description, grading additional analysis and preparation to be agreed upon between buyer and seller.

13 RE-ROLLABLE STEEL SCRAP

13.1 Re-Rollable Steel Scrap, Seconds and Defectives

It shall consist of seconds and defectives or cuttings/rejected ingots/slabs/blooms/billets, bars, rods, angles, shapes and sections, rails and railway materials such as wheels, tyres, axles, sleepers, sleeper bars, fish plates and flat rolled products suitable for re-rolling without undergoing process of melting and of length 2 000 mm (Max) width 800 mm (Max) thickness/diameter 8 mm (minimum). In case of rails and railway materials there will be no size restriction.

13.2 Re-Rollable Steel Scrap, Used and Salvaged

It shall consist of used, old and salvaged ingots, bars, rods, angles, shapes and sections, rails and railway materials such as wheels, tyres, axles, sleepers, sleepers bars, fish plates and flat rolled products including plate cutting/shearing and materials obtained from breaking of old ship suitable for rerolling without undergoing process of melting and of length 2 000 mm (Max) width 600 mm (Max), thickness/diameter 8 mm (minimum). In case of rails and railway materials there will be no size restriction.


13.3 Re-Rollable Steel Scrap, Crop Ends

It shall consist of crop and (front and back end cuttings) of semi-finished or finished products suitable for re-rolling of maximum and minimum sizes agreed upon between buyer and sellers.

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