Non-Ferrous: Aluminum

Aluminum

- **Description**
  - Aluminum is a strong, lightweight material that comes in a variety of shapes and sizes.









Non-Ferrous: Aluminum

Aluminum - Level 1

Old Aluminum [Taint/Tabor]

- **Description**
  - Old aluminum is the most common grade within this category and acts as a catch-all in that just about any clean grade of aluminum can be found within this grade. Typically this is thin gauge material with paint and/or stickers.
- **Upgrade potential**
  - Several upgrades can come from taint/tabor. The most common upgrades are painted siding (tale), clean plate and pipe (tough/taboo), and painted and clean extrusion (tutu).
- **ISRI definition**
  - **Taint/Tabor** Clean Mixed Old Alloy Sheet Aluminum
    - Shall consist of clean old alloy aluminum 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.

Non-Ferrous: Aluminum

- Painted Aluminum Siding [Tale]
  - **Description**
    - Painted Aluminum Siding is just that, siding from houses along with gutters and downspouts. Depending on the amount of this material that enters a facility, it may or may not be sorted as it can easily be mixed with taint/tabor.
  - **Upgrade potential**
    - Depending on the source, there might be clean aluminum sheet that can be upgraded to tough/taboo.
  - **ISRI definition**
    - **Tale** Painted Siding
      - 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.



Non-Ferrous: Aluminum

- New Aluminum, Clean Aluminum Sheet [Tough/Taboo]
    - **Description**
        - New aluminum or clean aluminum sheet, such as checker plate or conduit, is unpainted and generally thicker gauge material compared to old aluminum. It also does not have any other foreign attachments on it such as iron. New aluminum is another common grade that is difficult to downgrade, seeing that only unpainted items should be within the pile.
    - **Upgrade potential**
        - 5052 and 6061 aluminum clips are often mixed in and can be upgraded. Looking for a stamp that states the alloy or using a metal analyzer are two of the easiest methods to upgrade this material.
    - **ISRI definition**
        - **Tough** Mixed New Aluminum Alloy Clippings and Solids
            - 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 grease not to total more than 1%. Also free from punchings less than 1/2” (1.27 cm) in size.
        - **Taboo** Mixed Low Copper Aluminum Clippings and Solids
            - 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, punchings 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.

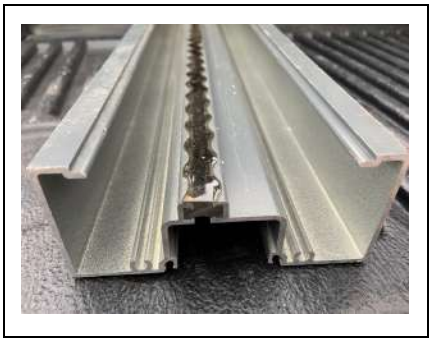


Non-Ferrous: Aluminum

- Extrusion [Tutu]
  - **Description**
    - Extrusions typically arrive in the form of handrails and window frames. Extrusions will always have an angle shape due to the extrusion process and can be either 6063 or 6061 extrusions. Depending on the source, there might be thermal break extrusion that has rubber/plastic down the center. This material must be sorted before shipping as it will most certainly result in a claim or downgrade.
  - **Upgrade potential**
    - There will likely be unpainted 6063 or 6061 material that can easily be upgraded within a truckload of painted extrusion.
  - **ISRI definition**
    - **Tutu** Aluminum Extrusion Dealer Grade
      - Shall consist of old extruded aluminum of one alloy, typically alloy 6063, 6061, or 7075. Material must be free of iron, thermo break, saw chips, zinc corners, dirt, paper, cardboard, and other foreign contamination. Percentages of paint or other alloys to be agreed upon by buyer and seller.

Non-Ferrous: Aluminum

- Thermal Break Extrusion
  - **Description**
    - This material is painted 6063 Extrusion with rubber/plastic down the middle to reduce or prevent the flow of thermal energy between the aluminum material.
  - **Upgrade potential**
    - While this material is typically downgraded from a truckload of painted extrusion, this might go the other way as well. There might be some painted/clean extrusion within a truckload of thermal break.



Non-Ferrous: Aluminum

- Cast Aluminum [Tense]
    - **Description**
        - In many cases, if aluminum that has a shape would qualify as cast aluminum. This material will most likely have a dull, grainy look to it. The material is typically brittle and can be broken up with tools or from dropping on the ground. If the finish has a shiny appearance, the material will probably be zinc die-cast, and it will need to be sorted.
    - **Upgrade potential**
        - In some cases, car wheels might get mixed within a truckload of cast aluminum, so it is important to look for these as there is a sizable price difference. It is also important to check Cast Aluminum with a magnet. If the iron content is too high and the magnet sticks, it will be downgraded.
    - **ISRI definition**
        - **Tense** Mixed Aluminum Castings
            - 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%.



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- Car and Truck Wheels [Troma]
    - **Description**
        - There are two different grades of aluminum when it comes to car and truck wheels. Car wheels are 356 aluminum with some chrome wheels and truck wheels are almost always 6061 aluminum.
    - **Upgrade potential**
        - Car and truck wheels should be clean (wheel weights, stems, inserts removed) however sometimes they arrive with attachments that need to be removed. With the right tools these attachments can easily be removed to make a clean product worth much more than one with attachments.
    - **ISRI definition**
        - **Troma** Aluminum Auto or Truck Wheels
            - Shall consist of clean, single-piece, unplated aluminum wheels of a single specified alloy, free of all inserts, steel, wheel weights, valve stems, tires, grease and oil and other non-metallic items. Variations to this specification should be agreed upon prior to shipment between the buyer and seller.
            - Car rims and Truck rims need to be packaged separately as they are different alloys.



Non-Ferrous: Aluminum

- Used Beverage Containers: UBC [Talc]
    - **Description**
        - Used Beverage Containers are typically referred to as UBC. This material is just what it says, aluminum beverage containers. Aluminum food containers should be removed as they will bring down the quality. Often residual moisture remains in the container resulting in a moisture deduction at the smelter.
    - **Upgrade potential**
        - In some cases, the tabs from the cans can be removed and upgraded to tough/taboo.
    - **ISRI definition**
        - **Talc** Post-Consumer Aluminum Can Scrap
            - 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.

Non-Ferrous: Aluminum

- Aluminum Shavings/Turnings
  - **Description**
    - Aluminum Shavings/Turnings are generated from the use of metalworking machineries such as lathes and touret mills. Depending on the facility, there could be various aluminum series such as 2000, 6000, and 7000. It is very important to visit the source to educate them on sorting this material to maximize the value. Excess moisture from cutting fluid will lead to downgrades and rejections of this material, so it is important to thoroughly dry the material before shipping. A magnet should also be run across this material from time to time to ensure steel turnings aren't mixed in.
  - **Upgrade potential**
    - Sorting 6000 from the other series will result in an upgrade as it will be considered High-Grade Telic versus Mixed Telic. There may also be large chunks of aluminum that can be upgraded as tough/taboo or 6061.
  - **ISRI definition**
    - **Telic** Mixed Aluminum Borings and Turnings
      - 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 dirt, 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 the basis of definite maximum zinc, tin and magnesium content.



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- Aluminum Radiators [Tally & Dirty Tally]
    - **Description**
        - Aluminum radiators are found in cars and air conditioners. These radiators consist of only aluminum. All iron and plastic need to be removed.
        - Dirty aluminum radiators have the ends still attached, the irony content not to exceed 15%. Also, no fan shrouds should be attached.
    - **Upgrade potential**
        - Dirty radiators can easily be upgraded by removing the ends.
    - **ISRI definition**
        - **Tally** All Aluminum Radiators From Automobiles
            - Shall consist of clean aluminum radiators and/or condensers. Should be free of all other types of radiators. 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.



Non-Ferrous: Aluminum

- Aluminum Copper Radiators [Talk]
    - **Description**
        - Aluminum/copper radiators are found within air conditioners and appliances. These units have copper pipes with aluminum fins attached to them that are typically enclosed with a steel frame. If the frame is left on, this material will be considered dirty/irony talk, and the ends themselves are considered talk ends.
    - **Upgrade potential**
        - Simply removing the steel frame or ends will result in an upgrade if purchased as a whole unit.
    - **ISRI definition**
        - **Talk** Aluminum Copper Radiators
            - Shall consist of clean aluminum and copper radiators, and/or aluminum fins on copper tubing, free of brass tubing, iron and other foreign contamination.



Aluminum - Level 2

8 Series of Aluminums

- **Description**
  - Aluminum can be divided into 8 series depending on the content of the alloying element.
    - 1000 Series Aluminum
      - The 1000 Series Aluminum is the purest of all the aluminum as it has the highest content of aluminum, 99% or more, without any other Technical elements added. Examples of 1000 series aluminum are EC wire and Buss bar. Aluminum in this series is primarily used for its conductivity and corrosion resistance.
    - 2000 Series Aluminum
      - The primary alloying element in the 2000 Series Aluminum is copper (Cu). One example of 2000 series aluminum is 2024 aluminum sheet. 2000 series aluminum is typically harder, stronger and used for its heat treatability. Due to those properties, this type of aluminum is often used in aerospace and military applications.
    - 3000 Series Aluminum
      - The primary alloying element in the 3000 Series Aluminum is Manganese (Mn), with content typically ranging from 1%-1.5%. These types of aluminum have high corrosion resistance. They are easy to work with, called “anti-rust aluminum,” and often used in humid environments such as air conditioning and refrigeration. Examples of this material are 3003 sheets, UBCs and radiators.
    - 4000 Series Aluminum
      - The primary alloying element in the 4000 Series Aluminum is Silicon (Si). Usually, the Silicon content is between 4.5% and 6%, and its properties include low melting point, good corrosion resistance and heat resistance. For those properties that the 4000 series aluminum is often used in building materials and mechanical parts.

Non-Ferrous: Aluminum

- 5000 Series Aluminum
    - The primary alloying element in the 5000 Series Aluminum is Magnesium (Mg), typically between 3%-5%. Its main properties include high tensile strength and low density, and is one of the more commonly used aluminum alloys, for example, 5052 aluminum sheet. Due to its lower weight characteristic, the 5000 series type of aluminum is often used in aviation and automotive applications.
- 6000 Series Aluminum
    - The 6000 Series Aluminum has two major alloying elements, Magnesium (Mg) and Silicon (Si), which makes it suitable aluminum for applications that require high corrosion and oxidation resistance. Some examples of 6000 series aluminum are both 6061 (extrusion, clips, and plate) and 6063 extrusion.
- 7000 Series Aluminum
    - The primary alloying element in the 7000 series is Zinc (Zn), which makes it very high strength and allows for heat treatability. Hence this type of aluminum is typically used in military and aerospace applications. A couple of examples of 7000 series aluminum are 7050 and 7075 aluminum.
- 8000 Series Aluminum
    - All other aluminum falls into the 8000 series, which typically has iron (Fe) as its major alloying element. Its primary property is strength. An example of an 8000 series is aluminum foil.

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- 5052 Aluminum
  - **Description**
    - 5052 Aluminum is typically found in plate form, and it will always have a stamp indicating this. 5052 will typically come from a machine shop that most likely works with other aluminum alloys. If the stamp is not visible, using a metal analyzer is really the only other option to confirm this grade. 5052 is typically mixed with New Aluminum [Tough/Taboo] when a facility doesn't generate enough to make it worth segregating.
  - **Upgrade potential**
    - 5052 is an upgrade found within New Aluminum [Tough/Taboo]. However, in a load on its own this material will receive a premium over New Aluminum [Tough/Taboo]l. To ensure you are receiving top dollar, it is important to check each sheet for a stamp or test with an analyzer to confirm grade, and then sell as a primary package.

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- 6061 Aluminum
  - **Description**
    - 6061 Aluminum is one of the most common grades of aluminum due to the variety of industrial applications it can be used in, such as pipe, plate, and structural beam. It's worth noting that truck wheels are made of 6061 aluminum so putting together a load of truck wheels and plate and/or pipe is a common method of shipping to a consumer. Similar to 5052 Aluminum, there will be stamps on the material indicating it is 6061. If stamps are unavailable the analyzer is the next step. 6061 is typically mixed with New Aluminum [Tough/Taboo] when a facility does not generate enough to make it worth segregating.
  - **Upgrade potential**
    - Although 6061 is one of the top aluminum grades, there is not much in the form of an upgrade within this material type.

- 10/10 Aluminum Extrusion [Toto]
    - **Description**
        - Like Tutu, this grade consists of painted 6063 extrusions; however, it allows for some clean 6061 extrusions (max 10%) and painted 6061 (max 10%). This is one of the most common dealer packages as most dealers don't see enough 6061 to segregate on its own.
    - **Upgrade potential**
        - 6061 typically receives a higher value over 6063, so if possible, it should be sold separately.
    - **ISRI Definition**
        - **Toto** Aluminum Extrusions "10/10"
            - 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, thermo break, and dirt and other contaminants.



Non-Ferrous: Aluminum

- EC Wire [Talon]
    - **Description**
        - EC wire is clean 1000 series aluminum typically produced by stripping the insulation from IAW or Aluminum Teck Cable. This material deserves a premium when sold on its own however if this is not a common grade, it can be mixed and shipped with New Aluminum [Tough/Taboo].
    - **Upgrade potential**
        - This is the highest grade aluminum in a scrapyard so it cannot be upgraded further.
    - **ISRI definition**
        - **Tall** New Pure Aluminum Wire and Cable
            - Shall consist of new, clean, unalloyed aluminum wire or cable free from hair wire, ACSR, wire screen, iron, insulation and other non-metallic items.



Aluminum - Level 3

- Secondary vs Primary Aluminum
  - **Description**
    - Processed and packaged Aluminum scrap is typically shipped to one of two types of consumers, either a secondary scrap aluminum consumer or a primary scrap aluminum consumer. Primary scrap aluminum consumers will pay a premium for specific segregated material. Their specifications are very exact, and the material must adhere to those specifications. These consumers often produce a particular product and depend on a specific chemistry scrap to produce such material. Consumers of primary aluminum scrap will be much quicker to reject material if it doesn't meet the outlined specifications. Some examples of primary aluminum scrap are 5052 aluminum sheet, 6063 extrusions, and UBCs. Secondary scrap aluminum consumers tend to be more flexible with material received that may not meet specifications. They may still accept the material but will downgrade it. In general, they purchase at a slightly larger discount. Some examples of secondary aluminum scrap are old sheets, irony extrusions, and old cast aluminum. Any material that can be upgraded from secondary material into a primary aluminum package will translate into additional value for the processor.

Non-Ferrous: Aluminum

- Dirty [Irony] Aluminum
  - **Description**
    - Dirty Aluminum or Irony aluminum is aluminum that has ferrous or other contaminants still attached to it. This is a common item as most suppliers don't want to spend time removing attachments. Buying and selling this material is typically done on aluminum recovery, so an experienced person should be present. It is very important to sort this material out of Old Aluminum [Taint/Tabor] as it is often found mixed.
  - **Upgrade potential**
    - Several upgrades can be found when this material is sorted, such as Old Aluminum [Taint/Tabor], New Aluminum [Tough/Taboo], and even Cast Aluminum [Tense]. When sorting is complete, using tools such as a shear can convert this material into a higher grade.



- Litho Sheet [Tablet & Tabloid]
    - **Description**
        - Litho sheets used to be a standard item produced from printing presses; however, this is becoming a rare commodity due to the switch to digital printing. It is very thin gauge aluminum sheets often seen with ink on them from the printing process. It is important to thoroughly sort through this material as there are often steel inserts mixed within a load of Litho sheets. Litho should be kept on its own however if only a small amount is delivered it can be mixed in with Old Aluminum [Taint/Tabor].
    - **Upgrade potential**
        - The only upgrade that might come through sorting this material is to find clean sheets without ink that can be upgraded to Tabloid.
    - **ISRI definition**
        - **Tablet** Clean Aluminum Lithographic Sheets
            - 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.
        - **Tabloid** New, Clean Aluminum Lithographic Sheet
            - To consist of 1000 and/or 3000 series alloys, uncoated, unpainted, to be free of paper, plastic, ink, and any other contaminants. Minimum size of 3” (8 cm) in any direction.