

September 22, 2017 _Comment

[Metal recycling](#) is one of the biggest sectors due to a strong connection with industrial manufacturing, construction and demolition, machinery, engineering and this list may be continued endlessly. Though, not many know that there are different types of metal that you can recycle. The two main categories are ferrous and non-ferrous. How do they differ? And what do those distinctions mean when it has to do with selling scrap metal?

In Short

- Ferrous metals and alloys include iron
- Non-ferrous products do not include iron

Seems pretty easy, doesn't it? Though, this is just theoretical knowledge and it's not so easy to determine the right type just looking at a random item. Fortunately, there is a number of various other aspects that set apart the two.

Ferrous metals characteristics

Ferrous metals include:

- mild steel
- carbon steel
- stainless steel
- cast iron
- wrought iron

These metals are largely used for their pull-off strength as well as endurance in cars, rails, housing construction, large-scale piping, most of things you use around the house for fixing i.e. different tools and hardware as well as knives you cook with.

As ferrous metals are created with the high amounts of carbon, such material and alloys are susceptible to rust. That's why, if you see rust you may be sure it's a ferrous metal except for wrought iron (as it resists oxidization being so iron pure) and stainless steel (thanks to its high chromium content).

Most ferrous steels likewise have magnetic behavior, which makes them very useful in the production of big motors as well as electric home appliances. Have you ever think about why you can stick so many different magnets to the fridge? Because it's made with ferrous metal.

Most significantly, ferrous metals are the most recycled products on the planet. In 2016 alone, 650 million tonnes of steel were recycled in the United State. recycled every year.

Non-ferrous metals characteristics

Non-ferrous metals include:

- aluminum
- brass
- copper
- nickel
- tin
- lead
- zinc
- precious metals like gold and silver

These metals are also strong as well as ferrous ones. But there are some important distinctions which make more preferable.

For instance, non-ferrous metals are far more malleable and additionally much lighter, making them fit for usage where weight is top priority after strength. Due to the fact that non-ferrous metals consist of no iron, they have a higher resistance to corrosion and deterioration, which is why you'll find these materials being used for rain gutters, water pipes, roof, cans and even aircraft. And as mentioned above, unlike ferrous metals, those are non-magnetic.

And what about recycling? Though aluminum takes the 3rd place among the most recycled material worldwide, many other non-ferrous materials like copper, brass and lead are reasonably limited, and metallurgists depend heavily on scrap product to earn new ones.

Pricing

Generally, ferrous scrap have the tendency to remain in excellent supply, so the rates have the tendency to be lower than many non-ferrous steels. The rates for steel and alloys remain rather stable on a month-to-month basis, going down or up only slightly. This is caused by the widespread practice of ferrous [metal recycling](#) all over the globe in high volume.

Non-ferrous scrap, as noted previously, are rather harder to produce and work. This naturally makes the demand greater. While aluminum rates don't rise and fall commonly as a result of recycling initiatives, others like copper and brass could change significantly in just a month's time depending upon the demands of the marketplace.

If you're an individual scrap collector with a desire to sell scrap, it's always best to check with a scrap supplier in your area to learn exactly what rates they're supplying prior to you bring your

materials to the backyard. [iSustain Recycling](#) provides information about the latest rates. Don't hesitate to [give us a call](#).

If you have a commercial, industrial or demolition [business](#), it is essential to analyze your specific scrap situation. [Our team](#) of specialists at [iSustain Recycling](#) not only will help identify what you have, but also provides an estimate for the collection and sale of your ferrous or non-ferrous materials.

<https://isustainrecycling.com/guide-scrap-metal-types/>

An Introduction to Metal Recycling

An Overview of Metal Recycling, Its Importance, and Recycling Processes

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BY [RICK LEBLANC](#)

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Metals can be recycled repeatedly without altering their properties. According to the American Iron and Steel Institute (AISI), steel is the most recycled material on the planet. The other highly recycled metals include aluminum, copper, silver, [brass](#), and gold.

Why Do We Recycle Metals?

Metals are valuable materials that can be recycled again and again without degrading their properties. Scrap metal has value, which motivates people to collect it for sale to recycling operations.

In addition to a financial incentive, there is also an environmental imperative. The recycling of metals enables us to preserve natural resources while requiring less energy to process than the manufacture of new products using virgin raw materials. Recycling emits less carbon dioxide and other harmful gasses. More importantly, it [saves](#)

[money](#) and allows manufacturing businesses to reduce their production cost. Recycling also creates jobs.

Quick Metal Recycling Facts

Although almost every kind of metal can be recycled again and again without degradation of properties, currently, only 30 percent of metal is recycled. Below are some additional [facts](#):

- Nearly 40 percent of worldwide steel production is made using recycled steel.
- Around 42 percent of crude steel in the United States is made of recycled materials.
- In the United States alone, around 100 million steel and tin cans are used every day.
- Steel and iron are the most recycled materials in the world due in part to the opportunity to recover large structures as well as the ease of reprocessing. The use of magnets in the sorting process enables recyclers to easily separate them from the mixed waste stream.
- Every year, around 400 million tons of metal are recycled worldwide.
- Currently, the single most recycled consumer product in the U.S. is the aluminum can.
- Throwing away a single aluminum can waste energy equivalent to the same can filled with gasoline.

Types of Metals Recycled

Metals can be classified as [ferrous, or non-ferrous](#). Ferrous metals are combinations of iron with carbon. Some common ferrous metals include carbon steel, alloy steel, wrought iron, and cast iron.

On the other hand, non-ferrous metals include aluminum, copper, lead, zinc, and tin. Precious metals are non-ferrous. The most common precious metals include gold, platinum, silver, iridium, and palladium.

The Metal Recycling Process

The main stages of the [metal recycling](#) process are as follows:

1. Collection

The [collection](#) process for metals differs than that for other materials because of higher scrap value. As such, it is more likely to be sold to scrap yards than sent to the landfill.

The largest source of scrap ferrous metal in the U.S. is from scrap vehicles.

[Other sources](#) include large steel structures, railroad tracks, ships, farm equipment, and of course, consumer scrap. Prompt scrap, which is created in the course of new product manufacturing, accounts for one-half of ferrous scrap supply.

2. Sorting

Sorting involves separating metals from the mixed scrap metal stream or the mixed multi-material waste stream. In automated recycling operations, magnets and sensors are used to aid in material separation.

At the entrepreneurial level, scrappers may employ a magnet, as well as to observe the material color or weight to help determine the metal type. For example, aluminum will be silver and light. Other important colors to look for are copper, yellow (for brass) and red, for red brass. Scrappers will improve the value of their material by segregating clean metal from the dirty material.

3. Processing

To allow further processing, metals are shredded. Shredding is done to promote the melting process as small shredded metals have a large surface to volume ratio.

As a result, they can be melted using comparatively less energy. Normally, aluminum is converted into small sheets, and steel is changed into steel blocks.

4. Melting

Scrap metal is melted in a large furnace. Each metal is taken to a specific furnace designed to melt that particular metal. A considerable amount of energy is used in this step.

Still, as mentioned above, the energy required to melt and recycle metals is much less than the energy that is needed to produce metals using virgin raw materials. Based on the size of the furnace, the degree of heat of the furnace and volume of metal, melting can take from just a few minutes to hours.

5. Purification

Purification is done to ensure the final product is of high quality and free of contaminants. One of the most common methods used for purification is Electrolysis.

6. Solidifying

After purification, melted metals are carried by the conveyor belt to cool and solidify the metals. In this stage, scrap metals are formed into specific shapes such as bars that can be easily used for the production of various metal products.

7. Transportation of the Metal Bars

Once the metals are cooled and solidified, they are ready to use. They are then transported to various factories where they are used as raw material for the production of brand new products.

When the products made of these metal bars come to the end of their useful life, the metal recycling process cycles again.

Challenges for the Metal Recycling Industry

The current overall metal recycling rate of around 30 percent is not acceptable, given the recyclability of almost every kind of metal, and challenges remain with respect how to recapture more material for recycling. The expansion of community recycling programs and public awareness help in this regard.

Another important reason for the low recycling rate has to do with the design of various metal products. The growing complexity of various modern products and their material mix makes recycling increasingly difficult. For instance, a simple mobile phone can contain as many as 40 different elements. So, extracting every kind of materials from a mobile phone and reusing them in the production of new products makes it difficult.

Metal Recycling Technologies

Modern recycling technologies can effectively identify many different kinds of metals, though there is still the need for even more effective recycling technologies to separate non-ferrous metals.

Separating ferrous metals from non-ferrous metals is one of the most important steps in the sorting process. As ferrous metals contain iron, they are attracted by magnets and easily pulled out of the mixed waste stream. In scrap yards, cranes fitted with an electromagnet can remove larger pieces of ferrous scrap.

When sorting metals from a mixed stream of recyclable material, the paper is removed first, leaving only plastics and metals. Then, electric currents are induced across the stream where only metals get affected. This process is called Eddy Current Separation. Although aluminum is not magnetic, this technology can levitate it and allow plastics to drop out of the process.

Recovering precious metals such as palladium, platinum, gold and other valuable metals such as copper, lead, and silver from electronic waste becomes economically viable only if enough scrap is collected. Such separation takes more technologically advanced and sophisticated recycling equipment. These days, in large recycling facilities, the use of sensors to identify metals through infra-red scanning and x-ray has become popular. Three common categories of metal sensing processes include biotechnology, hydrometallurgy, and pyrometallurgy. The use of these technologies can effectively improve metal recovery rates.

Business Opportunities in Metal Recycling

Traditionally, metal recycling has been regarded as a profitable business opportunity. In recent years, however, depressed prices have proved to be challenging. At an entrepreneurial level, a common entry point into the metal recycling business is through [starting scrap metal collection business](#) or [becoming a scrap metal vendor](#).

Metal Recycling Laws and Legislation

If you are looking to set up a metal recycling-related business in the U.S., you should know relevant recycling laws in your state. This [interactive map](#) allows you to find metal recycling laws pertinent to every jurisdiction.

<https://www.thebalancesmb.com/an-introduction-to-metal-recycling-4057469>