



## II Present Conditions for Steel Can Scraps

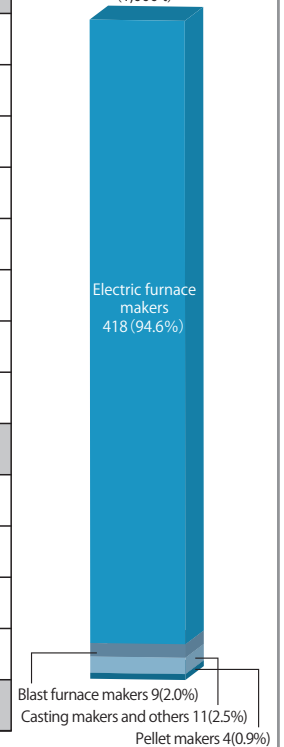
### 1. Types and Amount of Steel Can Scraps

#### Steel Can Scrap Purchase Amount According to Area and Type of Business

(Unit:1,000 tons)

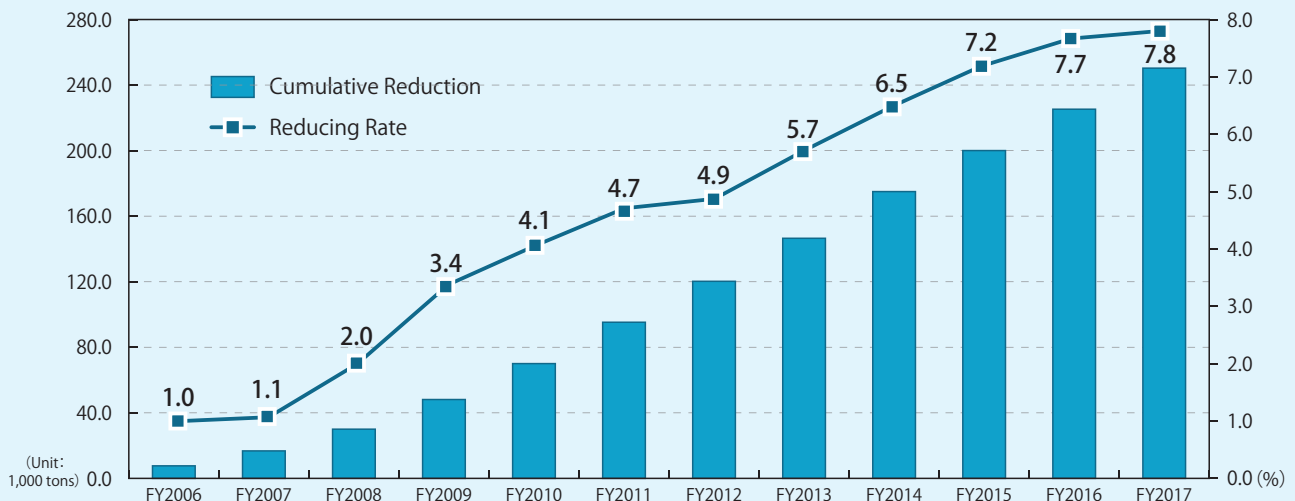
	FY2016 (B)				FY2017 (A)					(A-B)
	Press	Shredder	Total	%	Press	Shredder	Others	Total	%	
Hokkaido	15	1	16	3.5	14	1	0	15	3.4	-1
Tohoku	35	2	37	8.1	30	1	0	31	7.0	-6
Kanto	114	34	148	32.4	112	28	1	141	31.9	-7
Hokuriku	2	8	10	2.2	2	11	0	13	2.9	3
Tokai	40	17	57	12.5	44	17	0	61	13.8	4
Kinki	110	8	118	25.9	102	6	0	108	24.5	-10
Chugoku/ Shikoku	22	3	25	5.5	24	5	0	29	6.6	4
Kyushu/ Okinawa	33	13	46	10.1	31	13	0	44	10.0	-2
<b>Total</b>	<b>371</b>	<b>86</b>	<b>457</b>	<b>100.0</b>	<b>359</b>	<b>82</b>	<b>1</b>	<b>442</b>	<b>100.0</b>	<b>-15</b>
Electric furnace makers	341	78	419	91.7	339	79	0	418	94.6	-1
Blast furnace makers	23	0	23	5.0	9	0	0	9	2.0	-14
Casting makers and others	4	6	10	2.2	7	4	0	11	2.5	1
Pellet makers	3	2	5	1.1	3	0	1	4	0.9	-1
<b>Total</b>	<b>371</b>	<b>86</b>	<b>457</b>	<b>100.0</b>	<b>358</b>	<b>83</b>	<b>1</b>	<b>442</b>	<b>100.0</b>	<b>-15</b>

The amount of steel can scrap purchased according to the type of business (1,000 t)



### Concerning the Reducing of Steel Cans

In the "Committee to Reduce the Weight of Steel Cans" launched by the can manufacturing industry in June 2006, we formulated our voluntary action plans and worked on technology development as an industry. The target in the 1st and 2nd Voluntary Action Plan was achieved. In the 3rd voluntary action plan, we aim to achieve "a weight saving of 8% on average weight per can in 2020 fiscal year as compared with 2004 fiscal year". In 2017 fiscal year, the weight has been reduced to 7.8%.



Written by: Japan Steel Can Recycling Association

## Uniform Standards of Ferrous Scraps

“Uniform Standards” are the criteria used for a distribution of iron scraps, and set up according to types and grades etc. The standard listed below is used as a national standard. Iron scraps which meet the requirement mean they are a product, however, some manufacturers use their own standard since a production capacity and goods vary at each work.

Classification	Category	Grade	Dimensions (mm)		Unit Weight (kg)	Remarks
			Thickness	Width or Height × Length		
Carbon Steel Scrap	Heavy	Being sized by guillotine shear, gas cutting, heavy construction machines, or others, to be divided, according to thickness, size, and unit weight, into the following:				
		H5	6 ≤	≤500 × ≤700	≤600	
		H1	6 ≤	≤500 × ≤1200	≤1000	
		H2	3 ≤ t < 6	≤500 × ≤1200	≤1000	
		H3	1 ≤ t < 3	≤500 × ≤1200	≤1000	
		H4	< 1	≤500 × ≤1200	≤1000	
	Press	The basic material being chiefly steel-sheet-fabricated products and being compression-formed and rectangular parallelepiped by a press machine, to be divided, according to basic materials, into the following:				
		A	W+H+L ≤ 1800, with the max dimension ≤ 800			Automobiles (mainly from End of Life Vehicles)
		B	W+H+L ≤ 1800, with the max dimension ≤ 800			Except for Press A and C
		C	600 ≤ W+H+L ≤ 1800			Cans for food/drink
	Shredded	The basic material being chiefly steel-sheet-fabricated products and being crushed by shredder and then sorted by magnetic classifier, to be divided, according to basic materials, into the following:				
		A				Automobiles (mainly from End of Life Vehicles)
		B				Except for Shredded A
	New Scrap (Shindachi)	Consisting of cutting and blanking chips produced during the manufacture of steel-sheet-fabricated products, to be divided, according to shape and degree of oxidation, into the following:				
		Shredded				Shredded
		Press A	W+H+L ≤ 1800, with the max dimension ≤ 800			Hot or cold Sheet with no rust excluding coated sheet
		Press B	W+H+L ≤ 1800, with the max dimension ≤ 800			Hot or cold Sheet with some rust, incl Coated sheet without harm for steel making
		Busheling A	W or H ≤ 500 × L ≤ 1200			Hot or cold Sheet with no rust excluding coated sheet
		Busheling B	W or H ≤ 500 × L ≤ 1200			Hot or cold Sheet with some rust, incl Coated sheet without harm for steel making
	Turning	Consisting of cutting chips, produced during the manufacture of screws, machine parts, and the like, to be divided, according to shape and degree of oxidation, into the following:				
		A				Turning of mild steel with no rust, in fine forms
		B				Turning of mild steel with some rust, in various forms
		Press	W+H+L ≤ 1800, with the max dimension ≤ 800			Press of Turning of mild steel with no rust, in fine forms
Pig Iron Scrap	Cast Iron	Consisting of used castings finely crushed into blocks, to be divided, according to basic materials, into the following:				
		A			≤ 1000	Machinery parts, Clean Auto Blocks etc.
	B			≤ 1000	Charging box cast, unstripped auto blocks	
	Iron Boring	Consisting of cutting chips produced during the production of castings, to be divided, according to the degree of oxidation, into the following:				
		A				Iron boring of mild casting with no rust
B				Iron boring of mild casting with some rust		

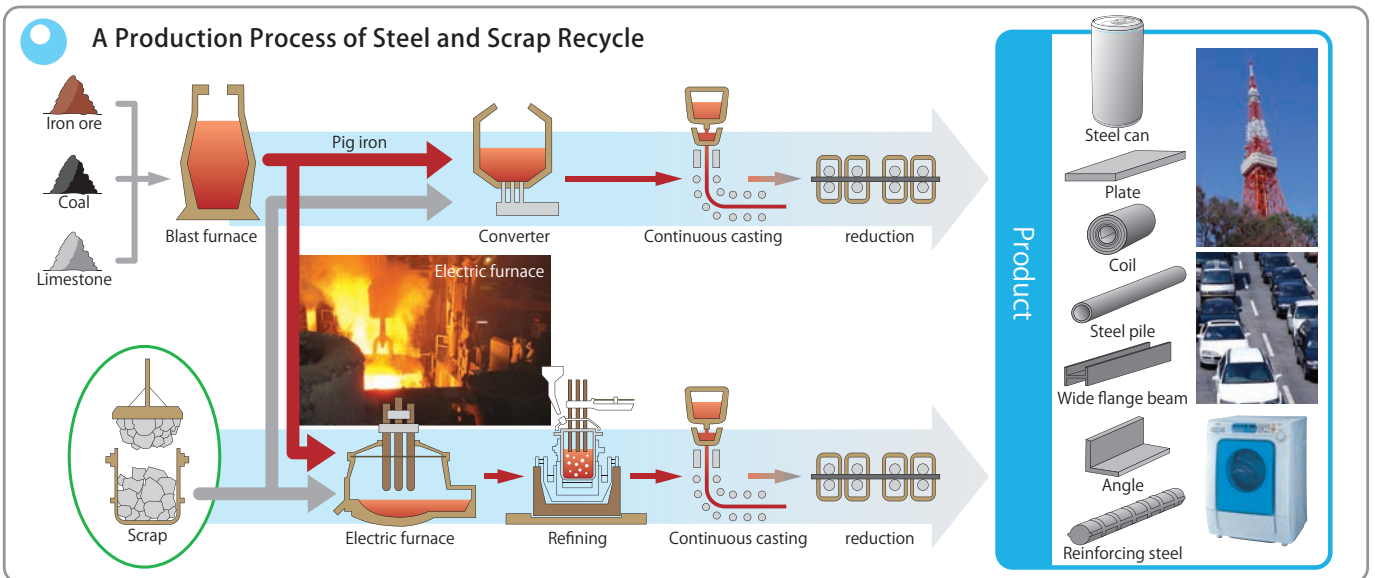


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### 2. How is Scrap Iron Recycled?

- The annual production of iron in Japan is approximately 104,840,000 tons in FY2017. Blast furnace and electric furnace methods are available to manufacture iron and steel. In Japan, 75.6% of iron and steel is manufactured by blast furnaces and 24.4% by electric furnaces.
- Iron that remains from use in construction, automobiles, machines, can containers, etc. are recycled at iron and steel manufacturers (blast furnaces, electric furnaces, casting makers, etc.) as iron scrap.
- Iron scrap that is traded in the Japanese market (commercial scrap) amounts to 28,620,000 tons (increasing 1,700,000 tons from the previous year). And 7,940,000 tons were exported in FY2017 (decreasing 700,000 tons from the previous year).

	Production Method	Number of makers and plants
<b>Electric furnace maker</b>	Iron scrap is melted in electric furnaces (by discharge heat from electrodes) to manufacture steel.	47 makers with 64 works
<b>Blast furnace maker</b>	Iron scrap is inserted when pig iron reduced from iron ore in a blast furnace is supplied to a converter to manufacture steel.	4 makers with 19 works



**Domestic Iron Scrap Supply and Demand (FY 2017)**

<b>Export 7,940,000 tons</b>	
<b>Industrial scrap by the steel makers 13,810,000 tons</b>	
<b>Domestic purchased scrap 23,260,000 tons</b>	Factory scrap 8,090,000 tons
	End-of-life scrap 20,170,000 tons
	<b>of which, Steel can scrap 450,000 tons</b>

(Unit: tons/year) Source: The Japan Ferrous Raw Materials Association

Note: The amount of domestic purchased scrap (for domestic iron makers) is the value added the past correction value to the sum of the factory scrap and the end-of-life scrap

**Technical Terms**

**[Electric furnace]**  
A heating chamber with a discharge heat to melt scrap iron

**[Blast furnace]**  
A furnace used to produce pig iron from iron ore, coal and limestone

**[Converter]**  
A furnace used to produce steel from melting pig iron and blowing oxygen into it. It is able to rotate 360 degree.

**[Steel]**  
An iron contains less than 2% of carbon

**[Pig iron]**  
An iron contains more than 2% of carbon

**[Industrial scrap]**  
Scrap generated in rolling process, and consumed inside of factories

**[Purchased scrap]**  
Scrap transacted in the scrap market

**[Factory scrap]**  
Scrap generated in processes using steel as a material (e.g. cars, machines and shipbuilding)

**[End-of-life scrap]**  
Scrap from dismantled buildings, disused cars, disused domestic electric equipments, and steel can scrap.

### Information on Steel Works in Japan

The questionnaire results for annual report on steel can recycling 2016 show many of municipalities made a request about for information on recycling facilities that have tour inside.

The Japan Iron and Steel Federation provides excursion across the country. If you want to access, detail is given below.

#### Information on Steel Works in Japan

Web Site Information <http://www.jisf.or.jp/kids/iku/map.html>



## II Present Conditions for Steel Can Scraps

### 3. Trends in Price of Domestic Steel Can Scraps

#### Factors Determining the Price of Iron Scrap

- ① The quality of scraps
- ② Changes in the supply-demand balance in each region
- ③ Comparative values internationally (e.g., overseas market conditions resulting from the international availability of commodities, etc.)
- ④ Costs of scrap collection from the market, scrap collection by scrap processors, and scrap-processing.
- ⑤ Costs of material price variance (iron ore and others), and an iron dissolution by blast furnace makers.

#### Relation between the Price of Steel Scrap and the Price of H2 (Heavy and Other General Scrap)

The price of steel can scrap moves almost in parallel with that of H2 (see the next page). The difference in price between the scrap steel cans (C press) and H2 is anywhere from 2,000 yen to 9,000 yen depending on supply and demand, overseas market trends, and its region. C press with good quality could sell at higher price than H2.

#### The Sale Price of Pressed Steel from Cans vs. the Base Price of Steel Can Scrap in Municipalities

The pressed steel from cans separated and processed in municipalities is delivered to steel makers via scrap processors, hauling/storage companies, and others. Thus, the sale price for the steel press in the municipalities is equivalent to the scrap purchase price by the steel manufacturers minus the amount spent on delivery via the intermediate routes.

#### Trend in Price of Iron Scrap (2017~2018)

##### Demand for Iron Scrap Strong with Increases in Both Domestic and Worldwide Production; However, "Trade Issues" Influencing Price Trends

With the Tokyo Olympic and Paralympic Games coming up in 2020, strong demand for construction steel has maintained in Japan's domestic market. For this reason, domestic electric furnace steel production is increasing. The iron scrap price has maintained a high price against the backdrop of high demand. The purchase price of H2 (Special Grade) for steelmakers exceeds 35,000 yen per ton as of mid-August, and reaching 38,000 yen, a yearly high in Japan.

World crude steel production from January to June amounted to about 81.5 million tons, an increase of 4.6% from the same period of the previous year. For the first time in history, world crude steel production is estimated to exceed 1.7 billion tons. The demand for iron scrap is strong.

However, the prolonged "trade war" and the "currency depreciation" of emerging countries are factors that will lower the iron scrap price. Turkey, the world's largest iron scrap importer, was impacted strongly, and the import price fell in August. This movement has spread worldwide. As a result, the iron scrap of Japan, which continues its steady production, became "comparatively more expensive" and the new export contract has stagnated. It will likely to affect future iron scrap prices.

#### Price Trend of Pressed Steel from Cans (2017~2018)

##### Steel Can Press Price Remains High

As the domestic steel scrap market showed a steady trend, the steel can press prices also continued to remain strong. The average price of the steel can press in the Kanto area (purchase price of the electric furnace maker) in August is expected to exceed 28,000 yen per ton. It is likely to increase by more than 1,000 yen from average price (27,000 yen) in April, the bottom price for this year. The electric furnace makers that use steel can scraps as a raw material sees steel can scraps as high in quality because of its stable quality and clear ingredients. It is increasing its presence as a stable source of raw material. Among the domestic electric furnace makers, some are setting a price that exceeds the H2 (special grade), the representative product of iron scrap. For this reason, high-quality steel can press continues to trade at high prices.

(¥/t)

	Average in 2008	Average in 2009	Average in 2010	Average in 2011	Average in 2012	Average in 2013	Average in 2014	Average in 2015	Average in 2016	Average in 2017	Average in 2018 (Jan-Aug)
Kanto region	36,000	15,100	23,700	25,900	19,400	26,200	25,600	16,200	14,500	23,800	29,800
Osaka region	41,100	18,600	27,700	31,100	23,400	29,000	27,300	16,700	15,100	23,900	29,900
Representative factory in West Japan	42,900	20,400	29,900	32,100	25,100	31,600	30,200	19,100	18,100	27,200	31,700

#### For more information about the price trend of pressed steel from cans

Nikkan Shikyo Tsushinsha Co., Ltd. publishes "MRM (Metal Recycle Monthly)" that carries international and domestic scrap market trends, topics, hot issues, and explanation of recycling laws. TEL: +81-3-3864-6021

## China, the End of “Binging” Recycled Resources: Banning Imports Such as “Miscellaneous Scrap” at the End of This Year

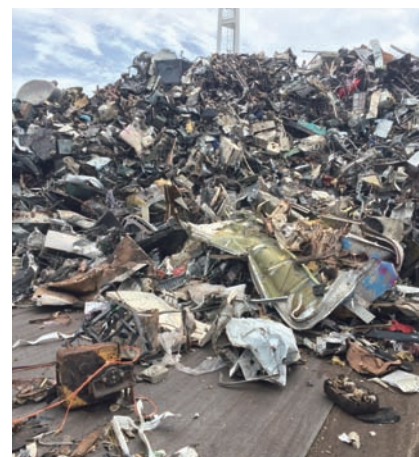
In April this year, China announced that it will prohibit the import of 16 items including “miscellaneous scrap,” motors and covered wires (including harness) for collecting copper and aluminum, and plastics at the end of the year. Also, additional 16 items such as stainless steel scraps will be prohibited at the end of next year. They have set the goal of zero imports of solid waste by 2020. As China continued its rapid growth, it has imported “recyclable resources” from all over the world as part of securing raw materials. However, from the aim of reducing the environmental burden at recycling sites and other places, the regulation has been strengthening which have led to the import ban. This movement in China has a particularly significant impact on developed countries that were the suppliers of “recyclable resources”.

### China to Strengthen Environmental Regulations, Zero Imports of Solid Waste by 2020

- ① **Banning imports such as “miscellaneous scrap,” greatly affect Western developed countries**
- ② **Revised Waste Disposal Law / Revised Basel Law Enforced**
- ③ **Problems of domestic recycling: shortage of dust repository**
- ④ **Contamination noticeable, the quality of iron scrap has “deteriorated”**

### The Influence of the Prohibition of “Single-use Plastic” Expanding World Wide

In May this year, the EU formulated a “Ban on Single-use Plastic Bill”. Movement such as abolition of plastic straws at restaurants has already spread all over the world. It is intended to prevent serious marine pollution, but the biggest factor is China’s import ban. Developed countries such as the West and Japan have “depended” on China for recycling of discarded metals and plastics on many parts. China’s advanced economic growth has increased raw material demand and continued the “binging” of recycled resources. As these developments have continued over the past 20 years, developed countries including Japan, have adopted a recycling system based on that system. For example, in 2017 China imported about 2.3 million tons of plastics waste. EU (20%), Japan (15%) and the United States (10%) accounted for about half the total amount of plastic waste that was imported to China. However, as China has banned the import from end of this year, each country has no choice but to convert exports to domestic recycling, and urgent countermeasures are required.



Miscellaneous Scrap

### Movement to Strengthen Regulations Even in Japan:

#### Revised Waste Management and Public Cleansing Act / Revised Basel Law Enforced ~

The environmental burden of the recycling process of recycled resources has been regarded as a problem not only in China but also in Japan. When recycled resources are discarded, they are mixtures of iron, nonferrous metals, plastics, and paper. Some of them may contain harmful substances. For example, “miscellaneous scrap” is defined as “a used electronic device including harmful substances mixed with other metal scrap” (Ministry of Economy, Trade and Industry). Harmful substances such as lead used for electronic boards may be included. Although crushing and sorting are done in the process of recycling when they are made into raw materials, inappropriate storage and treatment by some business operators has been pointed out. Fire accidents frequently occurred in storage yards and transport boats, and they are frequently taken up in TV and other news outlets. Therefore, the government revised the Waste Management and Public Cleansing Act and the Basel Law to strengthen regulations on “miscellaneous scrap”. The Waste Management and Public Cleansing Act came into force in April this year, stipulating regulated items and business operators to notify prefectures. The revised Basel Law stipulating regulations on the export of harmful substances will come into effect in October.

### Problems of Domestic Recycling: Shortage of Dust Repository

There are many challenges in promoting domestic recycling of these resources. Recycling of “miscellaneous scrap” normally goes through the following steps: first they get shredded, then iron, nonferrous metal, and plastic are sorted by each material. However, this process inevitably produce waste (shredder dust). Having said that, the number of final waste disposal sites and recycling facilities are tight at the moment, and the operation rate of shredder operators is declining due to the limitation of the amount of dust disposed in urban areas where there are few final disposal sites. If the waste that was exported in the past is recycled domestically, dust will increase further and there may be no place for them to go. Efforts will be made to upgrade the recycling technology and reduce dust, but that will take time. In the meantime, if the problem of disposing the rapidly increasing dust is not solved, it will pose a problem to the recycling resources and could lead to illegal dumping.

Also, China has already reduced its import volume prior to banning the import of recyclable resources. Meanwhile, there is a limit in the capability of domestic recycling, so the sorting of each materials is not thoroughly done, causing an increase in the amount of impurities getting mixed into metal scrap. “Deterioration” of the quality of iron scrap produced in Japan is being pointed out both domestically and abroad. If high-quality raw materials with few impurities are not supplied, recycling resources will be stagnant. China’s import bans have highlighted the problems of recycling resources.