



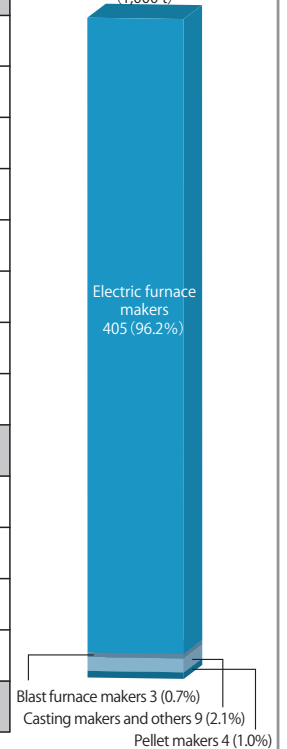
## II Present Conditions for Steel Can Scraps

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

Steel Can Scrap Purchase Amount According to Area and Type of Business (Unit:1,000 tons)

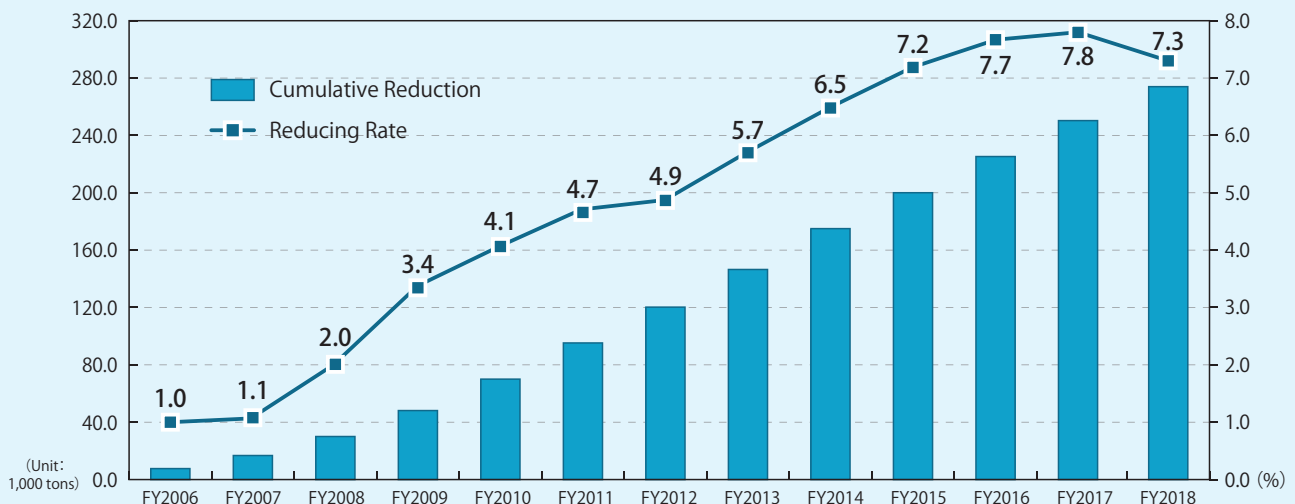
	FY2017 (B)					FY2018 (A)					(A-B)
	Press	Shredder	Others	Total	%	Press	Shredder	Others	Total	%	
Hokkaido	14	1	0	15	3.4	11	2	0	13	3.1	-2
Tohoku	30	1	0	31	7.0	27	10	0	37	8.8	6
Kanto	112	28	1	141	31.9	100	35	1	136	32.3	-5
Hokuriku	2	11	0	13	2.9	2	7	0	9	2.1	-4
Tokai	44	17	0	61	13.8	45	13	0	58	13.8	-3
Kinki	102	6	0	108	24.5	90	7	0	97	23.1	-11
Chugoku/ Shikoku	24	5	0	29	6.6	22	5	1	28	6.7	-1
Kyushu/ Okinawa	31	13	0	44	10.0	26	14	3	43	10.2	-1
<b>Total</b>	<b>359</b>	<b>82</b>	<b>1</b>	<b>442</b>	<b>100.0</b>	<b>323</b>	<b>93</b>	<b>5</b>	<b>421</b>	<b>100.0</b>	<b>-21</b>
Electric furnace makers	339	79	0	418	94.6	314	90	1	405	96.2	-13
Blast furnace makers	9	0	0	9	2.0	0	0	3	3	0.7	-6
Casting makers and others	7	4	0	11	2.5	6	3	0	9	2.1	-2
Pellet makers	3	0	1	4	0.9	3	0	1	4	1.0	0
<b>Total</b>	<b>358</b>	<b>83</b>	<b>1</b>	<b>442</b>	<b>100.0</b>	<b>323</b>	<b>93</b>	<b>5</b>	<b>421</b>	<b>100.0</b>	<b>-21</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 2018 fiscal year, the weight has been reduced to 7.3%, however compare to 2017 fiscal year, the reducing rate has dropped due to slow sales.



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		

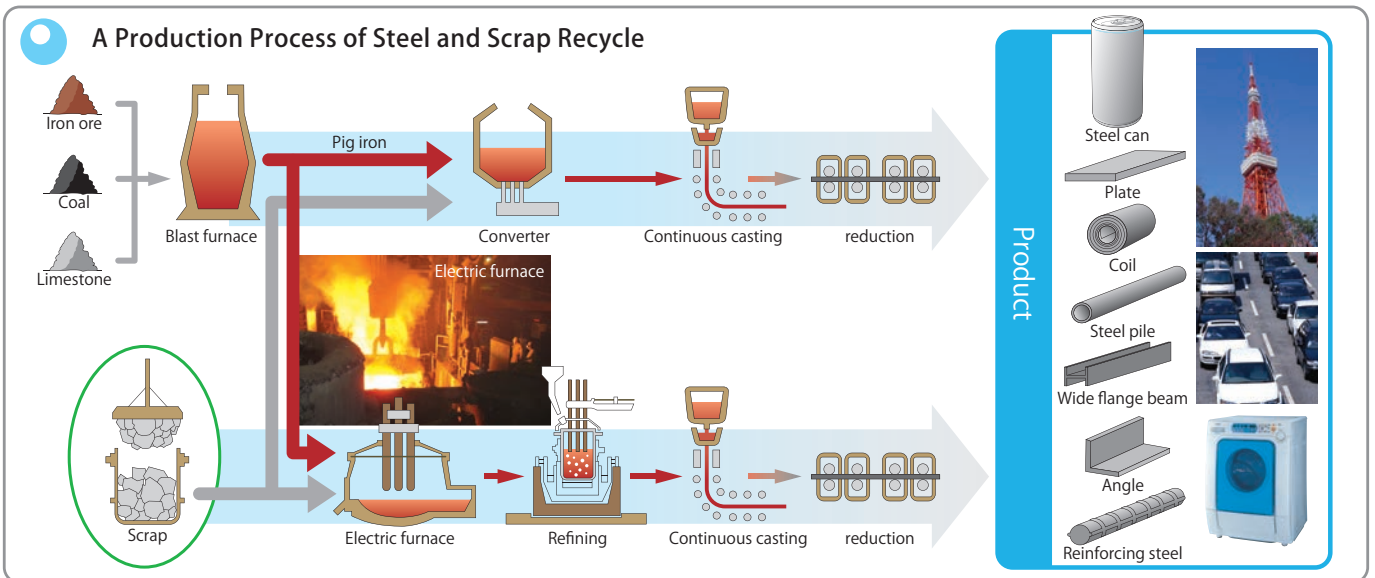


## II Present Conditions for Steel Can Scraps

### 2. How is Scrap Iron Recycled?

- The annual production of iron in Japan is approximately 102,890,000 tons in FY2018. Blast furnace and electric furnace methods are available to manufacture iron and steel. In Japan, 74,7% of Iron and steel is manufactured by blast furnaces and 25,3% 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 28,930,000 tons (increasing 300,000 tons from the previous year). And 7,360,000 tons were exported in FY2018 (decreasing 580,000 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 2018)**

<b>Export 7,360,000 tons</b>	
<b>Industrial scrap by the steel makers 14,150,000 tons</b>	
<b>Domestic purchased scrap 23,500,000 tons</b>	Factory scrap 8,140,000 tons
	End-of-life scrap 20,360,000 tons
	<b>of which, Steel can scrap 420,000 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 2017 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.

#### The Trend of Iron Scrap Price (2018-2019)

##### Price Dropping with Uncertainty about the Future of the Global Economy

Negative factors such as the "trade war" between the United States and China, trade issues, and large fluctuations in foreign exchange rates have increased uncertainty over the future of the global economy. As a result, the world's steel demand has been declining. Although global crude steel production has remained at record highs in China and the United States, reductions in production in Japan, the EU, and Turkey contributed to a year-on-year decline in global crude steel production excluding China. For this reason, demand for scrap iron has been on a downward trend, and the global market for scrap iron has been declining. In the domestic market, the price of H2 (special grade) remained at the 30,000 yen level per ton from February to April this year but then fell continuously, reaching 25,000 yen as of the end of August.

Prices of iron ore and coking coal, which had remained at high levels due to stricter environmental regulations at mines and concerns over supplies from natural disasters, have plummeted, while prices of steel and semi-finished products have fallen both domestically and abroad. International commodities, including non-ferrous metals, have continued to decline. There still remains anticipation of a fall in price in the scrap iron market.

#### The Trend in Steel Can Press Price (2018-2019)

##### Steel Can Press Prices Continue to Fall

Steel can prices have continued to fall as domestic and overseas scrap iron prices fall. The average price of steel can presses in the Kanto region in August (purchase price of electric furnace manufacturers) was 21,400 yen (preliminary value) per ton. This is a drop of 6,600 yen compared to the March average price (28,000 yen), which was the highest this year. The quality evaluation of the steel can scrap, with a clear and defined quality and component, is high and has further increased its presence as a stable steelmaking raw material. Some domestic steel manufactures using electric arc have set a price exceeding the price for H2 (special grade), a representative variety of iron scrap. For this reason, we continue to see trading at a high price for high-quality steel can press. However, steel can press prices have fallen as domestic and overseas scrap iron prices fall.

(¥/t)

	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	Average in 2019 (Jan-Aug)
Kanto region	15,100	23,700	25,900	19,400	26,200	25,600	16,200	14,500	23,800	29,400	24,400
Osaka region	18,600	27,700	31,100	23,400	29,000	27,300	16,700	15,100	23,900	29,600	25,200
Representative factory in West Japan	20,400	29,900	32,100	25,100	31,600	30,200	19,100	18,100	27,200	32,200	27,400

#### 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 tightened import restrictions on recycled resources by banning the import of "waste plastic (household-related)" and "unsorted used paper" two years ago. They have also banned "miscellaneous scrap" and "waste plastic (industrial-related)" from the end of last year. Since then, exports to Southeast Asian countries increased as a destination to replace China, but there was a growing trend among these countries to strengthen import regulations in consideration of environmental concerns. As a result, the domestic processing of these recycled resources has increased in Japan. However, due to the fact that the recycling structure was based on exports, the response to the rapid increase in the volume of waste processed in Japan has been slow, causing various problems.

### definition of scrap mixed metal

Used electrical equipment containing harmful substances mixed with other metal scrap

### Impact of tighter regulations on imports of recycled resources in other countries

- ① A sharp drop in exports of "scrap miscellaneous goods" and other products led to an increase in the domestic processing volume
- ② A shortage of dust disposal sites has become apparent, and processing costs have risen
- ③ Impurities in ferrous and non-ferrous scraps causing "quality problems" domestically and abroad
- ④ Frequent fire due to improper storage and processing
- ⑤ Move to charge for dust disposal, some opt for "reverse compensation"

## The Sharp Decline in Recycled Resources Lead to Increase in Domestic Processing Volume

### Miscellaneous scrap

In 2017, approximately 1.6 million tons of "miscellaneous scrap" were exported to China. Due to the subsequent tightening of import regulations, the total volume of such shipments decreased to about 900 thousand tons in 2018. Imports were banned from the end of the year. In addition, since July of this year, China has restricted the import of scrap iron, copper, and aluminum, and it is necessary to obtain an import license issued by the government.

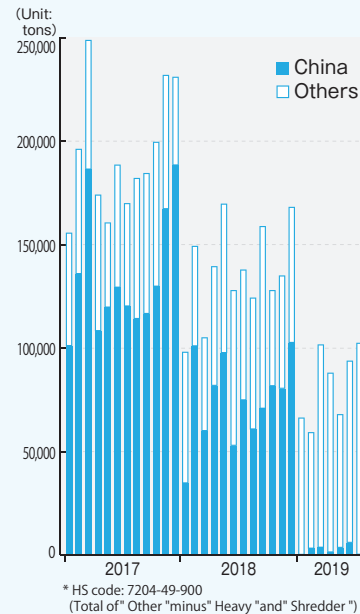
### Waste plastic

China's imports of waste plastics plummeted from about 5.8 million tons in 2017 to 50 thousand tons in 2018 due to a ban on imports of "household-related" waste. "Industrial-related" waste was also banned this year and is expected to be close to zero. In the future, only raw materials that are processed, such as pellets, will only be imported.

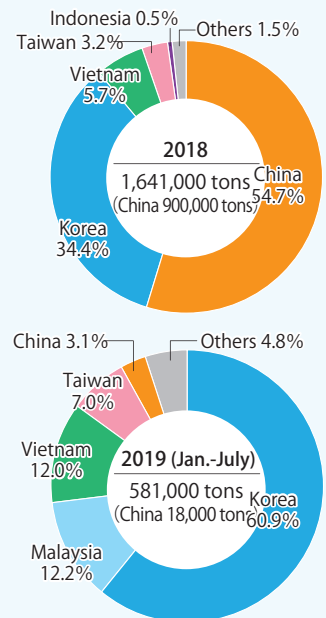
### Unsorted used paper

About 4.9 million tons of unsorted used paper was imported in 2017, but the import was banned at the end of that year. In order to reduce the environmental impact of sorting and processing, China plans to eliminate the import of these "solid waste" by the end of 2020.

Export volume estimated as scrap mixed metal (Ministry of Finance and Trade Statistics)

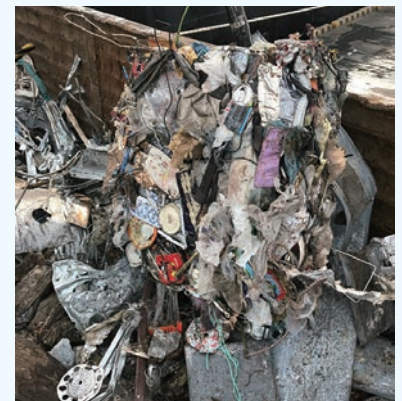


Probability of exporter of scrap mixed metal (estimate)



As an alternative to China, the volume of exports to Southeast Asian countries has increased. However, environmental problems have occurred in these countries, and import restrictions have been tightened. Japan and other exporting countries now have to dispose of these recycled resources domestically and promote recycling.

However, because the domestic market has been premised on exports, the capacity and functions for domestic disposal have not yet been established. In addition, due to high processing costs such as labor, transportation, and energy, it has not been profitable, so the selection of waste has not progressed. Furthermore, the amount of dust generated during the treatment process increased due to an increase in domestic processing volume, which caused problems such as an increase in dust disposal fees and a shortage of disposal sites. The decline in the prices of recycled resources such as ferrous and non-ferrous scraps has exacerbated this situation. Because of this, only imperfect screening is carried out, causing "quality problem" in which impurities are mixed in recycled resources, both domestically and abroad. There has also been frequent fire due to improper storage and processing. Until now, there were many fires in the bay yard or on transport ships due to a large number of exports, but recently there have been more fires in the storage yard located inland due to the decrease in exports.



Large amounts of impurities mixed in recycled resources

## Growing trend in the market to charge for dust disposal. Some "reverse compensation"

The H2 price for domestic scrap iron was maintained at 25,000 per ton as of the end of August. Conventionally, this price point is at a level where collection of scraps is done for a fee and sold to steel manufacturers. However, due to the tightening of regulations on the import of recycled resources in foreign countries, the cost of sorting has increased due to the incompleteness of sorting of various types leading to the increase in the number of impurities mixed in. In addition, rising costs, including dust processing costs, have also put pressure on the management of recycling companies. Management costs have also increased due to incomplete collection of dangerous materials such as "rechargeable batteries" that can cause fire. As a result, there is a growing trend among metal recycling companies to continue to purchase ferrous and non-ferrous scrap, while charging disposal costs for dust that is mixed in. In addition, some varieties are treated as "reverse compensation". As the domestic and overseas recycled resource market continues to decline, the range of "reverse compensation" is expected to expand in the future. Various measures such as thorough advance selection, upgrading of recycling technology, expansion of recycling, and securing appropriate disposal sites are required.