



III The Method of Sorted Collection of Steel Cans

1. How Many Municipalities Sort Out Steel Cans?

The Implementation of "the Questionnaires on the Recycling of Steel Cans" in FY2019

We carried out a questionnaire survey annually to figure out the present condition of sorted collection practices by municipalities, such as collection methods and conditions of recycling facilities focusing on the recycling of steel cans.

Subjected research period: From April 2019 to March 2020

Research period: From May to July 2020

Research subject: The cities all over Japan and the 23 wards in Tokyo (815 Wards and cities)

The number of returned questionnaires: 741 Wards/Cities

The return rate: 90.9%

The population coverage rate: 86.1%

Note: Total population (estimated) is 126,167,000 as of October 1st, 2019 (data from the Statistics Bureau).



People sorted out recyclables as "Cans"

The Rate of Municipalities Practicing Sorted Collection

The trend has not changed since 2010. Most of municipalities are practicing sorted collection.

	FY2010		FY2014		FY2019	
	# of wards and cities	rate (%)	# of wards and cities	rate (%)	# of wards and cities	rate (%)
Total	790	—	813	—	815	—
The number of returned questionnaires(The return rate)	704	89.1	732	90.0	741	90.9
Practiced throughout the Municipal District	694	98.6	725	99.1	733	99.0
Practiced in parts of the Municipal District	8	1.1	6	0.8	4	0.5
Not practiced	2	0.3	1	0.1	4	0.5

The Rate of Municipalities Collecting Resource Waste by Items

Steel cans for beverages, aluminum cans, bottles, and PET bottles have been designated to be collected separately at more than 90% of the municipalities from FY2010. The number of the municipalities that collect separately paper container, spray cans and small household appliances is increasing.

	FY2010		FY2014		FY2019	
	# of wards and cities	rate (%)	# of wards and cities	rate (%)	# of wards and cities	rate (%)
Only beverage steel cans	679	96.7	707	96.7	713	96.7
Food steel cans	-	-	-	-	658	89.3
General cans	-	-	-	-	646	87.7
Aluminum cans	683	97.3	707	96.7	712	96.6
Glass bottles	694	98.9	720	98.5	719	97.6
Metals	300	42.7	322	44.0	330	44.8
Waste paper	583	83.0	617	84.4	621	84.3
Fabric	368	52.4	399	54.6	414	56.2
PET bottles	673	95.9	704	96.3	705	95.7
Cartons	538	76.6	575	78.7	571	77.5
Cardboard	587	83.6	619	84.7	620	84.1
Paper container	286	40.7	378	51.7	405	55.0
Plastic container	451	64.2	481	65.8	479	65.0
Spray cans			337	46.1	487	66.1
Small household appliances			208	28.5	359	48.7
Food trays					169	22.9
Used cooking oil					185	25.1
Others	324	46.2	306	41.9	211	28.6
Total	702	100.0	731	100.0	737	100.0

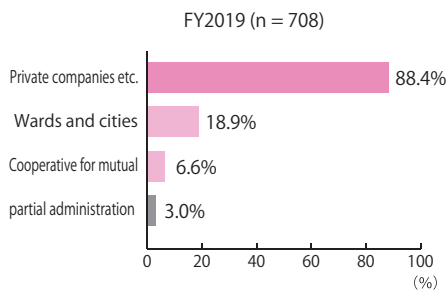


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2. How Do Municipalities Collect Steel Cans?

Agencies of Collecting Steel Cans (multiple answers)

To be an effective collecting cost, only 18.9% of municipalities collect by own and most of them (88.4%) do contract collection.



Recycling Route of Steel Cans (multiple answers)

99.0% of the municipalities collect steel cans. Other than municipalities collection rout, there are 51.3% of group collection and 22.9% of site collection for the steel cans.

	FY2019	
	# of wards and cities	rate (%)
Sorted collection	706	99.0
Collection from noncombustible waste	72	10.1
Collection from combustible waste	7	1.0
Group collection	366	51.3
Site collection	163	22.9
Store collection	5	0.7
Total	713	100.0

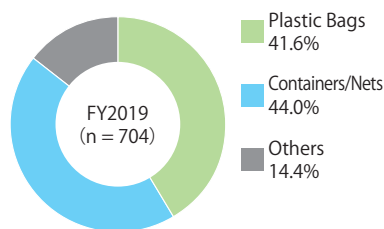
Items Discharging together with Steel Cans (multiple answers)

More than 80% of municipalities collect steels cans with beverage aluminum cans, and food cans. The number of municipalities where discharge spray cans together with steel cans are decreasing.

	FY2010		FY2014		FY2019	
	# of wards and cities	rate (%)	# of wards and cities	rate (%)	# of wards and cities	rate (%)
Only beverage steel cans	679	100.0	12	1.7	15	2.1
Beverage aluminum cans			603	85.3	620	87.0
Food steel cans	621	91.5	629	89.0	624	87.5
General cans	607	89.4	594	84.0	564	79.1
Spray cans	409	60.2	289	40.9	254	35.6
18 litter cans	177	26.1	117	16.5	100	14.0
Metals	-	-	93	13.2	81	11.4
Glass bottles	-	-	148	20.9	143	20.1
Pet bottles	-	-	45	6.4	41	5.8
Others	-	-	49	6.9	46	6.5
Total	679	100.0	707	100.0	713	100.0

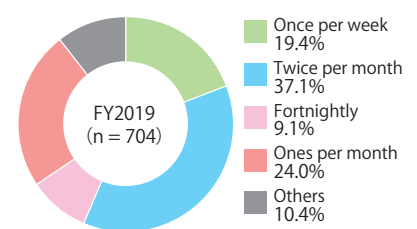
Types of Rubbish Bin

Normally the wastes are disposed by plastic bags, bulk containers or nets.



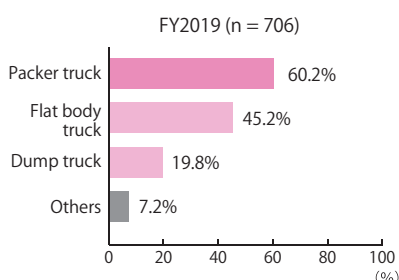
Frequency of steel cans collection

Most of municipalities collect steel cans twice per month.



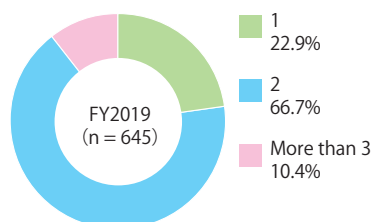
Types of Collection Trucks (multiple answers)

60.2% of municipalities use packer trucks and 45.2% use flat body trucks.



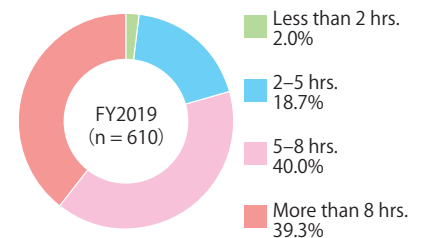
Number of Operation Staff per a Collection Truck per Day

More than 60% of municipalities collect steel cans by 2 staffs including a driver.



Hours for Collection per Day

Nevertheless, it depends on collecting items and population, around 80% of municipalities take more than 5 hours to collect steel cans.





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3. How Are Steel Cans Recycled?

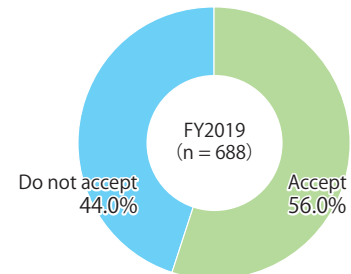
Recycling Facilities of Cans

More than 40% of municipalities bring steel cans into their own intermediate process facilities. The number of "partial administration" and "private companies etc." is increasing.

	FY2010		FY2014		FY2019	
	# of wards and cities	rate (%)	# of wards and cities	rate (%)	# of wards and cities	rate (%)
Wards and cities	291	43.4	296	42.8	302	41.5
Partial administration	128	19.1	138	20.0	157	21.6
Private companies etc.	212	31.6	218	31.6	252	34.7
Third sectors	5	0.7	5	0.7	2	0.3
Others / Multiple answers	35	5.2	34	4.9	14	1.9
Total	671	100.0	691	100.0	727	100.0

Whether the Facilities Accept Used

56.0% of facilities accept used steel cans from the businesses.



Selection Process of Cans

Before forming process of steel cans, 34.7% for magnetic and hand separation, 23.4% for magnetic separation only, and 14.8% for magnetic and machine separation. More than 80% of municipalities use magnetic separation. Some municipalities directly sell it without separation.

	FY2019	
	# of wards and cities	rate (%)
Magnetic & hand separation	237	34.7
Magnetic separation only	160	23.4
Magnetic & machine separation	101	14.8
Magnetic & machine separation (except cans) & hand separation (except cans)	99	14.5
Hand separation only	19	2.8
No separation	35	5.1
Others	32	4.7
Total	683	100.0

Forms after Selection of Cans

About 80% of steel cans are pressed. 4.6% of municipalities do not separate the steel cans which go directly to recyclers.

	FY2019	
	# of wards and cities	rate (%)
Press (Block-shape)	585	83.9
Shredder	24	3.5
Round cans etc.	23	3.3
Press (individual cans)	3	0.4
No processing	32	4.6
Others	30	4.3
Total	697	100.0

Recommended Selection and Processing Forms of Steel Cans

Conformity to the segregation standard specified in the Containers and Packaging Recycling Law is the most necessary to smoothly recycle steel cans as resources.

Recommended Selection and Processing Forms of Steel Cans

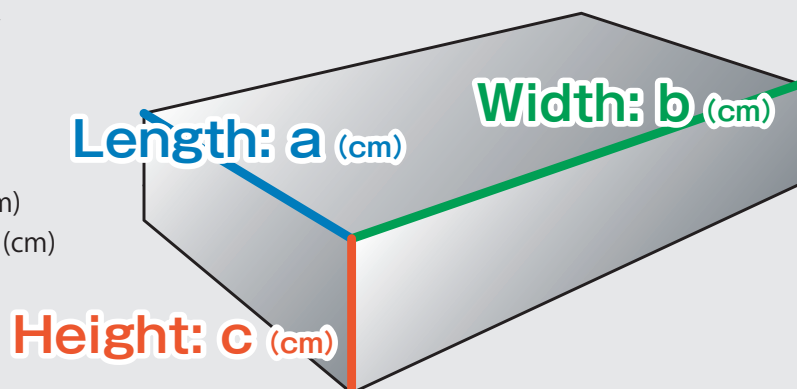
Source: The Japan ferrous raw materials association, "Uniform Standards of Ferrous Scraps"

[Size]

- Maximum Length ≤ 80 (cm)
- 60 (cm) $\leq a + b + c \leq 180$ (cm)

[Bulk specific gravity]

- More than $0.6t/m^3$



It is regulated not to contain foreign materials by legislation however, it still has identified lots of foreign materials. Please take a caution.



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4. How Much Steel Can is Collected by Municipalities?

■ The Total Recycling Quantity of Steel Cans in Japan is Estimated about 128,000 tons

The recycling quantity of steel cans for the 675 wards and cities that answered the questionnaire was 103,556 tons based on the record in FY2019. It translates into the recycling of a total of 127,625 tons nationwide.

■ The Amount of Steel Can Recycled per Capita is 1.00 kg Annually Based on the Record in FY2019.

The average quantity of recycling is 1.00 kg which are the same quantity as last year. The highest recycling ratio is shown among the population of less than 30,000. Also, the amount recycled in Hokkaido region and Tohoku region is large than other regions.

Recycling Quantity of Steel Cans per Capita (estimated based on the record in FY2019)

(Unit: t/yr)

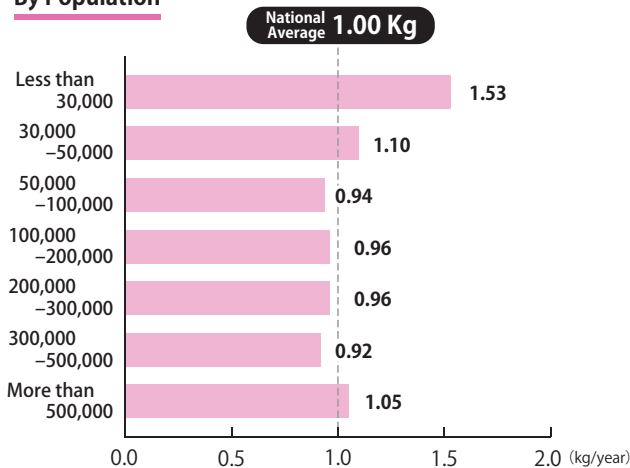
	# of wards and cities	Recycling quantity of steel cans per capita
Press	559	85,625
Shredder	22	3,645
Round cans etc.	22	1,186
Pressing individual cans	3	191
Delivery to recycling manufactures	31	3,698
Others	38	9,211
Total	675	103,556

Note: [Others] indicates unknown or multiple answers.

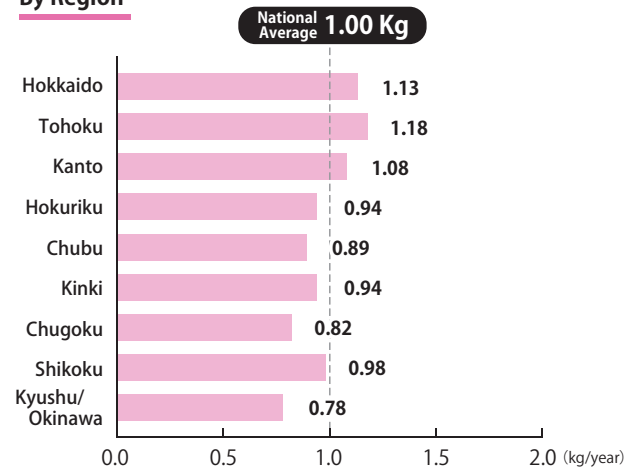


Recycling Quantity of Steel Cans per Capita (estimates based on the record in FY2019)

By Population



By Region



Cans of Trivia

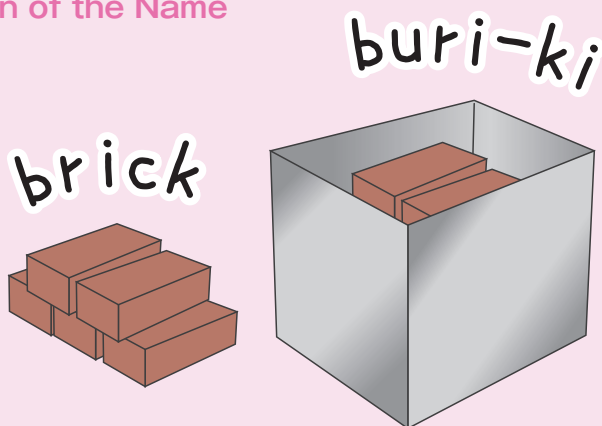
Birth of Tin Cans and the Origin of the Name

There are various theories about the origin of the word buri-ki (tinplate), but ...

The tin can was invented in 1810 by the British merchant Peter Durand. It is called tinplate in English.

At the end of the Edo period, bricks were imported in tinned iron boxes, as there were no bricks in Japan at that time.

At a foreign settlement construction site in Yokohama, an English engineer pointed to the bricks in the box and said "brick," which led the Japanese craftsman to think the box was called "buri-ki."



Brick in a box of iron plates



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5. How Are Steel Cans Collected from Noncombustible Waste?

■ The Amount of Steel Cans Collected from Noncombustible Waste is Estimated to be 29,000 tons totally

According to the research data collected from 554 municipalities, the amount of iron collected is 241,286 tons in FY2019 (including 20,112 tons of steel can).

This translates into the recycling of 350,513 tons nationwide (including 29,217 tons of steel can).

The amount of Steel Cans Collected from Noncombustible Waste (estimated based on the record in FY2019)

(Unit: t/yr)

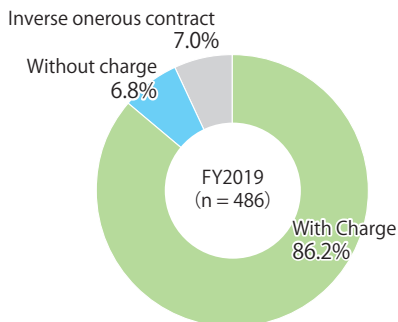
	# of wards and cities	The amount of iron collected	The amount of steel can collected
Magnetic separation after shredding	232	111,576	9,654
Magnetic separation and press after shredding	117	57,321	4,463
Deliver to recycling manufacture after hand separation	90	23,322	1,582
Press after magnetic separation	12	4,374	436
Delivery to recycling manufacture after shredding	10	4,128	525
Others	93	40,566	3,452
Total	554	241,286	20,112

Note1: In the 23 wards, Tokyo, the recycling amount of ferrous metal from noncombustible waste is calculated from data of the clean association of Tokyo 23.

Note2: [Others] indicates unknown or multiple answers.

○ Sales Price of Processing Ferrous Metals from Noncombustible Waste

Noncombustible waste scrap is mostly sold with charge (86.2%). However, once there is extraneous material admixed except iron, there is a case of inverse onerous.



○ Form of Processing Ferrous Metals [only in items with charge]

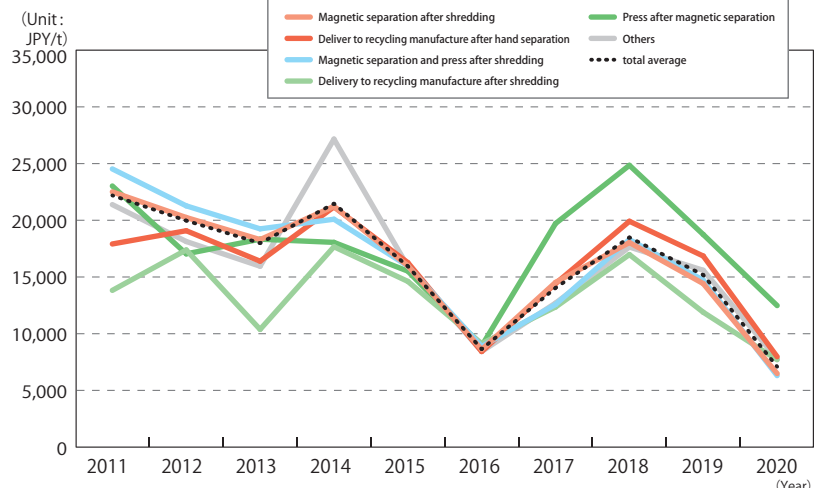
The highest ration of processing at noncombustible waste is magnetic separation after shedding (44.2%), then 18.1% of municipalities are magnetic separation and press after shredding. On the other hand, 16.9% of municipalities are hand separation only.

	FY2019	
	# of wards and cities	rate (%)
Magnetic separation after shredding	185	44.2
Magnetic separation and press after shredding	76	18.1
Delivery to recycling manufacture after shredding	9	2.2
Press after magnetic separation	7	1.7
Deliver to recycling manufacture after hand separation	71	16.9
Others	71	16.9
Total	419	100.0

○ Price Distribution According to the Form of Processing Ferrous Metals [only in items with charge]

The price of iron scrap falls dramatically due to market fluctuations and which affects to the price of iron scrap from noncombustible waste. The price of iron scrap from the noncombustible waste has recovered once in 2018, but dropped again in 2019.

	June-July, 2019	
	# of wards and cities	Price (JPY/t)
Magnetic separation after shredding	185	6,485
Deliver to recycling manufacture after hand separation	71	6,301
Magnetic separation and press after shredding	76	7,970
Deliver to recycling manufacture after shredding	9	7,701
Press after magnetic separation	7	12,476
Others	71	7,779
Total	234	7,092



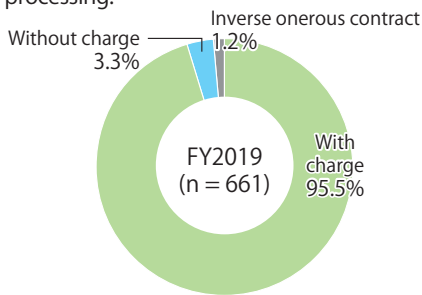


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6. How Much Pressed Steel from Cans Do Municipalities Sell?

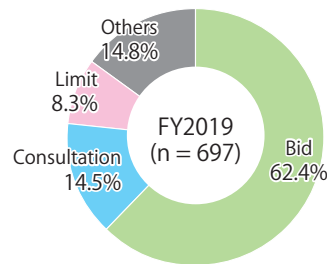
Price Conditions of Steel Cans

95.5% of steel cans are sold with charge, 3.3% without charge, and 1.2% are inverse onerous contract in municipalities. The reason of inverse onerous contract is such as delivering directly to recycler cost consignment fee for processing.



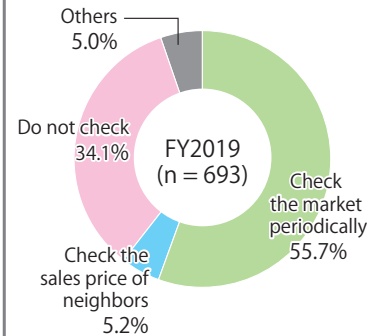
Methods to Decide Sales Price of Steel Cans

More than 60% of the municipalities decide the selling price by bidding.



Research on the Market for Recyclables

A half of municipalities check the market periodically, then contract or sell recyclables.



[Following cases are only for the municipalities where the steel cans are sold with charge]

Form of Steel Cans

74.0% of municipalities are sold pressed steel cans, 10.0% are mixed round cans, 8.7% are steel round cans.

	FY2019	
	# of wards and cities	rate (%)
Press	467	74.0
Shredder	17	2.7
Pressing individual cans	3	0.5
Steel round cans	55	8.7
Mixed round cans (aluminum & steel)	63	10.0
Others	26	4.1
Total	631	100.0

Average Sales Price of Pressed Steel Cans

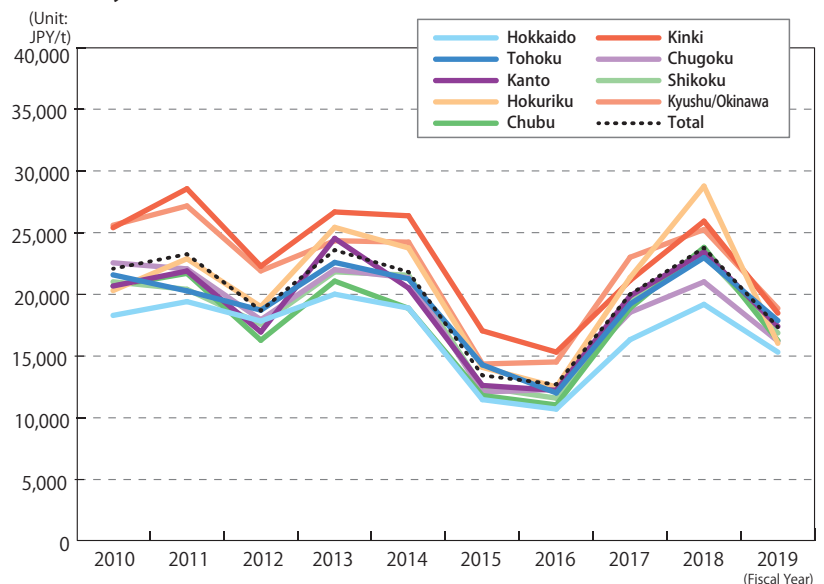
Price of steel cans collected by municipalities is JPY17,479/t.

	FY2019	
	# of wards and cities	Price (JPY/t)
Price of steel cans collected by municipalities	422	17,479
Price of steel cans and iron collected from noncombustible waste	16	19,331
Price of steel cans and metals collected from noncombustible waste	2	14,650
Others	10	14,046
Total	450	17,374

Average Sales Price of Pressed Steel from Cans by the Fiscal Year

The average sales price of pressed steel from cans has recovered once in 2016, but dropped again in 2019. Prices were higher in Kinki until 2016 but Hokuriku is the highest in FY 2018, and Kyushu/Okinawa is the highest in FY2019.

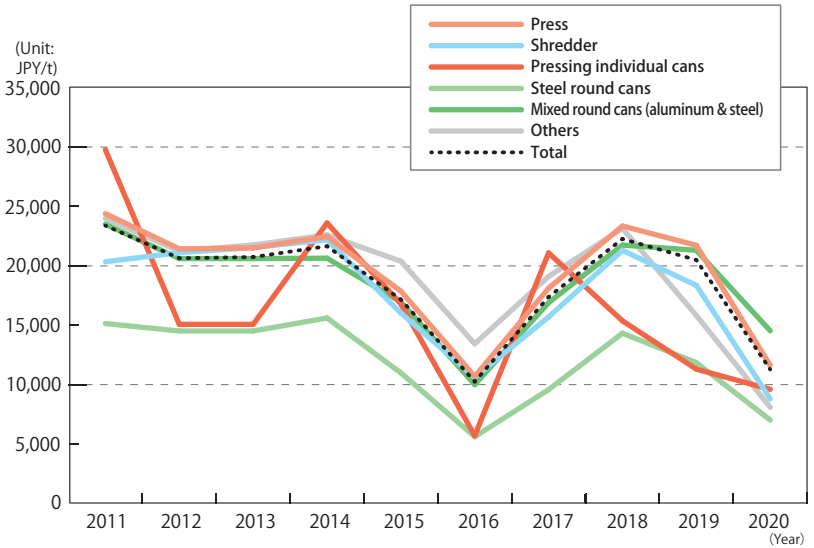
	FY2019	
	# of wards and cities	Price (JPY/t)
Hokkaido	29	15,344
Tohoku	43	17,900
Kanto	126	17,428
Hokuriku	23	16,061
Chubu	44	16,285
Kinki	54	18,506
Chugoku	37	16,234
Shikoku	24	16,899
Kyushu/Okinawa	66	18,888
Total	446	17,374



Latest Sales Price according to the Forms of Sales

The downturn in the market conditions that lasted from 2015 to the end of 2016 has recovered to the price of 2014 as of 2018. The price of steel cans has dropped again since 2019.

	June–July,2019	
	# of wards and cities	Price (JPY/t)
Press	454	11,619
Shredder	17	8,799
Pressing individual cans	3	9,600
Steel round cans	52	7,015
Mixed round cans (aluminum & steel)	60	14,537
Others	26	8,088
Total	612	11,275

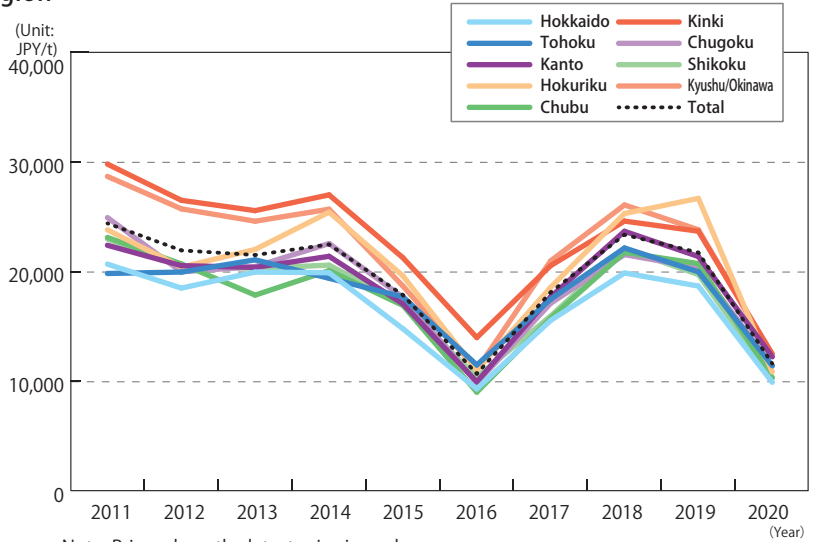


Note: Prices show the latest price in each year

Latest Price of Pressed Steel Cans by Region

Latest sales price of pressed steel cans has recovered once in 2016, but dropped again in 2019. The price is similar in all area, but high in Kinki area.

	June–July,2019	
	# of wards and cities	Price (JPY/t)
Hokkaido	28	9,913
Tohoku	48	11,422
Kanto	127	12,239
Hokuriku	23	10,861
Chubu	44	10,328
Kinki	55	12,503
Chugoku	36	11,408
Shikoku	25	10,339
Kyushu/Okinawa	68	12,262
Total	454	11,619

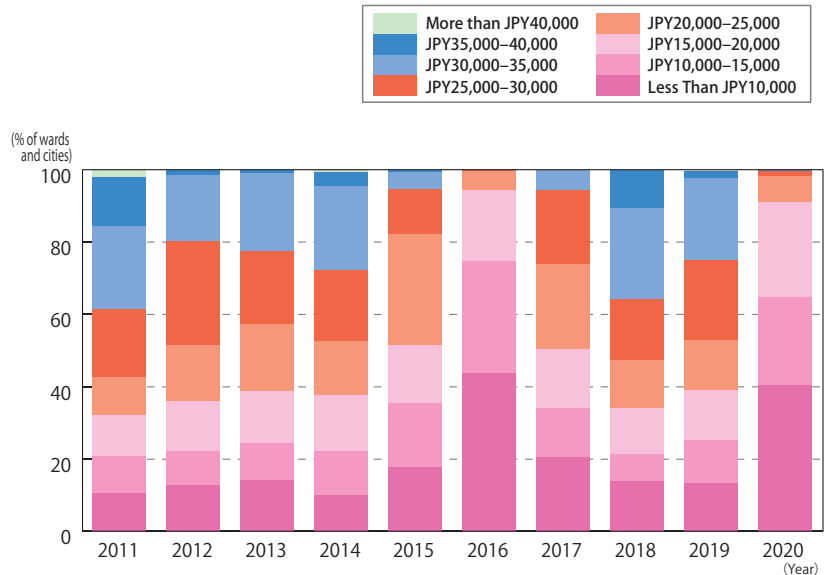


Note: Prices show the latest price in each year

Latest Price Distribution of Pressed Steel from Cans

The price of pressed steel cans is traded over the price of JPY10,000/t among half of municipalities. 40.5% of municipalities trade less than JPY10,000/t.

Price (JPY/t)	June–July,2019	
	# of wards and cities	rate (%)
More than JPY40,000	0	0.0
JPY35,000–40,000	1	0.2
JPY30,000–35,000	0	0.0
JPY25,000–30,000	7	1.6
JPY20,000–25,000	32	7.1
JPY15,000–20,000	120	26.4
JPY10,000–15,000	110	24.2
Less Than JPY10,000	184	40.5
Total	454	100.0



Note: Prices show the latest price in each year