

# Waste Disposal and Recycling

TSRC optimizes the process conditions within the plants to precisely control material input and reduce waste production. TSRC also actively promotes the recycling of by-products within the factories and exploring the utilization of waste outside the factories by collaborating with upstream and downstream value chain partners and other industries. All measures aim to transform waste into valuable resources, expand the secondary raw materials market, and implement the concept of circular economy.

Goals and Achievement	2023 Achievement	2023 Goals	2024 Goals			
	<ul> <li>VOCs: 312.81 metric tons</li> <li>Total waste: 6,405.36 metric tons</li> </ul>	Due to the strengthening of the Group's waste management and the review of the Group's waste situation, there is no annual target for 2023, and the actual operation of each plant was used.	<ul> <li>VOCs: 425.62 metric tonstate</li> <li>Total waste: 6,154.93 metric tons</li> <li>Note: Due to the increase in production in 2023, the 2024 goal has been adjusted based on the most recent year's production.</li> </ul>			

## 1. Waste Management Policy

TSRC refers to the basic principles and structure of the ISO 14001: 2015 environmental management system when formulating waste management plans and management goals, and periodically supervises and analyzes waste management results. In addition to the disclosure and reporting of waste data in each plant in accordance with local regulations, the Group holds at least one ESG production and waste management meeting per quarter, where the head of TSRC Global HSE, on behalf of each plant, reports to the head of the Group's Operational Division on the status of implementation and plans for future improvement. The Kaohsiung and Gangshan factories conduct quarterly reviews of the effectiveness of waste reduction, while Nantong Industries, Shen Hua Chemical, and TSRC-UBE track the amount of waste produced and the reduction targets on a monthly basis. Starting in 2024, TSRC Global HSE will collect waste data from each plant every month to review and track management performance on a monthly basis.

If TSRC Group's waste can be reused in the plants, it will be used as input materials in the manufacturing process. If in-site reuse is not possible, the waste will be commissioned to qualified waste disposal companies for final disposal or out-of-plant reuse. For wastes that cannot be avoided due to technical bottlenecks, the final disposal is mainly by incineration, during which the emission of air pollutants may cause air pollution and environmental impact. TSRC carefully manages each factory's waste based on our responsibility to the environment. We clear, dispose, or reuse waste with high standards in comply with environmental protection regulations of the country or region where each factory is located, and carries out audits, vehicle tracking, and other supervisory measures for waste removal and disposal companies.

### 2. Waste Generation and Recycling

In 2023, the total weight of TSRC' s general industrial waste (including non-recyclable, reusable, and recyclable) was 3,602.57 metric tons. Although the amount of scrap steel produced by Nantong



Industries increased due to the replacement of old equipment, and the amount of waste produced by Shanghai Industries was higher than that of 2022, the total weight only increased by 0.95% compared to 2022 due to the active implementation of reduction measures in other plants. Among the general industrial waste, the proportion of reusable and recyclable waste to the total amount of general industrial waste generated was 72.37%, indicating that most of the waste could be reused through recycling, while only 27.63% of the general industrial waste was subject to incineration, thermal treatment, and other final treatments. The total weight of waste has obtained ISO 14001 Environmental Policy Certification and Accountant's Limited Assurance of SASB Indicators (ISAE 3000).



#### Note:

- 1. This table only includes factories and subsidiaries with manufacturing activities within the reporting boundary. The two trading-based subsidiaries, Polybus and TSRC (Lux.), as well as the office-oriented Global Business Headquarter and TSRC specialty Materials LLC office, generate only general domestic waste, not industrial waste.
- 2. The data source for all factory is the waste removal and disposal (transfer) records provided by waste treatment manufacturers, rounded to the second decimal place. TSRC Kachsiung Factory, Gangshan Factory, Nantong Industries, TSRC-UBE, Shen Hua Chemical report to the government waste platform every month, while Shanghai Industries and TSRC (Vietnam) Co., Ltd. report to the government on an annual basis. TSRC Specialty Materials LLC reports to the government every two years.
- 3. TSRC Gangshan Factory, Shen Hua Chemical, Nantong Industries, TSRC-UBE clarified in 2023 and restated of information for 2021 and 2022 data due to that some waste was not included in the calculation. 2021 and 2022 data of TSRC Specialty Materials LLC, a subsidiary of the U.S., are estimated according to production volumes, and the 2021 and 2022 waste data have been restated due to the release of the 2021 and 2022 ERIC reports.
- 4. Non- hazardous general industrial waste includes: (1) incinerating, landfilling, and heat treatment and other disposed of General Industrial waste that cannot be recycled, including non-recyclable waste plastic mixtures, inorganic sludge, waste rubber and waste packaging materials, etc., (2) Recyclable General Industrial waste, including scrap iron, waste paper, rubber scrap, waste aluminum foil and waste metal boxes, (3) Reusable General Industrial waste, including waste rubber, wood, waste lubricating oil, etc.
- 5. Hazardous industrial waste includes: (1) non-recyclable waste oil, waste liquid, organic waste residue, sludge, waste chemicals, containers containing hazardous substances, etc.; (2) recyclable waste oil, waste packaging materials, waste containing hazardous substances, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers containing hazardous substances, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers containing hazardous substances, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers containing hazardous substances, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers containing hazardous substances, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers, etc.; (2) recyclable waste oil, waste residue, sludge, waste chemicals, containers, etc.; (2) recyclable waste oil, waste residue, sludge, sludg
- [Taiwan] Kaohsiung Factory and Gangshan Factory: According to the definition of "Hazardous Industrial waste Recognition Standard" published by Taiwan Environmental Protection Agency.
- [China] Shen Hua Chemical, Nantong Industries, TSRC-UBE, and Shanghai Industries: According to the definition of the hazardous waste list published by the government of China.
- [Vietnam] TSRC (Vietnam) Co., Ltd.:08/2022/ND-CP, 02/2022/TT-BTNMT.
- [USA] TSRC Specialty Materials LLC:40 CFR (Code of Federal Regulations) parts 260 through 273. Louisiana Administrative Code, Title 33, Part V.

6. Restatements of information:

- Non-hazardous General Industrial waste (including general waste and recycling) for 2022 was adjusted to the calculation scope due to Shen Hua Chemical (included rubber scrap), TSRC-UBE adjusted the calculation scope (included in waste electronic equipment), and TSRC Specially Materials LLC revised the calculation basis (the original estimated waste generation using production to the actual monthly waste removal volume) from 3,260 metric tons 0,368.65 metric tons, the degree of change accounted for 9,47 x 10<sup>3</sup> of the original production.
- Hazardous industrial waste generation for 2022, due to Shen Hua Chemical adjusted the calculation scope (including R-BD and R-SM), Nantong Industries adjusted the calculation scope (including waste empty barrels, etc.), TSRC-UBE adjusted the calculation scope (including waste empty barrels, etc.), and TSRC Specialty Materials LLC changed the information calculation basis from 2,144.63 metric tons to 2,360.24 metric tons for the above reasons, the degree of change accounts for 1.01 x 10<sup>3</sup> of the original production.
- The total weight of all waste in 2022 was restated from 5,404.63 metric tons to 5,928.89 metric tons due to the above amendments, the degree of change accounted for 9.70 x 10<sup>2</sup> of the original production.
- The amount of waste generated per unit product in 2022 has been restated from 10.01 to 10.98 (ton/thousand metric tons of production volume) for the reasons mentioned above, the degree of change accounts for 9.69x 10<sup>2</sup> of the waste generated per unit product.
- Automation of the waste generating product.
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- etc.), and TSRC Specialty Materials LLC revised the calculation basis from 2,592 metric tons to 3,948.41 metric tons, the degree of change accounted for 5.23 x 10<sup>-1</sup> of the original amount. + Hazardous industrial waste generation for 2021, due to Shen Hua Chemical revised the calculation basis (the calculation of empty barrels was changed from quantity to weight) and adjusted the calculation scope (to include R-BD and R-SM), Nantong Industries adjusted the calculation scope (to include waste empty barrels, etc.), TSRC-UBE (including waste empty barrels, etc.), and TSRC Specialty Materials LLC revised the calculation basis and other factors, from 1,873.05 metric tons were changed to 2,516.11 metric tons, accounting for 3.43 x 10<sup>-1</sup> of the original amount.
- The total weight of all waste in 2021 was restated from 4,465.05 metric tons to 6,464.52 metric tons due to the above amendments, the degree of change accounts for 4.48 x 10<sup>-1</sup> of the original production
- The amount of waste generated per unit product in 2021 has been restated from 7.94 to 11.50 (metric tons/per thousand metric tons of production volume) due to the above amendments, the degree of change accounts for 4.48 x 10<sup>1</sup> of the waste generated per unit product.



### Weight of General Industrial Waste



activities within the reporting boundary. The two trading-based subsidiaries, Polybus and TSRC (Lux.), the Global Business Headquarter, and the TSRC Specialty Materials LLC office, which are mainly office operations, generate only general domestic waste, not industrial waste 2. The data is from waste transfer record and rounded to the second decimal place 3. Restatements of Information: In 2022, the weight of general industrial recycling waste was changed from 2.505 metric tons to 2.473.09 metric tons due to Shen Hua Chemical's adjustment of the calculation scope. Nantong Industries' adjustment of the calculation scope, TSRC-UBE's adjustment of the calculation scope, and TSRC Specialty Materials LLC's revision of the basis of calculation, and the extent of the change accounted for 1.27x10<sup>-2</sup> of the original amount of recycling. · In 2021, the weight of general industrial recycling waste was changed from 1,187 metric tons to 2,680.76 metric tons due to Gangshan Factory's adjustment of the calculation scope, Shen Hua Chemica's adjustment of the calculation scope, Nantong Industries' adjustment of the calculation scope, TSRC-UBE's adjustment of the calculation scope, and TSRC Specialty Materials LLC's revision of the basis of calculation. and the extent of the change accounted for  $1.26 \times 10^{\circ}$  of the original

In terms of hazardous industrial waste, the total weight of hazardous industrial waste (including nonrecyclable and recyclable) in 2023 was 2,802.79 metric tons, an increase of 18.75%Note compared to 2022, which was mainly due to the increase in sludge caused by the dredging of the accident pool and the increase in the dosage of polymerized alumina chloride (PAC) in the air flotation tank of Nantong Industries. Shanghai Industries and TSRC (Vietnam) Co., Ltd.' s hand an increase in the weight of hazardous waste due to increased production. In 2023, TSRC' s hazardous industrial waste recycling volume was 826.90 metric tons, and the percentage of hazardous industrial waste recycling in the hazardous industrial waste production was 29.50%, a slight decrease from 30.25% in 2022. The recycling items are mainly waste oil, waste packaging materials, waste packaging barrels, and waste chemicals from the plant in China. TSRC will continue to increase the proportion of recycling in the future to minimize the impact on the environment.

Note





#### 2021-2023 Recycling and Treatment Weight and Percentage of General Industrial waste and Hazardous industrial waste (by Subsidiaries)

(Unit: Metric tons)		TSRC		Shen Hua	Nantong		Shanghai	TSRC (Vietnam)	TSRC Specialty	TSRC
		Kaohsiung Factory	Gangshan Factory	Chemical	Industries	TSRC-UBE	Industries	Company Limited	Materials LLC	Group in total
2021	Total weight of general industrial waste	1,306.04		344.78	1,612.06	316.57	21.50	8.99	338.47	3,948.41
	General industrial waste treated by recycling	491.73		311.27	1,572.18	299.59	6.00	0.00	0.00	2,680.76
	Percentage of general industrial waste treated by recycling	90.00%		90.28%	97.53%	94.64%	27.91%	0.00%	0.00%	67.89%
	Total weight of hazardous industrial waste	75.23		1,323.12	350.59	346.30	48.8	0.5	371.57	2,516.11
	Treated by recycling	0.00		143.22	23.29	1.54	0.00	0.00	365.14	533.18
	Percentage of hazardous industrial waste treated by recycling	0.00%		10.82%	6.64%	0.44%	0.00%	0.00%	98.27%	21.19%
2022	Total weight of general industrial waste	1,230.62	86.01	283.49	1,296.55	203.86	3.80	29.79	434.52	3,568.65
	General industrial waste treated by recycling	770.64	21.68	225.34	1,222.97	170.32	3.80	28.33	0.00	2,473.09
	Percentage of general industrial waste treated by recycling	62.62%	25.21%	90.07%	94.33%	83.55%	100.00%	95.10%	0.00%	69.30%
	Total weight of hazardous industrial waste	136.46	0.00	845.36	475.26	287.08	23.00%	1.32	591.76	2,360.24
	Treated by recycling	0.00	0.00	94.29	23.96	6.50	22.93	0.00	566.36	714.03
	Percentage of hazardous industrial waste treated by recycling	0.00%	0.00%	11.15%	5.04%	2.26%	99.70%	0.00%	95.71%	30.25%
2023	Total weight of general industrial waste	1,134.51	73.62	299.36	1,480.98	134.02	89.11	25.13	365.84	3,602.57
	General industrial waste treated by recycling	492.83	22.67	291.88	1,406.98	102.30	36.28	24.03	0.00	2,376.97
	General industrial waste that is disposed of by reuse	230.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	230.38
	Percentage of general industrial waste treated by recycling and reuse	63.75%	30.79%	97.50%	95.00%	76.33%	40.71%	95.62%	0.00%	72.37%
	Total weight of hazardous industrial waste	125.67	0.00	1,343.25	432.38	244.30	37.35	2.63	617.21	2,802.79
	Treated by recycling	0.00	0.00	170.20	26.14	9.92	37.21	0.00	583.25	826.71
	Percentage of hazardous industrial waste treated by recycling	0.00%	n/a	12.67%	6.05%	4.06%	99.63%	0.00%	94.50%	29.50%

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### 3. Waste Reduction and Reuse

TSRC actively reduces waste at the source by developing renewable materials to reduce the use of fossil fuels and waste. In addition, TSRC optimizes process control to stabilize reaction temperature and increase conversion rates, while increasing sampling analysis to make process conditions more precise and reduce waste and by-product production. In 2023, TSRC Kaohsiung Factory used metal filters instead of air filters for the dry bed coolers, and strengthened waste rubber classification to prevent scrap rubber from becoming waste rubber, reducing waste rubber by 1 metric ton per month. In addition, TSRC reduced the process changeover by stabilizing the scheduling process, reducing waste rubber by about 3 metric tons per month. Shen Hua Chemical, a subsidiary of TSRC, has effectively reduced sludge production by 14 tons by regulating the additives used in wastewater treatment.

TSRC' s global factory sites and subsidiaries promote the reuse of by-products and resources within the plant to reduce waste production. In 2023, TSRC' s subsidiary, Shanghai Industries, implemented the reuse of scrap iron, reducing scrap iron production by 2.5 tons. If waste cannot be reused within the plant, TSRC actively collaborates with waste treatment companies to recycle waste resources. TSRC Kaohsiung Factory sorts and screens waste rubber and sends it to legally authorized recyclers for resource recycling and production into reclaimed rubber raw materials. In 2023, the recycling rate of waste rubber was increased to 22% from 16% in 2022. Gangshan Factory turned waste rubber into recycled rubber raw materials, and reused 111 metric tons of waste rubber.



Implemented the reuse of scrap iron, reducing 2.5 tons of scrap iron generation