

WASTE MINIMIZATION AND RECYCLING

The generation, management and disposal of solid wastes from our operations has the potential to impact the public health and environment in our local communities. We are therefore committed to minimizing the generation of solid wastes from our operations and to safely manage these solid wastes using a hierarchy of environmentally sound management practices, including ISO 14001 and Lean Sigma. We also believe that finding alternative uses for waste materials and byproducts presents the greatest opportunities to minimize the impact of these wastes and to further contribute to a circular economy.

Materion globally utilizes Lean Manufacturing principles to identify projects and actions that minimize waste through actions and initiatives that maximize process yields and efficiencies. Examples of waste management and reduction projects preformed in 2022 included scrap reduction and recycling, edge loss minimization, equipment upgrades and process efficiency optimization. We also have programs in place to actively reuse shipping materials, including pallets and coil spools.

Once generated, many of our waste streams, including metal and alloy scrap or off-spec product, contain high-value mineral or metal content are recycled into our processes. Additionally, Materion also seeks to recycle chemical and waste streams generated in our manufacturing processes including oils, antifreeze, refrigerants, lighting, batteries, electronic waste, and office waste.

WASTE GENERATION AND RECYCLING				
Waste Generation		2020	2021	2022
Hazardous	Absolute (Metric Tons)	1,121	1,455	1,482
	Intensity (Metric Tons/\$1000 Net Sales)	0.001	0.001	0.001
Non-Hazardous	Absolute (Metric Tons)	5,457	2,793	7,705
	Intensity (Metric Tons/\$1000 Net Sales)	0.005	0.002	0.004
Waste Diverted from Disposal (Recycling)		2020	2021	2022
Hazardous	Absolute (Metric Tons)	Not Tracked		77
Non-Hazardous	Absolute (Metric Tons)	Not Tracked		4,199

The 2020 - 2022 companywide Waste Generation, Recycling, and Disposal data is provided in the following table.

MINERAL WASTE

Our operations also include the [Materion bertrandite ore mine](#) located near Delta, Utah, which has been producing beryllium feedstock since 1968. The mine process results in the generation of high volumes of overburden or waste rock to expose subsurface ore for extraction. Displaced waste rock is managed in a responsible manner including through a formal reclamation program. The quantity of waste rock produced per year can vary depending on mine activities. 2022 marks our first year of waste rock reporting, which is summarized below.

Mineral Waste				
Mineral Waste		2020	2021	2022
Waste Rock	Absolute (Metric Tons)	Not Tracked		1,814

MATERIAL RECYCLING

At Materion, we pride ourselves on our product stewardship. With more than 100 years of experience in precious metal refining and recycling, Materion offers [rare earth](#) and [precious metal recycling](#) and reclamation services that help our customers compete in today’s competitive business environment, where advanced materials recycling is increasingly more important in the supply chain. In fact, we offer two of the largest and most efficient state-of-the-art chemical and electrolytic refineries designed to handle our customers’ precious metal and other valuable scrap from production waste streams. For example, at our Buffalo facility in 2022 at least 55% of our gold input originated from post-consumer scrap. Our material recycling and reclamation services capabilities include:

- Aluminum Twin Wire Arc Spray Coating
- Assaying
- Beryllium Metal & Beryllium Aluminum Recycling and Reclamation
- Large Area Glass Shield Kit Cleaning
- Plating Solutions for Precious Metals
- Precious Metal Refining and Recycling
- Precision Parts Cleaning/Shield Cleaning
- Process Material & Precious Metal Recovery
- Sputtering Target Recycling

WATER USE

Water is a natural resource which is essential to life and a healthy environment. Water is also an essential raw material in our manufacturing processes, and we are committed to the responsible consumption and management of this important resource. Therefore, we seek to conserve water across our operations and manage water and wastewater responsibly. In 2022, this was evidenced by our Lincoln, RI site recognized by the Narragansett Bay Commission with their Perfect Compliance Award.

Materion continues to identify and implement efficiency management and other water use reduction improvement opportunities. Projects undertaken in 2022 included multiple water usage reduction initiatives and equipment and process improvements. Materion also performed a water-usage reduction assessment at two of our largest water consuming facilities and will deploy the learnings and strategies for improvement across the organization.

Starting in 2022, Materion began assessing water consumption from locations classifiable as meeting "high" or "extremely-high" baseline water stress criteria as defined by the World Resource Institute. The assessment concluded that approximately 48% of our water withdrawals occur from stressed areas, with majority of this consumption from the Delta, Utah ore Milling facility. This information will be utilized to prioritize water reduction efforts and initiatives in future.

Absolute water usage and intensity decreased in 2022 versus 2021, which has been attributed to water reduction initiatives as well as improved water accountancy. The 2019 - 2022 companywide Water Use data is provided in the following table.

WATER USE				
Absolute Volume	2019	2020	2021	2022
Water Withdrawal (MMm ³)	1.61	1.78	1.83	1.64
Water Intensity				
Water Withdrawal (m ³ / \$1,000 Net Sales)	1.36	1.51	1.21	0.94