



Department of  
**Environment &  
Conservation**



## Ceradyne, Inc. a 3M Company

Midway, Tennessee - Fused Silica Plant

Ceradyne, Inc. – 3M Midway in Midway, Tennessee manufactures fused silica. The site electrically fuses silica sand into glass and packages material of various particle sizes for customers. High-precision metal parts require precision and consistency at every stage of the manufacturing process. 3M™ Fused Silica products include flours, blends, and advanced shell systems that are used to meet the requirements needed in investment casting foundries, which produce precision metals. 3M fused silica products are used in the production of many different components for the aerospace, automotive, construction, energy, defense, and various other industries. These products are well-suited for use where high temperatures, thermal shock resistance, and low thermal expansion are critical.

The facility was established in 1977 as Minko, Inc. which offered similar fused silica products. In 2007, the company was purchased and started operating as a subsidiary of Ceradyne, Inc. 3M's acquisition of Ceradyne, Inc. occurred in 2012 when the company added this facility to its Advanced Materials Division.

The Midway facility is located next to a railway where loads of silica sand are shipped in and unloaded for production. This rail location eliminates the need for multiple trucks to be on the road, reducing harmful greenhouse gas emissions. After the sand is loaded into the holding tanks from the railcars, it is then moved, as needed, to fusion furnaces. Graphite electrodes are used to create an arc flash that fuses the silica sand into glass. The glass ingots have to cool for multiple days before the process can move forward. Once cooled, the ingots enter the crushing machines. The 99.7% pure silica glass is then broken down, through various methods, to the specific particle size that has been requested by the customer.

**3M MIDWAY**

- Established 1977
- Employs 100
- Member since 2016





3M is no stranger to driving sustainability by setting goals that reduce the company's environmental footprint and categorize it as a leader in environmental stewardship. The goals have a 2015 baseline and 2025 end date, categorizing in raw materials, water, climate/energy, health/safety, and education and development.

That being said, the small Midway facility has some environmental objectives already provided for it by the rest of the company. To push toward reaching those goals, they have already implemented some environmentally proactive changes. They recently started onsite recycling of cardboard and aluminum, which is conveniently picked up by their waste

vendor. The spent graphite electrodes are recycled back to their vendor when there is enough for a load. Wood pallets are reused until they are broken, then recycled. The Midway production process is geared towards reducing or eliminating waste as much as possible. Mark Strong, Midway's Environmental Health and Safety Engineer, is using the Tennessee Materials Marketplace to register any by-products for diversion from the landfill. He said, "We are always on the lookout for possible uses of our material that normally has to be shipped off to the landfill."

The Tennessee Materials Marketplace is a collaboration between industries, facilitated by an interactive online materials exchange, to recycle, repurpose, and return material discards back to Tennessee's economy. Ceradyne, Inc. – 3M Midway learned of the marketplace initiative through its membership in the Tennessee Green Star Partnership.



The manufacturing process does not require large quantities of water as it runs a closed water system for its production process. Mr. Strong mentioned future ideas of possible low-flow toilets and sinks to even further lower the water usage of the facility.

Midway's employees have also taken time to develop a relationship with the community. From volunteering as judges and sponsoring awards for the Greene County Science Fair, to buying books to promote children's literacy, volunteering for child advocacy events and annually providing 3M office supplies to selected local schools, this facility is invested in the community from all angles. Since 1999, the employees have collected more than 1900 bags of trash for the Keep Greene Beautiful and Adopt a Road programs.



The [Tennessee Green Star Partnership](#) is a voluntary environmental leadership program designed to recognize industries in the state that are committed to sustainable practices. If you are interested in joining Ceradyne Inc. – 3M Midway and other sustainable industries in Tennessee by becoming a member, please contact us.