

With 3D printing, you're not limited to just one method of production. In fact, about ten different strategies are currently used in 3D printing. Among these are fused deposition modeling, inkjet printing, digital light processing, and finally, one of the most popular methods: **selective laser sintering** or SLS.

Selective laser sintering is a method of additive manufacturing that creates solid objects out of powder metals, plastic and other materials. Unlike subtractive manufacturing, which takes materials away to form the product's shape, selective laser sintering only uses the materials that are needed to build the product from the ground up.

How Selective Laser Sintering Works

Selective laser sintering uses a high-powered laser, typically made of carbon dioxide, to fuse a powdered metal, plastic, ceramic, glass or alloy material together to form a tangible 3D object.

To start the process, a computer-aided design (CAD) file or digital design of the product must be uploaded to the printer. Then, the design is broken down by the machine into a number of equal horizontal cross-sections. The printer will build these one at a time, stacking them on top of each other until the final product is complete.

Once the cross-sections have been processed, the powdered material is laid across the build platform. The laser then fuses the powdered material together into the shape of the first cross-section. After one cross-section is finished, another layer of material is put down, and the second cross-section is fused directly on top of it. This continues until every cross-section has been laid and fused.

Benefits of Selective Laser Sintering

The first and foremost benefit of using selective laser sintering is its cost-effectiveness. Because of its additive nature, selective laser sintering produces no waste. That means there's no extra cost to transport said waste, and there's no need to dispose of any harmful or toxic chemicals. Additionally, there is no physical labor involved, so there are no salaries, benefits or other labor costs to incur.

Another benefit of selective laser sintering is that it can be produced locally. Because SLS only requires the work of one machine to manufacture and produce a product, the process can be done virtually anywhere. If a customer from Washington orders a product online, it can be printed, packaged and shipped from a 3D printer in their state, cutting down on shipping costs and putting the product in the customer's hands more quickly and easily.

Selective laser sintering is also better on the environment and produces a lower carbon footprint than traditional manufacturing methods. No extra waste is added to local landfills, and there are no manufacturing plants to pollute the air or overuse energy.

History and Uses of Selective Laser Sintering

Selective laser sintering was first developed in the 1980s by Dr. Carl Deckard and Dr. Joe Beaman, who worked at the University of Texas at the time. The two started DTM, a 3D manufacturing business that was eventually absorbed by 3D Systems in 2001.

Since its invention, selective laser sintering has grown significantly in popularity, especially within industries that require short-run products or highly customized parts and components for larger machines. The aerospace industry, for example, is one area where SLS has seen growth, as it only requires parts and products in small quantities.

Learn More About SLS

Do you think your business could benefit from using the selective laser sintering process? If you need short-run products or parts, require customizability, or just want to create quick prototypes of your new products and ideas, SLS could be for you. Contact Kraftwurx today at 281-256-9737 to learn more, or log onto our [online 3D printing community](#) to get started.