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## 3D Printing Pump and Transfer Tubing Solutions from Saint-Gobain

By Lily Lei

3D printing, also known as additive manufacturing, is changing the way the world thinks about manufacturing. This fast-growing technology is expanding beyond rapid prototypes and into commercial manufacture of actual products used in markets such as aerospace, medical, toys, food and even building materials.

### StereoLithography (SLA), Digital Light Processing (DLP), Material Jetting (MJ) and Binder Jetting (BJ)

Among many of the additive manufacturing technologies, StereoLithography (SLA), Digital Light Processing (DLP), Material Jetting (MJ) and Binder Jetting (BJ) use light-sensitive inks or bonding materials. During the printing process, the inks are cured as the object is printed. This presents a variety of fluid-handling challenges and requires careful selection of the tubing used to transfer the liquid plastic “ink” material or binder material from point A to point B. Since many of the “inks” or binder materials are chemically corrosive and contain harsh solvents, it is critical that the tubing has suitable chemical resistance. Further, the tubing must not alter ink chemistry in any way that could affect the curing process or the properties of the printed object.

Additionally, since SLA, DLP, MJ and BJ 3D printing technologies use light sources to cure liquid plastics (inks), the tubing also must have adequate opacity at the applicable wavelengths in order to prevent the inks from curing prematurely during the delivery process. Therefore, light resistance and blockage are critical properties of the tubing to ensure smooth and thorough transfer of light-sensitive inks during the printing process.

Mechanical properties such as flexibility and damping are also important due to the dynamic movement of the printing heads (MJ and BJ) or vibration during the printing operation while ensuring easy routing during printer assembly and maintenance.

### The Saint-Gobain Solution

Saint-Gobain Performance Plastics has been a long-time supplier of tubing for the 3D printing market. Working with many of our customers, we have supplied a great number of our highly-engineered Tygon® formulations to support OEM needs in their 3D Printer designs. Among many tubing offerings, one of our most popular formulations used in the industry is [Tygon® A-60-G](#), which is made of a highly chemical-resistant elastomer material. Super flexible, A-60-G can be used as pump tubing and as transfer tubing. The opaque black color provides natural protection from UV lighting.

Another Tygon® tubing family widely used in the 3D printing market is [Tygon® 2375-C or 2375-D2](#). Both are composed of highly chemical-resistant TPE materials. While 2375-C is clear to provide easy observation of the material flow when UV resistance is not needed, 2375-D2 features the UV-resistant black color to meet OEM needs for UV protection when sensitive materials are used during printing.

Saint-Gobain is proud to be a partner in the 3D printing market. We are a global business that co-develops products with customers using a multi-materials toolset. Our global operations have flexibility to react quickly to customer needs. We are driven to provide peace of mind to our customers, inspiring our employees and building trust with our customers. Our employees are application experts and are empowered to provide solution.

If you have a challenge or need assistance with tubing applications in your 3D printer design, please contact us at 1-800-798-9240 or [email us](#).

*Lily Lei is the Global Marketing Manager for Chemical and Small Engine Industries*

## **About Saint-Gobain**

*Saint-Gobain designs, manufactures and distributes materials and solutions which are key ingredients in the wellbeing of each of us and the future of all. They can be found everywhere in our living places and our daily life: in buildings, transportation, infrastructure and in many industrial applications. They provide comfort, performance and safety while addressing the challenges of sustainable construction, resource efficiency and climate change. With 2016 sales of more than \$43 billion, Saint-Gobain operates in 67 countries and has more than 172,000 employees.*

*Saint-Gobain's Performance Plastics business is headquartered in Solon, Ohio, and employs 6,000 people in 22 countries. It is a world leader in high-performance plastics, including flexible tubing, seals, coated fabrics, foams, window film, barrier/release films, tapes, medical components, fluid handling systems and bearings.*

*Saint-Gobain's Process Systems business unit helps customers achieve safety, performance and brand assurance through a broad range of capabilities that rely on superior engineering and customer support. Our product applications include those in the food, beverage, habitat, aerospace, chemical and electronics sectors. We've helped customers in all of these industries achieve goals in innovation, efficiency, sustainability and product integrity through customized solutions such as flexible tubing, gaskets, seals, hoses, fittings, pumps, valves and manifolds.*

