



Material Properties that Maintain Taste and Odor Integrity in Food & Beverage Dispensing Applications

Have you ever wondered how beverage dispensing machines can offer so many different flavors and types of beverage without flavor contamination? Safeguarding the integrity of food products' taste and odor during dispensing activities is paramount for dispensing equipment manufacturers and tubing selection plays a big role in protecting a manufacturer's brand.

Food products vary as does the dispensing equipment used to get coffee, wine and beer, and even ice cream to its final destination: the consumer. Food products passing through the varying types of food and beverage dispensing equipment may be compromised by tubing contaminants which may be released during transfer applications. These contaminants (such as off gassing, oils or particulates) often impact taste and generate unwanted odors.

Proper tubing material selection is essential to maintaining taste and odor integrity, as well as ensuring the tubing performs well over its useful product lifecycle. Materials should also be selected to resist specific product characteristics such as the presence of alcohol in wine and beer, high oil content of salad dressing, or the risk of bacterial growth in dairy-based products such as ice cream and yogurt. These factors ultimately impact the taste and odor of the dispensed product.

APPLICATION CONSIDERATIONS

FOOD & BEVERAGE TYPE



ICE CREAM SOFT DRINK JUICE ALCOHOL COFFEE

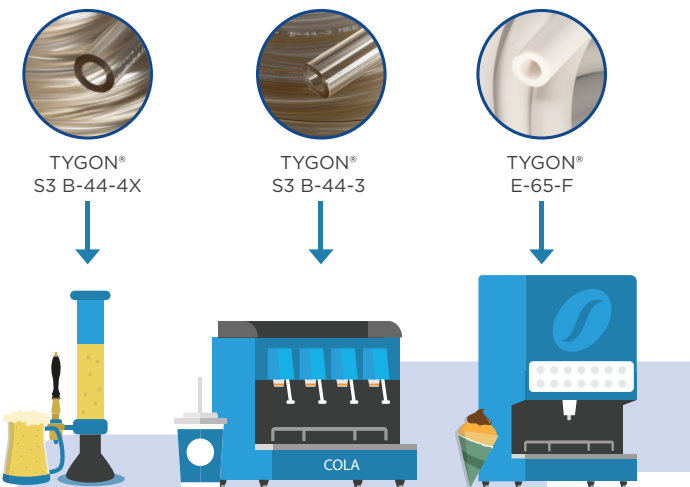
DISPENSING TEMPERATURE



PRESSURE REQUIRED FOR DISPENSING



MAINTAINING TASTE & ODOR INTEGRITY THROUGH PROPER TUBING SELECTION



Selecting Appropriate Tubing Materials

Once the dispensed food product characteristics have been established (such as alcohol or fat content, temperature or pressure to dispense), the next step is to determine which materials are best suited to deliver the product without the risk of taste and odor contamination to the food.

Thermoplastic and Thermoplastic Elastomers (TPE)

This material can be used for aqueous foods, dairy and low alcohol (<12%) beverages but should not be used for foods with fat or high alcohol content. TPE offer high flexibility, sealability and a long pump life (up to 1000 hours). The polymer also offers some resistance to cleaning chemicals but may have an adverse impact on taste/odor if not designed properly. Thermoplastics such as Tygon S3™ B-44-3 are very flexible, crystal clear and easy to install. It is an important component of bag-in-box syrup dispensing systems.

A recent study found that **Tygon® E-65-F** and **Tygon S3™ B-44-3** will not affect the taste or odor of transferred products; mechanical properties such as color, transparency, cracking, hardness, tackiness, weight, and flexibility will not be impacted.*

*03/09/18 Siena Development Saint Gobain Tubing Testing Certificate and 11/29/17 Corrosion Testing Laboratories Inc. CTL Ref #33584

Silicone Rubber

This tubing type should not be used for products with fat or high alcohol content, but is suitable for aqueous foods, low alcohol (<10%) and dairy products. Silicone rubber offers high flexibility and limited leachables resulting in limited impact on taste/odor; however, it offers no sealability, limited resistance to pressure or cleaning chemicals and possesses poor optical clarity attributes. Given its flexibility it can withstand moderate dynamic deformations associated with peristaltic pumping and offers 25-500 hours of pump life.

In addition, silicone rubber has excellent high temperature resistance properties for water transfer that is needed in coffee brewers.

Saint-Gobain Solutions

Not all OEMs or brand owners have the expertise or resources necessary to determine the best tubing solution for a dispensing application. Therefore, choosing the right supplier to provide high-performance and high-quality solutions will help ensure that the right food and beverage dispensing tubing is used for the right dispensing application.

Key is a tubing solutions supplier with comprehensive design capabilities and materials science know-how to help OEMs design high-performance dispensing equipment that not only also protects the consumer and the food and beverage brand's integrity but also achieves reduced downtime and long-term cost-savings.

Saint-Gobain Performance Plastics, Process System's mission is to assist customers through customization and co-developed fluid management solutions using our multi-materials expertise and comprehensive production capabilities. These capabilities include compounding (silicone and TPE to customize and optimize materials for specific properties, performance and applications), injection molding (silicone, 2K, micro, thermoplastic and fluoropolymer) and extrusion (single and multi-material/layered thermoplastic and fluoropolymer tubes and profiles).

Saint-Gobain's food and beverage dispensing tubing solutions and products are designed to support critical performance requirements. With our extensive testing capabilities, R&D centers, application and regulatory compliance expertise and flexible, global manufacturing footprint - our customers can successfully address any challenges and achieve most any performance goals.

For more information, contact:

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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 2018 net sales of more than \$46 billion, Saint-Gobain operates in 67 countries and has more than 181,000 employees.

