Silicone Grades

Due to the many rare properties of silicone, such as its thermal stability, flexibility, low chemical reactivity and low toxicity, excellent gas permeability (over 400 times that of typical rubber at room temperature), good electrical insulation and the fact that silicone has a high ability for repelling water and other liquids, makes it an extremely useful material in many industries, especially food and medical. Most silicone rubber products are formulated to comply with on food-contact regulations and recommendations. This means that most of them are produced to comply food grade specifications. Silicone is very useful in many applications used in the kitchen used for cooking, baking, barbecuing, grilling. Silicone sprays, lubricants, defoamers and emulsions are using in food processing and packaging.

Food grade silicone contains silicone, meets FDA Regulation for Incidental Food Contact, provides excellent lubrication, and is nonstaining, noncorrosive and fast evaporating. A multi-purpose silicone spray is used for food processing and handling applications (LPS, 2007). It is recommended for use in food processing plants on conveyors, guides, roller chains, bakery equipment, racks, and cookers and in bottling and packaging applications (Jet-Lube, 2007).

There are numerous household and industrial products used in the modern kitchen that contain silicone. For example: parchment used in baking cakes or steaming, flexible ice cream and cookie molds, pie pans, food sleeves, food ties and loops used for roasting any kind of meat, travel bottles, spatulas used in frying, grilling or barbequing, hot pads, gloves and many others all either contain or are entirely made of silicone. They are very well shaped, useful, heatproof, waterproof and of course non toxic no matter how they are being used. Silicone is also used for manufacturing dish-ware. Because it is far less brittle than ceramic, it is useful for households with children. It also is used to contain dishwashing liquids necessary in every kitchen.

Another silicone grade is "medical grade silicone." The medical-silicone industry is quite modern. Silicone has been being used in medicine since the 1960s. Bio Medical Grade Liquid Silicone Rubber is made up of the following: two-part (1:1 by weight), platinum-catalyzed liquid silicone rubbers; Typical Applications include injection molding of precision and intricate parts of medical devices (O-rings, stoppers and closures) and mesh coating (DCH, 2007). There are several subgrades of silicone rubber used for other medical applications. Devices made of silicone have many rare properties which are very useful in medicine, but its biocompatibility is most likely the most important of all. Silicone devices have exhibited super-ordinate compatibility with human tissue and fluids and have an exceedingly thin tissue when compared with other elastomers or implanted devices. We also have to remember that silicone and silicone devices very rarely incur any kind of allergic reaction. There are many products made entirely of silicone or contains silicone rubber such as breast implants, catheters (urology, biosensing and other), eternal feeding tubes, silicone sheeting and blocks (implanted in augment bones), anaesthetic machine circuits, peristaltic, suction, aspirating pumps, hearing aids, dental dams, condoms, menstrual cups, gloves sterilization trays, syringes and many others.

There are also many special grades and forms of silicone rubber, including: Steam resistant, metal detectable, glow-in-the-dark, electrically conductive, chemical/oil/acid/gas resistant, low smoke emitting, and flame-retardant (Wikipedia, 2007). General Purpose grades are 20 - 90 shore hard. FDA177.2600 and WRC approved. They are suitable for food and pharmaceutical use. They also have temperature range -80°C to +200°C. Another grade: BS6853 Cat 1 & 2 is used for fire sensitive applications that require low smoke and low toxicity levels. It has high temperature grades stable to 315°C

Silicone is a very useful and in many cases even a necessary material in many industries such as in food processing and medicine. Plenty of devices used in today's world are made of silicone because its

special properties respond well to their requirements. Silicone's durability, flexibility, biocompability, non-toxicity and many other advantages guarantee success, no matter where and when it is used. The progression of modern society can't exist in such high level without invention of silicone, especially when we consider medical or food industries.