

**PKN**  
Product Knowledge Network

*Everything you need to know  
about nonstick-coated  
houseware products — FREE.*

## Substrate Options

Since the mid 1970's, space-age technology has led to many new developments and improvements of plastic materials. Plastic materials now have significantly improved durability and heat resistance leading to their use by manufacturers for ovenware and bakeware.

Plastic ovenware includes a broad category of materials with widely different characteristics. Many shapes, sizes, colors and designs of plastic ovenware are available today. Some shapes are specifically designed for small, compact microwave ovens, while others are made to accommodate certain foods.

### Properties of Plastics

The family of materials used in plastic ovenware provides a number of unique features not necessarily found in the many plastic household items used for serving, storing or packaging. The plastic material used for plastic ovenware is one of three kinds: thermoset plastic, thermoplastic or silicone.

The thermoset plastic materials used for plastic ovenware have a high heat resistance, which make them suitable for use from the freezer to the microwave, convection or conventional oven. An example of a thermoset plastic material is fiberglass-reinforced polyester. This type of ovenware is rigid and consequently will retain the original ovenware shape, with temperatures of 400°F/204°C.

Thermoplastic materials for plastic ovenware can be taken from the freezer to the microwave oven to the table. The thermoplastic category includes a number of special compositions for ovenware, all of them considered lightweight and impact-resistant. Some commonly used thermoplastic ovenware materials include polymethylpentene (TPX), polycarbonate and polysulfone.



Silicone is an especially high-heat resistance plastic that can be used for bakeware and is usually safe up to oven temperatures of 450 degrees. Silicone pans, unless wire reinforced, usually must be supported on an oven proof pan when placed in the oven.



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# Substrate Options

All of the thermoset, thermoplastic and silicone ovenware products are dishwasher safe, stain-resistant, breakresistant and easy to clean. These unique characteristics have increased the popularity of plastic ovenware and continued to improve the acceptance of plastic for cooking.

## **Manufacturing**

The thermoset plastics are compression molded by using a predetermined weight of material which is either formed or compressed into a slug or pill and is placed in the mold when the mold is in an open condition. The mold then closes and heat and pressure are applied to this plug which forces the resin into all areas of the cavity as it compresses the material.

The thermoplastic or injection molded materials are formed in an injection press in which the material passes through a heated barrel, reducing it to a liquid which is then forced under pressure into the mold itself. The mold is then cooled. Subsequently, the plastic is also cooled and solidified. The parts are then ejected from the mold. Silicone is molded in a similar fashion.

## **Use and Care**

Before using any plastic ovenware, check the manufacturer's carton, labels and booklets for special instructions. Wash the utensils thoroughly in hot sudsy water before first use.

All plastic ovenware is easy to clean in the dishwasher or by hand washing. However, all ovenware requires extra cleaning effort if food is allowed to burn. In such cases soak the plastic ovenware in soap and water, then remove the food with a nylon or plastic scrubber. In order to avoid damage to the surface, do not use an abrasive cleaner, scouring pads, strong solvents or sharp kitchen tools.

New plastic ovenware with nonstick coatings can be used in conventional, convection and microwave ovens. Convenience and versatility are highlighted. The nonstick-coated ovenware goes safely from oven, to freezer, microwave and table.