Substrate Options

Properties of Porcelain On Steel

Porcelain enamel has served the needs of mankind for centuries. The exact time and place of its origin are not known, but museums throughout the world contain many examples that are older than two thousand years. These ancient artifacts remain as bright, clean and well defined as the day they were created.

Originally porcelain enamel was an artistic medium for making fine jewelry and, even when it was used to make a functional object such as an urn or small box, it was invariably fashioned in painstaking, handcrafted designs. For centuries porcelain enameling developed as an art form, with only gold, silver, copper and bronze used as its base metal.

Then, in 1830, a Bohemian craftsman found he could create a permanent, smooth, glassy surface on cast iron by dusting the red-hot metal with dry, powdered porcelain—and a new era dawned. From that time on, porcelain enamel became a utilitarian as well as a decorative finish.

Porcelain enamel is essentially a highly durable glass which, with coloring oxides and other inorganic materials, is fused to metal at extremely high temperatures. It first found its way into the kitchen as a decorative finish for wood-burning ranges and cast iron utensils. Later, when techniques were discovered for applying it to sheet steel, it became a standard coating for coffeepots, roasting pans and saucepans.

Manufacturing

In the manufacture of cooking utensils, porcelain enamel is applied after the metal is formed into its final shape. While porcelain can be applied to aluminum, and stainless steel, the most common substrate is steel followed by cast iron. It is one of the most versatile finishes, offering virtually an unlimited range of colors and design effects. Today’s colors included many shades of reds, greens, blues, yellows and oranges in addition to the traditional
“speckled” pattern. There are also decorative porcelain decals, mechanically applied that have the same scratch and stain resistant qualities of the regular porcelain coating.

Use and Care

Aside from the variety of colors and designs available, the chief recommendations for porcelain enamel are its stain and scratch resistance, its immunity to fading and peeling, its chemical resistance, and the fact that it will not pick up food odors. Porcelain enamel utensils can be used for cooking, baking, serving and storing food. Do not use porcelain enamel utensils over high heat for a prolonged time; extreme high temperatures may cause the porcelain to melt. Additionally, consumers should be careful in using porcelain on metal pans on ceramic or glass cooktop surfaces. Should the pan boil dry the glass coating can adhere to the cooktop, resulting in a crack when the pan is removed.

Cleaning porcelain enamel is easy: just wash in warm sudsy water, using a sponge or cloth. Burned on foods or other stubborn stains can be removed by soaking or by using a non-abrasive cleanser and a nylon or other non-abrasive scrubber. All porcelain enamel utensils are safe in modern dishwashers.