
electric skillets Induction Cooking Explained Part 4 - Cookware For Induction Cooking

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Part 1 of this series explained how Induction cooktops use a magnetic field to directly heat the the pot or pan. Part 2 explained the growing popularity of induction cooking by exploring induction's many advantages over conventional cooking technologies. This installment of the Induction Cooking Explained series expands on an issue introduced in part 3 by looking at the types of cookware that work best on induction cooktops and explaining which types of cookware should be avoided. Unlike gas and conventional electric cooking elements, induction elements do not heat up and then transfer heat to the pot or pan. Instead, they directly heat the pot or pan via magnetic hysteresis loss. While the home cook or restaurant chef has no need to understand the details of magnetic hysteresis, he or she must be aware that induction cooking only works with pans made of a ferrous (magnetic) material and will not work with aluminum, glass or ceramic cookware. In addition, although steel is normally magnetic, some stainless steels are actually non-magnetic alloys unsuitable for induction cooking. Because of induction's growing popularity, many manufacturers whose cookware is compatible with induction cooking will state this in their product descriptions. In addition you can perform an easy test: generally speaking, if a magnet sticks to the bottom of a pot or pan then that pot or pan can be used for induction cooking. Conversely, if a magnet does not stick to the bottom of the pan, then the pan cannot be used for induction cooking. In addition to being magnetic, a pot or pan used for induction cooking must have a flat bottom; therefore traditional round-bottomed woks are not suitable for induction cooking, nor are pots or pans that have extremely warped bottoms. Several manufacturers make Chinese-style induction cooktops specifically designed for round-bottomed woks; however these cooktops are suitable only for woks and can't be used with flat bottomed pans.

Cast Iron The materials suitable for induction cooking fortunately turn out to be among the most commonly used and effective cookware materials: cast iron, carbon steel and some stainless steel. The first of these types, cast iron, is a very traditional type of cookware and is well suited for a wide range of applications. Cast iron has a high heat capacity compared to many other cookware materials, so cast iron pots and pans tend to be relatively slow to heat up and, once heated, tend to hold heat longer once the heat source is removed. This property is advantageous for many types of cooking (for example, non-enameled cast iron skillets excel at browning and searing meat because of this property), but cast iron cookware is not ideally suited for dishes that require rapid temperature changes. Also, cast iron cookware must be seasoned to protect against rust, to prevent acidic food from reacting with the cookware, and to prevent food from sticking (a well seasoned cast iron pan is almost as stick resistant as a modern non-stick pan) and care must be taken when cleaning cast iron cookware not to remove the seasoning.

Enameled Cast Iron In addition to the plain cast iron cookware discussed above, several manufacturers produce enameled cast iron cookware. The enamel coating means that the cookware: does not have to be seasoned is fairly easy to clean will not react with acidic foods. Furthermore, enameled cookware is attractive because the enamel coating is typically available in a variety of bright colors. However, enameled cookware does not do a good job of browning food and the enamel is subject to damage if the cookware is dropped or heated to an extreme temperature. Both enameled and plain cast iron work well with induction cooktops.

Carbon Steel Carbon steel is common in woks used for Asian-style stir-fry cooking but is otherwise not commonly used for cookware in the U.S. Like cast iron, carbon steel must be seasoned to reduce sticking, rusting and to prevent food from reacting with the cookware. Also like cast iron, once properly seasoned, carbon steel is almost as stick-resistant as modern non-stick cookware. Flat bottomed carbon steel cookware works well with induction cooktops; however round-bottomed woks will work only with specially designed Chinese style induction cookers.

Stainless Steel Stainless steel actually refers to a family of steel alloys. To be called stainless steel, an alloy must contain a minimum of 10.5% chromium, and it is chromium that causes stainless steel to be resistant to rusting. Many stainless steels contain other metals such as nickel as well. Nickel adds additional corrosion resistance, hardness and durability to stainless steel; therefore it is common in cookware. Unfortunately, stainless steel containing nickel is usually non-magnetic; therefore some stainless steel cookware is not suitable for induction cooking. When purchasing stainless steel cookware for induction cooking, you should look for a statement from the manufacturer or retailer indicating that the cookware is induction-ready. Alternatively, you can test the cookware with a magnet.

Clad Stainless Steel In addition to frequently being non-magnetic, stainless steel's thermal properties are not well suited for cookware (inductive or otherwise); carbon steel and cast iron both conduct heat much better than does stainless steel. Interestingly, the cookware materials with the best thermal conductivity, aluminum and copper, are non-magnetic and are both quite reactive, so there is really no one material that is ideal for induction cookware. However stainless-steel clad cookware, the fourth type of induction-ready cookware, is made from several different types of metals resulting in cookware that has the desirable properties of each. Typically, clad cookware has outer layers of nickel stainless steel for durability, non-reactivity and for its shiny luster, an inner layer of either iron, carbon steel or magnetic stainless steel and another inner layer of either aluminum or copper for its high conductivity (the goal of this layer is to conduct heat evenly across the surface of the pan bottom for even heating). Some clad cookware will utilize magnetic stainless steel for the outside layer of the pan bottom rather than cladding the bottom in nickel stainless steel; this eliminates 1 layer while retaining all of the important properties of clad cookware. Because clad cookware has the best properties of several different materials, it is an excellent choice for induction cookware. There are several excellent high-end brands of clad cookware and numerous less expensive brands.

Waterless Cookware One excellent choice for clad induction compatible cookware is multi-ply surgical stainless steel cookware marketed as waterless cookware. Even if you do not intend to use waterless cooking techniques, many of the same properties that make cookware well suited for waterless cooking also make it suitable for induction cooking. Just make sure that one of the layers in the multi-ply cookware is magnetic as this will not always be the case.

Non-Stick Cookware Lastly, some but not all non-stick cookware is induction-ready. When buying non-stick cookware, use the same rule as when

buying stainless cookware. If you are buying the cookware in a store and have physical access to it, then you can use the magnet test; the cookware is induction ready if and only if a magnet sticks to the bottom. If you don't have physical access, then unless the merchant or manufacturer states that the pan is induction ready, you should not purchase the pan for use with an induction cooktop. You can leverage the advantages of induction cooking provided you have the right kind of cookware, as described in this article. Future installments of the Induction Cooking Explained series will take a closer look at why induction cooking is more environmentally friendly than other cooking techniques and will describe some of the advanced features available on induction cooktops. Secret Restaurant Recipes Finally Revealed: <http://arrcook.blogspot.com/#>

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