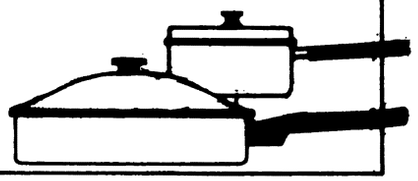
BE SMART ABOUT COOKWARE MATERIALS



Today's cookware is available in a wide choice of materials, colors, patterns and prices. The familiar materials continue to be used. But there are also new combinations with a variety of finishes inside and out. Which materials and finishes are used makes a difference in the cost of pots and pans and how satisfactory they will be to use and care for.

No one material is best for all uses. Each material has its strengths and weaknesses, and some materials need special care. You must decide which qualities you prefer.

The following information explains the main features of materials used in cookware and some guides for using and caring for these materials.

Material	Characteristics	Special Use and Care Guides
Aluminum	Lightweight for its size. Aluminum is an excellent conductor of heat. Because of this quality, heat spreads quickly and evenly. Heavy aluminum allows heat to travel across the cover to completely surround food being cooked. Food will cook at low temperatures, thus saving energy. Will not rust. Discolored by alkaline foods and hard water. Pitted by food acids and salt (performance not affected, only appearance).	Remove burned-on foods in uncoated pans by lightly scouring with soap-filled steel wool pads or soaking in warm water. Rinse in hot water and dry. Stains which are caused by hard water or vegetable residues sometimes appear. To remove them, boil a solution of 1 to 2 tablespoons of cream of tartar to each quart of water in the pans for 5 to 10 minutes. Then lightly scour with a soap-filled pad to restore the shine. Also, cooking acid foods, such as tomatoes or rhubarb, will remove the stains without affecting the cooked foods.

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Material	Characteristics	Special Use and Care Guides
Aluminum (Cont.)	Generally, the gauge or thickness of an aluminum utensil is one feature which determines its quality. The heavier the gauge or thickness, the costlier but more durable the utensil. Heavy sheet and cast aluminum utensils are long-lasting and keep their shapes with normal use. Very thin sheet aluminum warps, dents, and bends readily.	Minerals in water and/or the strong detergents combined with the very hot water necessary for automatic dishwashing can sometimes discolor aluminum. So hand dishwashing may be preferred to preserve the finish. Utensils with coated exteriors and nonstick interiors may be washed in dishwashers without damage to the finish.
Cast Iron	Heats evenly and holds heat well. Works well for long, slow cooking. New cast ironware is usually pre-seasoned to prevent rusting. May discolor from acid foods. Heavy to handle.	Re-season when necessary. Clean the utensil thoroughly, then coat the inside surface with unsalted fat, preferably suet, and place the utensil in a slow oven (250-300°F) for about 2 hours. When the utensil is taken from the oven, wipe off excess grease. Dry thoroughly after washing to prevent rust spots. To remove stuck foods, use soap-filled steel wool pads. May need to rub pan with unsalted fat before using after it is cleaned. Washing in a dishwasher will remove the seasoning and cause rusting. Never store the cover on, as this might cause "sweating." Store these utensils in a dry place. Remove sugar or starch burned-on food by soaking the pan in warm water to which baking soda has been added--3 tablespoons of soda to 1 quart of water.

Material	Characteristics	Special Use and Care Guides
Glass-Ceramic (Pyroceram)*	Can take quick changes of temperatures (cook, freeze, serve) - guaranteed against breakage from temperature changes. No warping, cracking, or crazing. Heavy to handle. Can be used for cooking and serving.	Follow instructions that come with the cookware. Use low to medium heat for top-of-the-range cooking. Remove gray marks made by metal tools by using plastic scouring pad or scouring powder on damp cloth. Avoid use of metal scouring pads.
Heat-resistant glass	Holds heat well, but conducts heat slowly. Not affected by food acids or alkalis. Will break with extreme temperature changes or if dropped. Cool glass cookware after taking it from the heat before subjecting it to extreme cold--liquid, refrigerator, or freezer. Check the information on the label for information regarding temperature changes. Use only for oven cooking unless marked for top-of-the-range use. Top-of-the-range utensils are made of a special type of glass which can endure extreme temperature changes. Some utensils come with a wire grid to be placed between the utensil and an electric unit. Set oven 25° lower than for metal pans.	Remove sugar or starchy burned-on food by soaking the pan in warm water to which baking soda has been added--3 tablespoons of soda to 1 quart of water.

*Trademark of Corning Glass Works

Material	Characteristics	Special Use and Care Guides
Stainless Steel	Resistant to food alkalis and acids. Resistant to pitting. Easy to clean. Tends to get hot spots unless combined with other metals, usually aluminum, copper, or carbon steel. In top-of-the range utensils, the resulting combinations are referred to as: Two ply--commonly with stainless steel interior and another metal on exterior. Three ply--Stainless steel on both inside and outside surfaces with a layer of copper, carbon steel or aluminum forming the core. Bottom clad--formed from solid stainless steel or three-ply and copper is plated to the bottom or aluminum is applied to the bottom by casting, bonding, or metal spraying.	To remove burned-on foods, soak and wash in hot sudsy water. If spots are stubborn, lightly scour with a plastic or soap-filled steel wool pad or a stainless steel cleaner. High heat or cooking certain foods may cause a mottled, rainbow-like discoloration. To remove, use a stainless steel cleaner. Clean copper bottoms with: -Vinegar or lemon juice and salt with a fine (000) steel wool. -A commercial copper cleaner.
Tin	New tinware which is shiny will reflect heat and brown foods lightly. As you use utensils they darken and will absorb heat and permit more browning of foods. Tin coating is thin. As it wears off, the iron base is exposed and will rust easily.	Avoid scouring and scraping that removes tin coating. Avoid extremely high cooking temperatures which cause discoloration, warping, and melting of tin coating. Prevent rust by drying thoroughly. Soak baked-on foods with baking soda and water. Use 1 to 2 teaspoons of soda to 1 quart of water.

FINISHES

Finishes	Characteristics	Special Use and Care Guides
Porcelain enamel on metal	Colorful Non-porous and easy to clean. Resistant to acids and alkalis. Crazed by sudden change of temperature or chips from sharp impact.	For hard-to-remove food, soak in warm sudsy water or use a plastic or other non-abrasive scrubbing pad. All enamel utensils are dishwasher safe.
Polyimide	Smooth, shiny coating made of a polymer, a synthetic chemical compound. It has good heat stability, impact resistance, and flexibility and is not affected by detergents, food, and water.	Wash well in hot suds, rinse and dry after each use. This finish can be washed in a dishwasher but any exposed aluminum parts of the pan may discolor. Do not allow grease or food particles to remain on the finish from one use to the next because they will bake onto the surface.
Anodized Aluminum (heavy oxide coating)	Makes exterior aluminum surface stain- and corrosion-resistant. Won't make gray marks on porcelain enamel. Can add color to aluminum--high heat may fade color. Absorbs heat to produce brown, crisp crusts for pies and yeast breads.	Do not use abrasives. Avoid very high temperatures.

Finishes	Characteristics	Special Use and Care Guides
Non-Stick Finishes	Clean easily and quickly.	Follow manufacturers' instructions.
	Overheating can result in staining and can lessen the non-stick effectiveness.	Most manufacturers recommend conditioning finish before using pans for the first time (except tube pan) by rubbing with cooking oil or shortening. Use no heat.
	May stain or scratch with continued use--stains and small scratches do not affect the non-stick property.	Wash in hot sudsy water after each use to prevent stains. If stains do appear, lighten or remove them by using a special cleaner for non-stick finishes available in grocery, hardware or department stores, or with a solution of 2 tablespoons baking soda, 1/2 cup liquid household bleach and 1-2 cups water. Simmer 5 minutes; wash; dry and recondition surface as directed above.
	Some trade names for non-stick finishes are "Teflon", "Fluon" and "Debron."*	
	Not all interior finishes are the usual non-stick silicone or fluorocarbon finishes. For example, there is a white ceramic finish applied to the interior surface of aluminum cookware which differs from the usual non-stick finishes.	Preventing Scratches--Reasonable care should be taken when using sharp cooking tools. Plastic, rubber, Teflon-coated or wooden spatulas, spoons, forks and other utensils are recommended to ensure a longer life from your cookware. Metal tools may be used as long as they don't dig into the finish.
	*Trademark for DuPont, ICI America, Inc., and DeBeers, respectively.	Cutting food with a sharp-edged knife should be avoided in Teflon finished cookware. When cutting is necessary, as in a pie plate or cake pan, a dull-edged table knife or plastic knife should be used.

Safety of Cooking Utensils

Periodically, the question of the safety of certain cookware materials arises.

The Food and Drug Administration reports that it knows of no commonly used material such as aluminum, copper, glass, steel, or tin which is unsuitable for the types of food utensils in which they are generally used.

Aluminum utensils are particularly subject to claims and notions that they are injurious to health. However, the Food and Drug Administration points out that there is an abundance of evidence that cooking in aluminum utensils is safe. The greyish coating which forms on these utensils is a harmless compound that forms when aluminum combines with air.

The safety of non-stick fluorocarbon coatings such as Teflon has also been questioned by some consumers. Food and Drug Administration scientists report that pans coated with Teflon are safe for conventional kitchen use.

Waterless Cookery and Cookware

Waterless cookery simply means that great quantities of liquid need not be added. However, some liquid must be present and it can be in the food itself or added by the cook. This method cooks by steam. Using low heat is extremely important to keep vapor losses at a minimum and to keep the food from scorching. Waterless cooking retains the nutritional value of food but does not increase it as might be claimed.

Waterless cooking can be done in any heavy pan which has a tight fitting lid that allows only a small amount of steam to escape. It need not be limited to pans labeled "waterless cookware."

Additional information related to cookware selection is found in "Cooking Utensils To Meet Your Needs," Publication 478, published by the Extension Division of Virginia Polytechnic Institute and State University. Ask your local Extension agent for a copy.

*Trade and brand names are used only for the purpose of information and the Virginia Cooperative Extension Service does not guarantee or warrant the standard of the product, nor does it imply approval of the product to the exclusion of others which may also be suitable.