



## Dinnerware

| Dinnerware Type         | Purpose                                                                                                                            |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Charger Plates          | Large decorative plates placed under dinnerware to enhance the table's look and catch spills. Not typically used for serving food. |
| Dinner Plates           | The main plate for serving the primary course, usually the largest in a set, typically 10–12 inches in diameter.                   |
| Salad Plates            | Smaller plates for appetizers, salads, or sides, typically 7–8 inches in diameter.                                                 |
| Dessert Plates          | Used for desserts or small portions, these plates are typically 6–7 inches, slightly smaller than salad plates.                    |
| Soup Bowls              | Deep bowls designed for soups, stews, and other liquid dishes, available in various shapes and sizes.                              |
| Bread and Butter Plates | Small plates, 5–7 inches in diameter, used for serving bread, rolls, or accompaniments like butter or condiments.                  |
| Cups and Saucers        | Used for serving tea or coffee, the saucer supports the cup and catches drips or spills.                                           |
| Other                   | This category includes specialty dinnerware like ramekins for soufflés, pasta bowls, or serving platters for shared meals.         |



## Serveware

| Serveware Type   | Purpose                                                                                                                          |
|------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Serving Platters | Large, flat dishes for serving main courses, appetizers, or desserts, perfect for sharing at gatherings or formal meals.         |
| Serving Bowls    | Deep bowls perfect for serving sides, salads, or soups with style and function.                                                  |
| Gravy Boats      | Vessels with a spout for serving sauces, gravies, or dressings, ensuring easy pouring.                                           |
| Butter Dishes    | Containers designed to hold and serve butter, keeping it fresh and presentable on the table.                                     |
| Sugar Bowls      | Small lidded bowls used to serve sugar, often paired with tea or coffee.                                                         |
| Creamers         | Small pitchers for serving cream or milk, typically used with sugar bowls for coffee or tea.                                     |
| Cake Stands      | Platforms designed to display and serve cakes or baked goods, adding a decorative touch.                                         |
| Other            | Serveware items like cheese boards, tiered trays, and appetizer plates, designed for specialized serving and presentation needs. |



## Flatware

| Flatware Type    | Purpose                                                                                           |
|------------------|---------------------------------------------------------------------------------------------------|
| Dinner Forks     | The largest forks in a place setting, used for main courses like meats, pasta, or hearty dishes.  |
| Salad Forks      | Smaller than dinner forks, designed for salads, appetizers, and lighter meals.                    |
| Dessert Forks    | Perfect for enjoying desserts like cakes, pies, and tarts, often matching other dessert utensils. |
| Dinner Knives    | Sharp knives made for cutting cooked meats and main course items.                                 |
| Butter Knives    | Small, rounded knives with blunt edges, ideal for spreading butter, jams, or soft spreads.        |
| Soup Spoons      | Round, deep spoons for sipping soups and broths.                                                  |
| Teaspoons        | Small spoons for stirring drinks or eating soft desserts like pudding or yogurt.                  |
| Serving Utensils | Includes serving spoons, forks, and tongs for portioning food during communal dining.             |
| Other            | Specialized utensils like seafood forks, grapefruit spoons, or cake servers for specific dishes.  |



## Glassware

| Glassware Type   | Purpose                                                                                                                                 |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Drinkware        | Includes items like tumblers and specialty glasses, thoughtfully designed to complement the beverages served during meals.              |
| Water Goblets    | Sturdy and versatile, these glasses are perfect for serving water at both casual meals and formal dining.                               |
| Wine Glasses     | Designed to enhance wine's flavors and aromas, these glasses have a tapered bowl and thin rim, with variations for red and white wines. |
| Champagne Flutes | Tall and narrow, these glasses are ideal for sparkling wines and champagne, preserving carbonation and bubbles.                         |
| Cocktail Glasses | From martini to margarita glasses, these are designed for mixed drinks, emphasizing presentation and flavor.                            |
| Stemware         | Glasses with stems, often used for formal occasions, offering an elegant way to serve wine or champagne.                                |
| Beer Glasses     | Available in styles like pint glasses, steins, and pilsners, these are made to highlight beer flavors and retain head.                  |
| Stemless Glasses | Modern and practical, these stem-free glasses are great for casual settings and can be used for wine, cocktails, or water.              |
| Coffee Mugs      | Durable mugs with handles, perfect for coffee, tea, or hot chocolate.                                                                   |
| Other            | Includes specialty glassware like whiskey tumblers, cordial glasses, or punch cups, each designed for specific drinks.                  |



## Other Tablewares

| Other Dinnerware     | Purpose                                                                                              |
|----------------------|------------------------------------------------------------------------------------------------------|
| Napkin Rings         | Hold napkins neatly rolled or folded, adding elegance to the table.                                  |
| Condiment Containers | Small jars for sauces, dressings, or seasonings, keeping the dining experience organized.            |
| Centerpieces         | Decorative items placed at the table's center to enhance its look, often used for special occasions. |
| Chopsticks           | Traditional utensils for Asian cuisines, blending function with cultural significance.               |
| Ramekins             | Small, heat-resistant dishes for individual servings of desserts, soufflés, or sides.                |
| Trivets              | Heat-resistant platforms that protect the table from hot cookware or dishes.                         |
| Other                | Includes extra flatware like butter knives, cheese spreaders, or specialty utensils.                 |



## Tableware Summary Table

| Category         | Examples                                                                                                                          |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Dinnerware       | Charger plates, dinner plates, salad plates, dessert plates, soup bowls, bread and butter plates, cups and saucers                |
| Serveware        | Serving platters, serving bowls, gravy boats, butter dishes, sugar bowls, creamers, cake stands                                   |
| Flatware         | Dinner forks, salad forks, dessert forks, dinner knives, butter knives, soup spoons, teaspoons, serving utensils                  |
| Glassware        | Drinkware, water goblets, wine glasses, champagne flutes, cocktail glasses, stemware, beer glasses, stemless glasses, coffee mugs |
| Other Tablewares | Napkin rings, condiment containers, centerpieces, chopsticks, ramekins, trivets                                                   |



## Cooking Pots

| Cooking Pot Type | Purpose                                                                                                                                     |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Saucepot         | A medium pot with a wide base and tall sides, perfect for sauces, soups, and stews. It ensures even heat for slow cooking and simmering.    |
| Saucepan         | A small pot with a long handle and lid, ideal for heating liquids, making sauces, or cooking small portions.                                |
| Stockpot         | A tall, straight pot ideal for stocks, broths, soups, and stews. Its size is perfect for boiling pasta or steaming shellfish.               |
| Dutch Oven       | A heavy-duty cast iron or ceramic pot with thick walls and a tight lid. It retains heat well, ideal for braising, baking, and slow cooking. |
| Other            | Specialty items like jam, pasta, or tamale pots cater to specific cooking needs.                                                            |



## Cooking Pans

| Cooking Pan Type | Purpose                                                                                                                                                            |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frying Pan       | A versatile and commonly used pan with a flat bottom and flared sides, perfect for frying, searing, and browning food.                                             |
| Skillet          | Similar to a frying pan but often heavier and with straighter sides, making it suitable for both stovetop and oven use.                                            |
| Grill Pan        | Features raised ridges on the cooking surface that mimic a grill, ideal for cooking meats, vegetables, or sandwiches with grill marks.                             |
| Sauté Pan        | Designed with straight sides and a larger surface area, perfect for sautéing, searing, and cooking sauces or liquids.                                              |
| Roasting Pan     | A large, deep pan with handles, specifically used for roasting meats and vegetables in the oven. Often comes with a rack for even cooking.                         |
| Wok              | A deep, round-bottomed pan with steep sides, excellent for stir-frying, steaming, and deep-frying due to its high heat distribution.                               |
| Braiser          | A wide, shallow pan with a tight-fitting lid, ideal for slow-cooking, braising, and simmering. Often used for meats and stews.                                     |
| Other            | Specialty pans, such as crepe pans or paella pans, are designed for specific cooking tasks, offering unique shapes and characteristics for their intended purpose. |



## Other Cookwares

| Other Cookwares         | purpose                                                                                                                                                                         |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pressure Cooker         | A versatile kitchen tool that uses steam pressure to cook food quickly, making it ideal for tenderizing meats, cooking beans, or preparing stews in a fraction of the time.     |
| Slow Cooker             | Designed for low, slow cooking over several hours, this appliance is perfect for soups, stews, and other dishes that benefit from a gradual melding of flavors.                 |
| Steamers                | Used to gently cook food with steam, maintaining nutrients and natural flavors, steamers are particularly popular for vegetables, seafood, and dumplings.                       |
| Rice Cooker             | A convenient device specifically for cooking rice with precision, often featuring automatic settings for various types of rice and keeping it warm for hours.                   |
| Steamer Insert / Basket | A removable accessory that fits inside a pot, allowing food to steam above boiling water without submerging it, commonly used for vegetables or seafood.                        |
| Sous Vide               | A precision cooking method involving vacuum-sealed food cooked to exact temperatures in a water bath, ensuring evenly cooked, tender, and flavorful results.                    |
| Other                   | This category includes specialty cookware like fondue pots, tagines, griddles, dutch ovens, or air fryers, each offering unique cooking capabilities for diverse kitchen needs. |



## Summary Cookwares

| Category        | Examples                                                                                      | Description                                                                                             |
|-----------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Pots            | Saucepot, Saucepan, Stockpot, Dutch Oven, Other                                               | Larger vessels designed for liquid-based cooking like soups, sauces, and stews.                         |
| Pans            | Frying Pan, Skillet, Grill Pan, Saute Pan, Roasting Pan, Wok, Braiser, Other                  | Shallow tools for high-heat cooking methods such as frying, sautéing, and roasting.                     |
| Other Cookwares | Pressure Cooker, Slow Cooker, Steamers, Rice Cooker, Steamer Inserts/Basket, Sous Vide, Other | Specialized equipment designed to perform specific tasks like pressure cooking, steaming, or sous vide. |



## Baking Sheets

| Type          | Purpose                                                                                                                                                                                                   |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Baking Sheets | Flat, rectangular metal sheets designed for baking cookies, biscuits, or roasting vegetables. They ensure even heat distribution and often have a rimless edge for easy sliding of baked items.           |
| Baking Trays  | Similar to baking sheets but with raised edges, these are ideal for containing liquids or preparing dishes like lasagna and sheet cakes. They come in various sizes and depths to suit different recipes. |
| Cooling Racks | Wire racks used to cool freshly baked goods by allowing air to circulate underneath, preventing sogginess and ensuring proper texture. They can also double as trays for glazing or decorating.           |



## Baking Pans

| Type                               | Purpose                                                                                                                                                                                          |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bread Loaf Pans                    | These pans come in various sizes and shapes, from standard rectangular ones to elongated or decorative designs, accommodating different types of bread like sandwich loaves or artisan styles.   |
| Cake Pans                          | Available in a wide range of shapes such as round, square, or heart-shaped, these pans are essential for making layered cakes, sheet cakes, and other creative designs.                          |
| Square and Rectangular Baking Pans | Versatile pans used for brownies, bars, casseroles, and other baked dishes. Their straight edges ensure evenly baked goods.                                                                      |
| Muffin Pans / Cupcake Pans         | These pans feature multiple cup-shaped cavities for baking muffins and cupcakes uniformly. Sizes range from mini to jumbo for versatility.                                                       |
| Springform Pans                    | Ideal for cheesecakes and other delicate desserts, these pans have removable sides and bases for easy release without damaging the baked item's shape.                                           |
| Bundt Pans and Tube Pans           | Characterized by their center tube and decorative shapes, these pans are perfect for bundt cakes, angel food cakes, or other ring-shaped creations.                                              |
| Pie Dishes/Pie Tins                | Shallow, round pans with sloped sides designed for pies. They often come in ceramic, glass, or metal for different baking needs and presentation preferences.                                    |
| Baking Dishes                      | Generally made of glass or ceramic, they are used for baked casseroles, gratins, and savory or sweet dishes. Their heat retention and attractive designs make them suitable for serving as well. |
| Jelly Roll Pans                    | Flat, rectangular pans with low edges, commonly used for baking thin sponge cakes, cookies, or roasting smaller cuts of vegetables and meat.                                                     |
| Pizza Pan / Pizza Stone            | Pizza pans have raised edges for holding dough in place, while pizza stones mimic a brick oven, creating crispy crusts. Both are essential tools for pizza enthusiasts.                          |
| Ramekins                           | Small, round ceramic dishes perfect for individual portions of soufflés, custards, or molten lava cakes. They are also used for serving appetizers or desserts.                                  |
| Tart Pans                          | Typically circular with fluted edges and a removable bottom, these pans help create beautifully shaped tarts and quiches with crispy crusts.                                                     |
| Brioche Pans                       | Specially crafted pans with a fluted design to make traditional brioche bread. Their unique shape creates the classic, domed appearance of this buttery bread.                                   |
| Specialty Pans                     | This broad category includes uniquely shaped pans such as madeleine pans, donut pans, or novelty molds for themed cakes or pastries, offering endless creative possibilities.                    |

|                 |                                                                                                                                                                          |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Other Bakewares | Includes items like silicone baking mats, adjustable molds, or casserole dishes for niche baking needs. These tools enhance functionality and creativity in the kitchen. |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



Summary Bakewares

| Category        | Examples Included                                                                                                                                                                                                                                          | Details                                                                                                             |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Sheets          | Baking Sheets, Baking Trays, Cooling Racks, Other                                                                                                                                                                                                          | Thin, resistant surfaces or racks for even baking, roasting, and cooling.                                           |
| Pans            | Loaf Pans, Bread Loaf Pans, Cake Pans, Square or Rectangular Pans, Muffin or Cupcake Pans, Springform Pans, Bundt Pans, Tube Pans, Pie Dishes, Baking Dishes, Jelly Roll Pans, Pizza Pans/Stones, Ramekins, Tart Pans, Brioche Pans, Specialty Pans, Other | Diverse shapes and sizes for specific baked goods like bread, cakes, muffins, tarts, pizzas, and savory casseroles. |
| Other Bakewares | Soufflé Dishes, Pudding Basins, Flan Molds, Other                                                                                                                                                                                                          | Specialized dishes for distinct recipes, used to expand creativity in baking.                                       |



## Kitchen Knives

| Knife Type         | Blade Length | Primary Use                                         |
|--------------------|--------------|-----------------------------------------------------|
| Chef's Knife       | 6–12 inches  | Versatile tasks like slicing, dicing, and chopping  |
| Paring Knife       | 2–4 inches   | Peeling, trimming, and garnishing                   |
| Utility Knife      | 4–7 inches   | Slicing fruits, vegetables, and small cuts of meat  |
| Bread Knife        | 7–10 inches  | Cutting bread, pastries, and soft foods with crusts |
| Santoku Knife      | 5–7 inches   | Precision slicing, dicing, and chopping             |
| Boning Knife       | 5–7 inches   | Separating meat from bones                          |
| Carving Knife      | 8–14 inches  | Slicing thin cuts of meat                           |
| Fillet Knife       | 6–11 inches  | Preparing fish fillets                              |
| Cleaver            | 6–12 inches  | Cutting through bones and tough meat                |
| Steak Knife        | 4–6 inches   | Cutting cooked meat at the dining table             |
| Tomato/Bagel Knife | 4–6 inches   | Slicing soft, delicate foods without crushing       |
| Nakiri Knife       | 5–7 inches   | Precise vegetable slicing and chopping              |
| Peeling Knife      | 2–3 inches   | Peeling and intricate decorative work               |



## Kitchen Tools and Utensils

| Tool / Utensil            | Function                                                                       | Common Materials                    |
|---------------------------|--------------------------------------------------------------------------------|-------------------------------------|
| Kitchen Shears / Scissors | Cutting herbs, trimming meats, opening packages, and multifunctional use       | Stainless steel, heavy-duty plastic |
| Measuring Cups / Spoons   | Precise measurement of ingredients for cooking and baking                      | Stainless steel, plastic, glass     |
| Cutting Boards            | Providing safe and hygienic surfaces for cutting and chopping                  | Wood, plastic, bamboo               |
| Peelers                   | Removing skins from fruits and vegetables, creating decorative strips          | Stainless steel, plastic            |
| Graters                   | Shredding cheese, zesting citrus, grating spices                               | Stainless steel                     |
| Garlic Press              | Crushing garlic cloves with ease and extracting flavorful paste                | Stainless steel                     |
| Specialty Knives          | Refining tasks like cutting cheese, shellfish preparation, or butter spreading | Stainless steel                     |
| Sharpening Steel / Honing | Maintaining knife blade sharpness and edge alignment                           | Carbon steel, stainless steel       |
| Knife Block / Storage     | Storing knives and tools in an organized, hygienic, and safe manner            | Wood, plastic, magnetic strips      |



## Food Prep Utensils

| Utensil Type      | Function                                    | Key Use                                                |
|-------------------|---------------------------------------------|--------------------------------------------------------|
| Meat Grinder      | Grinds meat to desired texture              | Custom blends for burgers, sausages, or meatloaves     |
| Meat Tenderizer   | Breaks down fibers for tender meat          | Improves texture in tougher cuts of meat               |
| Meat Thermometer  | Measures internal temperature of proteins   | Ensures safe, precise cooking                          |
| Melon Baller      | Scoops spherical pieces of fruit            | Enhances presentation for desserts and salads          |
| Mezzaluna         | Mincing and chopping herbs                  | Prepares finely chopped herbs and vegetables           |
| Microplane        | Zests or grates in fine textures            | Ideal for citrus, cheese, or spices                    |
| Milk Frother      | Creates foam in beverages                   | Perfect for cappuccinos or latte art                   |
| Mortar and Pestle | Crushes and blends ingredients              | Releases essential oils and aromas in spices           |
| Nutcracker        | Splits hard shells                          | Great for walnuts, pecans, and other hard-shelled nuts |
| Whisk             | Blends or aerates mixtures                  | Preparation of batter, sauces, or whipped cream        |
| Spatula           | Flips, spreads, and mixes food              | Versatile for various kitchen tasks                    |
| Tongs             | Safely handles food during cooking          | Useful for grilling, frying, or serving                |
| Colander/Strainer | Separates liquids from solids               | Drains pasta, washes produce, or sifts grains          |
| Potato Ricer      | Presses and smooths potatoes                | Perfect for fluffy mashed potatoes                     |
| Mandoline Slicer  | Cuts uniform slices of vegetables or fruits | Speeds up meal prep and ensures consistent thickness   |



## Food Serving Utensils

| Utensil            | Primary Use                           | Key Features                          |
|--------------------|---------------------------------------|---------------------------------------|
| Serving Spoons     | Portioning and transferring foods     | Large bowl, durable materials         |
| Slotted Spoons     | Separating solids from liquids        | Perforated or slotted designs         |
| Serving Forks      | Serving meats and delicate food items | Long prongs, sturdy grip              |
| Ladles             | Serving soups, stews, and sauces      | Deep bowl, long handle                |
| Cake / Pie Servers | Slicing and transferring desserts     | Sharp edge, flat triangular base      |
| Salad Tongs        | Tossing and serving salads            | Ergonomic, secure grip design         |
| Sugar Tongs        | Serving sugar cubes                   | Compact, hygienic design              |
| Cheese Knives      | Cutting and serving cheese            | Designed for specific cheese textures |
| Bread Knives       | Slicing breads without crushing       | Serrated blade, long handle           |
| Spaghetti Forks    | Serving long pasta strands            | Pronged design with grip slit         |
| Gravy Boat         | Pouring liquid condiments like sauces | Spout for clean pouring               |
| Butter Dish        | Preserving and serving butter         | Covered lid, stable base              |
| Other              | For unique serving needs              | Oyster forks, egg slicers             |



## Materials Used in Cookware

| Material           | Pros                                                                      | Cons                                                        |
|--------------------|---------------------------------------------------------------------------|-------------------------------------------------------------|
| Stainless Steel    | Durable, non-reactive, easy to clean                                      | Poor heat conduction, food can stick                        |
| Cast Iron          | Excellent heat retention, long-lasting, develops non-stick with seasoning | Heavy, requires maintenance, prone to rust                  |
| Aluminum           | Lightweight, excellent heat conductivity, affordable                      | Warps easily if not anodized, reacts with acidic foods      |
| Copper             | Superior heat conduction, aesthetic                                       | Requires polishing, reacts with acidic foods                |
| Carbon Steel       | Durable, lighter than cast iron, develops natural non-stick surface       | Requires maintenance, susceptible to rust                   |
| Stoneware          | Even heat distribution, naturally non-stick                               | Fragile, limited to oven use                                |
| Ceramic            | Smooth non-stick surface, eco-friendly                                    | Prone to chipping, less durable                             |
| Non-Stick Coatings | Easy food release, ideal for low-fat cooking                              | Surface deteriorates if scratched or overheated             |
| Other              | Glass is non-reactive and silicone is flexible                            | Glass is fragile, silicone limited to specific applications |



Bakeware Materials

| Material                  | Pros                                                                  | Cons                                                      |
|---------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------|
| Aluminum                  | Lightweight, excellent heat conduction, budget-friendly               | Prone to scratching and denting, reacts with acidic foods |
| Aluminized Steel          | Strong and long-lasting, even heat distribution, resistant to warping | Can be heavy, may need careful handling                   |
| Stainless Steel           | Extremely durable, rust-resistant, non-reactive                       | Poor heat conductor, potential for uneven cooking         |
| Glass                     | Non-reactive, retains heat, easy to clean                             | Fragile, not suited for rapid temperature changes         |
| Ceramic Stoneware         | Non-stick surface, holds heat well, attractive appearance             | Prone to chipping or cracking, less durable               |
| Silicone                  | Highly flexible, non-stick, dishwasher safe                           | Limited heat conduction, not suitable for browning        |
| Cast Iron                 | Durable, excellent heat retention, versatile                          | Heavy, requires maintenance, prone to rust                |
| Non-Stick Coated Bakeware | Easy food release, great for delicate baking                          | Coating can wear off, shorter lifespan                    |



## Materials Used for Cooking Knives

| Material          | Pros                                                | Cons                                        |
|-------------------|-----------------------------------------------------|---------------------------------------------|
| Stainless Steel   | Rust-resistant, low maintenance, affordable         | Dulls faster, requires regular sharpening   |
| High-Carbon Steel | Extremely sharp, excellent edge retention           | Prone to rust, requires careful maintenance |
| Ceramic           | Lightweight, rust-resistant, long-lasting sharpness | Fragile, difficult to sharpen               |
| Damascus Steel    | Unique patterns, combines durability and sharpness  | Expensive, rust-prone without maintenance   |
| Titanium          | Lightweight, rust-resistant, low maintenance        | Less sharp, not suitable for heavy tasks    |



## Dinnerware Materials Overview

| Material       | Pros                                       | Cons                                    |
|----------------|--------------------------------------------|-----------------------------------------|
| Porcelain      | Elegant, durable, microwave-safe           | Expensive, cracks under extreme changes |
| Bone China     | Lightweight, durable, refined              | Expensive, brittle                      |
| Stoneware      | Sturdy, versatile, affordable              | Heavy, less refined                     |
| Ceramic        | Affordable, versatile, safe for microwaves | Fragile, chips easily                   |
| Earthenware    | Affordable, decorative appeal              | Prone to chipping, absorbs liquids      |
| Glass          | Non-porous, easy to clean                  | Breaks easily, slippery                 |
| Wood           | Eco-friendly, aesthetic, durable           | Requires care, absorbs moisture         |
| Crystal        | Elegant, enhances presentation             | Expensive, fragile                      |
| Tempered Glass | Durable, heat- and scratch-resistant       | Heavy, limited designs                  |
| Other          | Lightweight, inexpensive                   | Not heatproof, degrades over time       |