

MATERIAL AND SURFACE

Once you've decided what kind of pot or pan you need, the next thing to decide is the material and surface. The material and surface largely determine the properties of the pot or pan and thereby its suitability for different purposes and dishes. For example, aluminium conducts heat evenly and quickly, making the cooking easy to control since the heat is adjusted quickly. Therefore a saucepan for cooking flour- or milk-based dishes (which easily gets burnt) would optimally be made of aluminium with a non-stick coating.

However, if you are also taking other things than the actual cooking into consideration, this might still not be the right choice for you. If, for example, it's very important that the saucepan is durable and able to wash in the dishwasher, you should probably consider a pan made of stainless steel. That's why we offer most functions in a variety of materials.

The point is that there is a connection between the function and the material, and that it might be a benefit to have a mix of materials in your pots and pans.

Mixed materials give better properties

In general, two materials are mixed to take advantage of the best properties of each material and avoid properties that may have a negative effect on the cooking. For example, stainless steel is a bad heat conductor.

Therefore, pots and pans made of stainless steel is provided with a three-layer base composed of a layer of aluminium (conducts heat efficiently) embedded between two layers of stainless steel. This way the advantages of aluminium are utilised to balance the disadvantages in the stainless steel pot or pan.

A conclusion to be drawn from this is that the choice of pots and pans should not solely be based on appearance and design. More important is that it is suitable for the food you prefer to cook and eat.

Stainless steel

Stainless steel is a collective term for stainless steel alloys containing minimum 12% chromium and various amounts of nickel, molybdenum, titan, niob and other agents. Depending on the amount of the different agents, the material gets different properties such as easy to harden (for knives), more ductile or better protection against corrosion.



IKEA 365+ cookware is made of stainless steel.

Carbon steel

Carbon steel is sometimes used in pots and pans (for example PYRA wok). Carbon steel is not stainless as the chromium content is too low, which is why it is supplied with a non-stick coating to enhance the properties of the pan.

Three-layer quality

Stainless steel is one of the most rust-resistant, durable, heat- and impact-resistant materials available and is therefore highly suitable for the production of pots and pans. A disadvantage is that it conducts heat poorly, so the heat will be concentrated to the bottom, increasing the risk of the food getting burnt. This disadvantage can be balanced in two ways.

The most effective (but also most expensive) way is to make the whole pot or pan in three layers. It means that a metal with high heat conduction capacity (for example aluminium) is laminated between two layers of stainless steel. This combined material goes through the whole pot or pan, making it thick but with better heat conducting properties than solid stainless steel. The thickness is also a benefit since it distributes the heat evenly through the pot. In that way the food is heated both from the sides of the pot and from the bottom minimizing the risk of food sticking to the bottom.

In other words – you get the same benefits as with a thick aluminium pot or pan (quick and even heat distribution) and the benefits of stainless steel (durable and washable in a dish-washer).

Another way of balancing the poor heat conduction properties of stainless steel is to make the base of the pot or pan in three layers (also called sandwich base). The pot or pan is then supplied with a 3-5 mm thick plate of aluminium, which is laminated on to a stainless base (of chrome steel in general, to work well on an induction hob) and to the pot or pan itself. The pot or pan thus obtains a three-layer base of stainless steel-aluminium-stainless steel.

Foods suitable for cooking in stainless steel cookware

- Food cooked in a lot of water (e.g. pasta) and hydrous foods like vegetables, involving a minor risk of getting burnt. However, pots and pans made of three-ply stainless steel are suitable for almost any kind of food.
- Dishes containing acid, wine or vinegar, as stainless pots and pans are non-reactive.

Advantages

- Impact-resistant and durable, giving the pots and pans a long life. It does not become scratched, dented or warped by normal use. Correctly used and cared for stainless steel pots and pans will look fresh for a long time.
- Easy to clean; they are normally dishwasher-safe and withstand intense cleaning and scrubbing (except pots and pans with non-stick coating).
- Not reactive to acidic ingredients (e.g. wine, vinegar, lemon or tomato), meaning the food will not take on taste or colour and the surface of the pot or pan will remain unchanged.
- Corrosion-resistant.

Disadvantages

- As a consequence of the poor heat conduction of the material the pot or pan heats relatively slowly, the temperature is difficult to quickly adjust and the food easily gets burnt and stuck to the base.
- Limy water, salt water, lemon and vinegar can leave stains on the metal. Staining can be prevented by wiping the pot or pan dry directly after washing and not adding salt until the water has come to the boil.
- Sometimes a rainbow-coloured film may form on the exterior of the pot or pan. This happens when the pot or pan is exposed to too high heat (e.g. when used on a gas hob). Discoloration can be polished off by using a cleaner for stainless steel.

Aluminium

Aluminium, as well as copper and precious metals, is the metal that conducts heat best. This capacity to distribute heat quickly and evenly makes aluminium one of the best metals for use in cookware. Apart from being an excellent heat conductor it is light and rust-resistant. Compared to stainless steel, aluminium is relatively soft and not very scratch-resistant. For this reason, the pots and pans should be handled with care and only plastic or wooden utensils should be used in the cooking.

All our pots and pans made of aluminium are provided with some kind of surface treatment (non-stick coating) or are anodised. The surface treatment and anodisation neutralises the disadvantages that pots and pans made of untreated aluminium have.



SKÄNKA cookware is made of aluminium.

Pots and pans without surface treatment are reactive, which means that they easily become discoloured, or discolour or give the food an undesired flavour. The discolouration of the pot itself occurs because aluminium reacts with oxygen. In other words - the aluminium oxidises. The oxidation forms a very thin film (5/1 000 mm) that dissolves when exposed to certain agents in hot water, foodstuffs or dishwasher detergents.

The risk of discolouration is greatest when food is stored in the pot or pan and can be removed by polishing. However, this kind of problem should not occur on any pot or pan in our range, since they are either anodised or provided with non-stick coating.

A good aluminium pot or pan contains a large quantity of material, i.e. it has a thick wall and base. The thicker the wall, the less the concentration of heat in the bottom will be.

Thus the pot or pan heats evenly, and the food will not get burnt since it is heated from several directions.

Foods suitable for cooking in aluminium cookware

The efficient heat conduction makes aluminium pots and pans suitable for sensitive dishes, e.g. flour- and/or milk-based dishes. The risk of food sticking is small since it is heated from both the wall and the bottom, and the heat is easy to adjust, which also helps prevent burning.

Advantages

- Efficient heat conduction – the heat is conducted quickly and evenly through the material. Quick heating is energy-saving. Even heating helps prevent the food from getting burnt.
- Aluminium is a lightweight material which makes the pots and pans easy to handle.
- Rust-resistant.

Disadvantages

- Not dishwasher-safe.
- Thin-walled aluminium pots and pans easily get dents and scratches and become deformed.
- Utensils of plastic or wood are recommended

Anodised aluminium

Anodised aluminium is aluminium reinforced by electrical means. This treatment imitates the oxidation process which naturally occurs in the metal. The difference is that natural oxidation occurs the very moment when aluminium gets into contact with oxygen and a 5/1000 mm oxide film is formed. Anodising reinforces the oxide film so that it becomes 10-12 times stronger (i.e. 60/1000 mm) than the natural oxide film.

Anodising is an electro-chemical process, by which the aluminium is provided with a hard, dense oxide coat. Oxidation changes the molecule structure of aluminium so that it becomes stronger than steel but does not affect the heat conduction.

Anodising should not be mixed up with non-stick coating, which is applied to the surface of the aluminium pot or pan. Anodising "seals" the surface of the pot or pan, thereby preventing discolouration or transfer of metal taste to the food. It is sensitive to acids, however, and the anodic oxide film may disappear if acidic food like tomato sauce or orange juice is stored in the pot or pan for a longer period. When the pot or pan is emptied, a new oxide film will form, of the same thickness as on a non-anodised aluminium product (5/1000 mm). The pot or pan has consequently lost several important properties.

By anodising, the pots and pans obtain all the positive material properties of pure aluminium (even and quick heat conduction etc.) while the negative properties are counteracted. Anodising reinforces the surface of the pot or pan, so that it becomes more scratch- and stain-resistant. It also further reduces the risk of food sticking, and thus makes the product easy to clean. The use of wooden or plastic utensils is recommended, because metal utensils with sharp edges can scratch the product.



FAVORIT frying pan 23x33 cm made of anodised aluminium.

Foods suitable for cooking in anodised aluminium pots and pans

Pots and pans of anodised aluminium are suitable for almost any kind of cooking, including sensitive flour- and/or milk-based dishes.

Advantages

- Efficient heat conduction capacity – the heat is conducted quickly and evenly through the material. Quick heating is energy-saving. Even heating helps prevent the food from getting burnt.
- High surface resistance and long life.
- Rust-resistant.

Disadvantages

- Not dishwasher-safe; dishwasher detergent can damage the surface.
- Metal utensils with sharp edges should not be used as these may scratch the product. Utensils of wood or plastic are recommended.

Cast iron

Cast iron is one of the materials that have been used longest for the production of pots and pans. It is durable and has superb browning and frying properties. Cast iron pots and pans heat slowly but, on the other hand, store and retain heat for a long period, which is an advantage when making dishes that require slow cooking and when the food is to be served direct from the pot or pan. Pots and pans made of cast iron can either be untreated or enamelled.



SENIOR cookware - made of enamelled cast iron.

Untreated cast iron

Untreated cast iron pans shall always be seasoned before use (if this is not already done in production).

By seasoning, microscopic cavities in the metal surface are filled and the surface becomes smooth. As a consequence, the risk of food sticking is reduced and its resistance to corrosion is increased.

To season a cast iron pot or pan, a small amount of oil is rubbed in and the pan is heated in the oven or on the cooker to max. 150°C (300°F). Leave the pan to cool off and wipe off excess oil. This treatment should be repeated three times when the pan is new, but once it has been seasoned it only needs to be treated in this way once in a while. If corrosion or food stains occur, or if the food gets burnt and stuck, it can be cleaned with steel wool or an abrasive sponge and then re-seasoned.

When food is cooked in an untreated cast iron pan, the frying fat collects in the small pores in the cast iron surface. Thus the food to be fried or browned does not rest directly on the base but on a layer of fat, which contributes to producing a nice, brown surface. This also prevents the food from getting burnt easily.

In order not to dry out the material by removing the necessary layer of fat, the pan should be cleaned with pure water if possible. Washing-up detergent dries out the surface. Stains from remaining food can be removed by sprinkling a little salt in the pot or pan and then wiping it clean. Salt absorbs excess fat but leaves just enough to prevent the pot or pan from drying out.

Untreated cast iron consists of 100% iron, which means it can corrode if it is not treated properly. It is therefore important to wipe the pan dry directly after washing-up and to oil it regularly. Another disadvantage of cast iron pots or pans is that the material is reactive. This means that acidic foodstuffs (e.g. lemon and tomato) can become discoloured or take on taste from the metal. The pan itself can be discoloured by salts and acidic foodstuffs. Iron precipitated from the pan during cooking is completely harmless, since it is of the same type as iron that is normally, and should be, present in the human body.

Enamelled cast iron

Enamelled cast iron has a hard porcelain enamel coating. This provides a permanent finish that does not require seasoning and prevents the iron from reacting with acidic food. We use two kinds of enamel: shiny or matt. Shiny enamel has an even and tight surface which does not need seasoning before use. It is sensitive to sudden changes in temperature (might crack). Matt enamel is porous, and it might be a good idea to oil it in before use and after that now and then. However, it does not require as extensive treatment as untreated cast iron. It is possible to combine shiny and matt enamel, like in SENIOR, which is shiny on the outside (makes it durable, easy to clean and possible to put colour on) and matt on the inside (gives good frying properties). Pots and pans made of enamelled cast iron are simply washed by hand after use and then carefully wiped dry.

Foods suitable for cooking in cast iron pots and pans

- Meat dishes to be browned or fried will obtain a nice and even browning.
- Dishes that require slow cooking – the material stores up heat, which is an advantage for dishes to simmer for a long while.

Advantages

- Durable and resistant material.
- Conducts heat evenly, helps obtain an even browning.
- Stores heat, practical in slow cooking and when the food is served direct from the pot or pan.
- Small risk of the food getting burnt and stuck, provided the pot or pan has been properly seasoned.

Disadvantages

- Not dishwasher-safe. Dishwasher detergent dries out the fat film and impairs the properties of the pan.
- Untreated cast iron can corrode if not properly cared for.
- Untreated cast iron is reactive, and therefore not suitable for use with acidic foodstuffs which easily take on taste or colour from the metal.
- Relatively heavy and may therefore be difficult to handle, especially when filled with food.
- May crack if dropped on a hard floor.

Non-stick coatings

Certain types of pots and pans, and frying pans in particular, are treated on the inside with PTFE (PolyTetraFluorEtylen), a fluoroplastic coating commonly called Teflon®, Xylan®, Excalibur® etc. The term "Teflon" is often used to describe PTFE coating but actually is a brandname just like the other types of coatings. The brandnames stand for different qualities of coating.

The PTFE coating gives the pots and pans non-stick qualities, preventing the food from getting burnt easily. This simplifies cooking and makes the pots and pans easier to clean. The coating allows for cooking with less fat., thereby making the food more healthy.

Pots and pans with coating should be washed by hand, without washing-up detergent. Washing-up detergent dries out the pan. Even pots and pans with coating will benefit from a thin layer of fat on the surface.

Overheating of non-stick coated pots and pans

PTFE can be used at temperatures up to 250°C (482 degrees°F). Overheating of coated pots and pans should be avoided, however, because at very high temperatures (ca. 300°C/572°F) the coating can generate toxic gases. The same type of gases can develop when fat is burnt, for example from meat left in the pan. In connection with gas development a heavy build-up of smoke takes place.

Thus, the risk of persons being affected by the gases is very small since you will notice immediately from the smoke that the pot or pan is overheated. A condition for this to happen is high temperature, which means that the pot or pan, in principle, must be left standing on the cooker by mistake. When frying, a maximum temperature of 220°C (428°F) is reached, therefore there is no risk of toxic gases developing.

Black flakes from the non-stick coating

Regardless of quality, the coating will be worn and after a period of use flakes may come off. A frequently asked question is whether the flakes can cause harm if they land up in the food. The answer is no. The flakes will follow the alimentary canal and intestinal canal without the body absorbing any foreign substance.

Qualities of non-stick coatings

We use non-stick coatings of five different qualities: Teflon® Professional, Teflon® Platinum Plus, Teflon® Select, Teflon® Classic and coatings without brandnames.

The quality of the non-stick coating is related to durability. The durability, in turn, depends on:

- how many layers the coating consists of
- how thick the layers are
- the composition of the coating
- how the coating is applied on the pan
- which material the pan is made of (plus the thickness and quality of the material).

All these aspects will affect the coating and give it various properties.

Teflon® Professional, Teflon® Platinum Plus, Teflon® Select and Teflon® Classic have been developed by a company by the name of DuPont which is specialised in the production of non-stick coatings of different qualities and for different purposes.

Teflon® Professional

The top of the line of all the coatings used on our products. It is used on our series FAVORIT and STIL – for the hobby cook customer who demands a lot from their kitchen tools and use them frequently. Teflon® Professional is, as the name indicates, for professional use and has excellent durability.



Teflon® Platinum Plus

Is a non-stick coating that stands up to the tough demands of everyday use. It is therefore a natural choice for the non-stick coated pots and pans in the IKEA 365+ series, and is also found on the MEDALJ series.



Teflon® Select

Is a good choice for a customer who likes cooking but doesn't need high performance cookware. This coating is used on the series SKÄNKÅ.



Teflon® Classic

Stands for convenience, by making cooking and cleaning easier. It is a somewhat thinner coating than the other ones and is used for the series KAVALKAD.

