



The Guide to **Tabletop**



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Glassware

Market Background

- UK Glassware market size £28 m
- Trends influencing caterer's choice
 - Consumers becoming more sophisticated, wanting products mirroring quality, shapes & sizes used at home
 - Better quality wines & variety increasingly demanded
 - Need for more comprehensive ranges
 - Fashion is to elevate wine bowl off table top, giving height, creating two levels
 - Colour becoming acceptable for water glasses
 - Wine tasting attributes of glassware more relevant



Market Sector Product Needs

- Hotels
 - Banqueting – strong durable stemware, thick walled or toughened
 - Fine Dining – Fine rim, no seams, bowl clarity, blemish free
 - Tumblers – greater base thickness, tall and stylish
- Restaurants
 - Wine tasting profiled bowl preferred
 - Non LGS stemware
 - Larger capacities for wine served by the bottle



- Pubs
 - Fully toughened beer glasses, tumblers & stemware becoming the norm
 - Lined & European Stamped product a prerequisite
 - Strength & durability a major factor
- Education
 - Stackable, fully toughened, mainly 8-12 oz tumblers

What are the different types of glassware available

- Soda lime Glassware
 - Ingredients: silica sand, limestone, pot ash, cullet
 - Different quality grades
 - Colour gives clue to recycled content
 - Bauxite improves colour, removing tints
 - Relatively strong and durable, less brittle than crystalline and crystal
- Crystalline
 - 8-11% Barium, Titanium or Lead content
 - Luigi Bormioli (lead), Schott (Titanium)
- Crystal
 - 24% Lead content
 - 30% Full crystal (expensive & impractical)

What are the manufacturing processes



- Mouth blown, hand rolled process
 - Large items, mixed colours, intricate forms – (coloured cocktails)
- Hartford – press and blow process
 - Tumblers and stemware
 - Quick process – (Nonic beer, Princessa Wine)
- Antas Press – press forming process
 - Large and heavy items
 - Non-round and many surface features
 - Thick walls – (Ashtrays, Jugs, Granity)



Toughened Glassware

- Up-to 7 times stronger
- 10-50 timer longer life
- Greater resistance to mechanical shock
- Greater resistance to thermal shock
- More fragmentation on breakage for safety
- Ideal for:
 - Busy bars
 - Institutional sites
 - Canteens
 - Banqueting
 - High volume restaurants
 - Hotel bedrooms



Product Features & Benefits

- Bar Stemware:
 - * Soda lime smooth drawn stem (Sensation)
 - Refracts light up into bowl
 - Mirrors retail fashion
 - * Soda lime featured stem (Touraine)
 - Can co-ordinate with other products
 - * Toughened soda lime (Elisa, Princessa)
 - reduces breakage where hard surfaces



- Fine Dining Stemware:
 - * Premium quality soda lime (Cabernet, Lautrec)
 - Has appearance but more durability
 - * 24% crystal (Master Collection)
 - Higher refractive index for clarity
 - * Toughened crystal (Avranches)
 - Counteracts brittleness of material

Bar Tumblers:

- * Soda lime tumbler suites (Shetland, Premier)
 - Modern profiles for adding value
- * Coloured soda lime (Salto Colours, Ice Blue Shetland)
 - Adds visual depth & lifts colourless environments
- * Toughened soda lime (Emperor, Crown Viking)
 - Highly durable & safer



American Product:

- * Themed tumblers (Granity)

- More tactile due to faceting & have 'speciality' feel

Legal Requirements

- Outlets with metered beer dispense – no line or stamp needed so plain oversize glassware used as more foam generated in dispense (wouldn't fit into brimful pint glass)
- Outlets with free-flow beer dispense – European stamped at brim or Lined & EU stamped if oversized must be used, depending on preference
- Wine must be served in EU stamped glassware if outlet not using a calibrated metal measure
- Measures
 - 10oz-14oz glasses would typically be Lined @ 250ml
 - 8oz-9.5oz glasses would typically be Lined @ 175ml
 - 5.5oz-7oz glasses would typically be Lined @ 125ml
- Toughened Product is often stipulated as a mandatory requirement by local authorities before licenses are granted
- It is now a legal requirement that ALL glassware in outlets in Glasgow is fully toughened (everything from beer to liqueur glasses)
- Fully toughened glassware is also normally stipulated when late licenses granted



Crockery



Can't tell the difference between porcelain and china? We're here to help: there are so many kinds of crockery available, here's a little guide on what's what and what to choose.

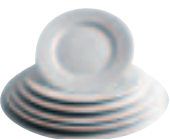
Porcelain

is a ceramic material made by heating raw materials, generally including clay in the form of Kaolin in a Kiln to temperatures between 1,200 °C (2,192 °F) and 1,400°C (2,552 °F). The toughness, strength, and translucence of porcelain arise mainly from the formation of glass and the mineral mullite within the fired body at these high temperatures. Porcelain has a beautiful finish and comes in several grades, some more hardwearing than others.



Bone China

is a type of porcelain body first developed in Britain in which Calcined Ox bone (Bone ash) is a major constituent. It is characterised by high whiteness, translucency and strength. Production usually involves a two stage firing where the first, bisque, is without a glaze at 1280 °C (2336 °F), which gives a translucent product and then glaze, or glost, fired at a lower temperature below 1080 °C (1976 °F).



It can break and chip easily so is generally reserved for fine dining. It's oven, microwave, dishwasher and food safe, with a vitrified finish that becomes smooth with use.

Stoneware

is a category of clay and a type of ceramic distinguished primarily by its firing and maturation temperature (from about 1200°C to 1315 °C). In essence, it is man-made stone. One widely recognized definition is from the Combined Nomenclature of the European Communities which states, "Stoneware, which, though dense, impermeable and hard enough to resist scratching by a steel point, differs from porcelain because it is more opaque, and normally only partially vitrified. It may be vitreous or semi-vitreous. It is usually coloured grey or brownish because of impurities in the clay used for its manufacture, and is normally glazed".

A highly versatile crockery fired at extremely high temperatures, which makes suitable for use in the freezer, oven, microwave and sometimes the stovetop. It's also non-porous so it's perfect for use with liquids.



Earthenware

is a common ceramic material, which is used extensively for pottery tableware and decorative objects. Although body formulations vary tremendously between countries, and even between individual makers, a generic composition is 25% ball clay, 28% kaolin, 32% quartz, and 15% feldspar. Earthenware is one of the oldest materials used in pottery. While red earthenware made from red clays is very familiar and recognizable, white and buff colored earthenware clays are also commercially available and commonly used.

The majority of cheaper crockery is made of this. It's not fired at such high temperatures as stoneware, which means it's not as strong. Some kinds of earthenware crockery are not suitable for the microwave – they'll actually heat up. If a certain plate or bowl doesn't say "microwave safe" on the back, don't use it in the microwave. Earthenware chips, breaks and scratches more easily than stoneware. It's sometimes not suitable for use in the oven – it could crack. Factor this in when you're buying crockery because chances are you'll have to replace it sooner.

Vitrified ceramic crockery

When applied to whiteware ceramics, vitreous means the material has an extremely low permeability to liquids, often but not always water, when determined by a specified test regime. The microstructure of whiteware ceramics frequently contain both amorphous and crystalline phases.

Also known as "hotelware", this is what is used in the majority of restaurants and hotels. It's designed for stacking and repeated use in the dishwasher and oven. It will last for ages – think classic white plates and bowls.

Gilded crockery Don't put gilded crockery in the microwave, and only put it in the dishwasher if the piece says it's OK on the back.

Place Settings

You will need to establish if the customer wants to opt for a traditional place setting, or a more modern/contemporary style

Traditional Place Setting

Service/Liner plate

12" presentation plate

Main Plate (chop plate)

12.5", 11.75", 10.75", 10" plus ovals

Starter/Sweet Plate (fish plate)

9", 8" +oval options

Starter/Sweet/Breakfast Bowl

Oatmeal, Stone Rim

Side plate

6.25/6.5"

Soup

Stacking unhandled/unhandled
plus saucer
Soup plate

Modern/Contemporary Settings

- No standard pieces
- Work with menu items to identify need
- Begin with main course items then work through the entire menu
- Double up usage with multifunctional items
- Ensure all items are covered including dips, combinations, platters etc

Holloware

Cups and Saucers

- 3oz espresso coffee
- 8oz standard tea, coffee, cappuccino
- 12oz large coffee/chocolate
- 16oz ex large coffee/chocolate

Styles

- Stacking which is functional for large caterers
- Low cup which is preferred for coffee and good for tea
- Tall cups which is traditional for tea/coffee
- Cone cups which have modern applications
- Saucer options which fit both soup and cups

Mugs

- Coffee house, stacking, club
- 8.5oz – 16oz “sell business”

Always remember

your higher priced items

- Teapots
- Coffee Pots
- Milk Jug
- Sugar
- Salt Pepper
- Bud Vase
- Egg Cups
- Dipper Pots



Cookware

Stainless Steel

The Pros

- Highly polished or satin finish.
- Modern shapes & designs.
- Mechanical resistance.

The Cons

- Low thermal conductivity.
- High specific gravity.
- Energy consumption.
- Uneven distribution of heat between the bottom and the sides of the pan.
- Resistance to coarse salt is low.
- Contains alloy elements such as Nickel and Chromium (increasing cost).

Uses & Care

- the material must be stainless steel 18/10 to ensure that the pan will not rust.
- The bottom part (for diffusing the heat) must be in aluminium and in a thickness adequate to guarantee an even distribution of heat at least on the bottom.
- Salt should only be added when the liquid in the pan is at boiling point, to ease the solution, otherwise there is the risk of chemical attack (pitting) of the material.



- Dishwasher safe with correct dosage of chemicals.

Thickness

Ideally the body of the cookware should be between 0.8 and 1.2mm, while the extra aluminium base must be at least of 6 - 7mm.

Energy Efficiency:

Not very good because of the low thermal conductivity.

Durability:

Very good resistance to impact, thermal shocks abrasion and corrosion. Very low maintenance.

Alluminium

The Pros

- Very good thermal conductivity.
- Energy saving (from heating sources).
- Safe in relation to hygiene as per current food contact regulations.
- Light weight.
- Long lasting (due to the thickness of the pan).
- Good value for the price.

The Cons

- Not recommended for food storage, particularly if acidic or salty.
- Not dishwasher safe.

Uses & Care

- Aluminium is suitable for all types of cooking, particularly for long and constant temperature cooking. It is important to buy only pans in Aluminium with at least 99.5 % purity.
- The dark patina that appears inside the pans after usage is derived from the spontaneous oxidation of the metal. It is a protective layer and barrier that should not be removed. For Consumers who want to have a shining surface, we recommend specific products for cleaning aluminium.
- When using the utensils for the first time, we suggest washing the pan with soapy water and rinse well, then "pre-conditioning" the inner part with oil or butter.

Thickness

Between 3 and 5mm depending on the dimensions of the cookware.

Energy Efficiency:

considerable because of a high thermal conductivity.

Durability:

If of a proper thickness it has a very good resistance to impact, thermal shock, abrasion and corrosion.

Health and Safety:

Included in the Specific Guidelines of the Council of Europe, which prescribe a maximum daily intake of 60 mg. as agreed with the World Health Organisation. In accordance with the Sanitary Institute, the mean daily intake value is 6 mg; therefore it is perfectly suitable for direct contact with food. It is not recommended to keep food in the cookware for more than 24 hours unless refrigerated.

Versatility

Suitable for most cooking which requires direct contact with the sides and base of the cookware (braising, roasting, baking) ideal for slow cooking, and can also be used for sauté.

Aluminium – Non Stick

The Pros

- Very good thermal conductivity as is the non coated aluminium.
- Practical to use and clean.
- Allows cooking with very little fat.

- Energy saving (from heating sources).
- Safe in relation to hygiene as per current food contact regulations.
- Light weight.

The Cons

- Some coatings have a very poor scratch resistance to metal tools.
- Not suitable for all cooking modes, such as deep frying.

Uses & Care

- There are various processes for the application of the non-stick layer. The most effective one is to spray it in layers on the already formed pan. This technique allows the production of high quality professional pots.
- The thickness of the aluminium pan must be at least 3 millimetre, in order to guarantee the duration. Avoid using metal utensils for stirring, turning, or lifting in or from Aluminium containers. Do not store metal cutlery or utensils in Aluminium pans as they will damage the surface.

Thickness

between 3 and 5mm depending on the dimensions of the cookware. Preferably three layer coating, 40 micron. Ease of handling: very good thanks to the low specific gravity of 2.7.

Energy Efficiency

excellent due to a high thermal conductivity.

Durability

if of a proper thickness it has a very good resistance to impact, thermal shock, and corrosion. Intensive and heavy-duty usages, especially if sharp utensils are used to cut the food directly in the pan, may over time damage the coating.

Health and Safety

Release of metal to food is exceptionally low as the inert coating creates an effective barrier between the metal body of the cookware and the food.

Versatility

It is ideal for cooking with a minimum of fat thanks to the properties of the non-stick coating, as well as for heating up food or to give a finishing golden touch to a dish already semi-prepared.

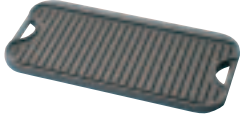
Copper

The Pros

- The best material for heat transfer in cooking applications.



- Very good energy saving (from heating sources).
- Even distribution of the heat.
- Relevant for cooking cycles that requires long cooking time as well as use in the oven.



The Cons

- More costly.
- Specific gravity.
- Requires periodic maintenance for the tin inner layer.

Uses & Care

- Avoid putting the empty pan on a direct flame to prevent damage of the inner tin layer.
- During cooking, the gas flame must be controlled in order to prevent food sticking.
- Do not use if the tin layer is damaged or worn off.
- Never use abrasive cleaning materials on the tin layer. For the external part of the pot, use specific products available on the market.
- For a shiny surface, periodic use of lemon is advised. Dark colouring on the bottom is an indication that the gas burners are in need of cleaning.



Thickness

to obtain the best performance a thickness of 2mm is required.

Energy efficiency:

Excellent because of the high thermal conductivity.

Durability

Very good resistance to impact, thermal shocks abrasion and corrosion. Long lasting due to the possibility of periodically re-tinning the inside and of polishing the outside.



Health and Safety

included in the Specific Guidelines of the Council of Europe, which prescribe a maximum daily intake of 30 mg for copper and 120 mg for tin as agreed with the World Health Organization. Experiments show that the mean daily intake value is 3 mg for copper and 4mg for tin; therefore they are both absolutely suitable for direct contact with food. Virgin copper must be used.

Versatility

Suitable for slow cooking and dishes which require precise temperature in general when, the heat is transmitted directly to the sides and the base of the cook-ware. Often used for desserts to make custards and caramel.



Black Iron

The Pros

- Suitable for all heat sources (except induction).
- Ideal for quick sauteing and frying.

The Cons

- Must be seasoned before use.
- Unsuitable for dishwashers.
- Does not work with induction.

Uses & Care

- These pans are protected by a clear lacquer which must be removed before use.
- Season by cooking with cooking fat or oil to attain a Patina on the surface. This Patina is naturally formed, virtually non-stick and built up with regular use. The Patina is formed from the carbonisation of food bonded by high temperature and oil on the surface.
- Black Iron may go rusty, in this case scour the product to remove the rust and re-season.
- Always dry immediately after washing and coat with oil
- Never use a dry pan
- Store in dry conditions.

Thickness

Energy efficiency

Durability

Health and Safety

Due to the high temperatures in cooking the Patina is absolutely safe and free from any health risk.

Versatility

Cast Iron

The Pros

- Cast iron skillets are an economical and healthy way to cook.
- Excellent heat retention and even distribution.

The Cons

- Heavy weight
- Not dishwasher safe
- Must be seasoned before use.

Uses & Care

Seasoning Your Cast Iron: Raw cast iron is a porous material which needs to be "seasoned" before use. Seasoning your cast iron will create a non-stick surface, prevent the food from acquiring a metallic flavour as it cooks, and help the pan to



resist rust and corrosion. The non-stick surface will improve over time.

To season your new pans, preheat your oven to 350 degrees. Wash each pan in hot, soapy water and hand-dry immediately. Using a paper towel, cloth or spray, coat the pan with a thin layer of olive (or vegetable) oil or melted shortening. Be sure to coat all surfaces, including the handle. Place the pan in the oven for one hour. Remove while hot and let cool to room temperature. When cooled, hang your pan to store. If stacking, place a paper towel between your pans.

Cleaning & Caring For Cast Iron: You need not wash your pans with soap and water. After use simply rub them clean with oil and a paper towel or dishcloth. To remove stuck-on residues, place salt and vinegar or oil in your pan and heat in on low heat for a few minutes, then rub clean.

Alternatively you may scrub it clean with coarse salt and water. Be sure to always dry your pans thoroughly immediately after use. Never place cast iron in the dishwasher – this will cause them to rust.

Thickness

Energy efficiency

Durability/ Versatility

- Cast iron lasts for years when cared for properly. It never warps or dents and cooks well at a wide range of temperatures. It can be used to fry foods on top of the stove or to bake in the oven. Its uniform conductivity makes cast iron the ideal choice for slow-cooking desserts, as well as for frying and sautés.



Cutlery



What is stainless steel?

'Stainless' is a term coined early in the development of these steels for cutlery applications. It was adopted as a generic name for these steels and now covers a wide range of steel types and grades for corrosion or oxidation resistant applications.

Stainless steels are iron alloys with a minimum of 10.5% chromium. Other alloying elements are added to enhance their structure and properties such as formability, strength and cryogenic toughness. These include metals such as:

- Nickel
- Molybdenum
- Titanium
- Copper

Non-metal additions are also made, the main ones being:

- Carbon
- Nitrogen

The main requirement for stainless steels is that they should be corrosion resistant for a specified application or environment. The selection of a particular "type" and "grade" of stainless steel must initially meet the corrosion resistance requirements.



Additional mechanical or physical properties may also need to be considered to achieve the overall service performance requirements.

What is 18/10 Stainless Steel?

The primary ingredient is carbon steel 18% chrome is added to make the steel stronger and to ensure it can be polished to a bright finish. This steel is called 18/10 stainless steel.

However 18/10 will sometimes rust when exposed to strong food acids such as vinegar, eggs, and tomatoes for prolonged periods of time, staining or pitting can occur.

Therefore higher quality stainless steel also contains 10% nickel, this alloy protects against food acid staining and is called 18/10 stainless steel.

NB. All stainless is 'Stain-less' not 'stain proof'

Different Types Of Cutlery Finish

Polished/Mirror Finish

Each item undergoes many different buffing and polishing processes to leave each item with a bright mirror finish.

Brushed Finish

Once the final shape of the cutlery has been created each item is brushed, lengthways with fine wire wool to give a soft linear finish.

Satin Finish

This is the most expensive finish as the look is achieved by sandblasting the desired area to give a smooth champagne lustre.

Care of Cutlery & Flatware

by CATRA The Worlds Cutlery Technology Organisation

Silver Plated Cutlery, Flatware and Hollow Ware

Most silver plated cutlery and hollow ware is marked 'E.P.N.S.' - the abbreviation for 'Electro-Plated Nickel-Silver'. 'Nickel-Silver' identifies the base metal as a copper-zinc-nickel alloy; it contains no silver but, because its nickel content imparts a colour more akin to silver than brass, it has always been known as 'nickel-silver'. 'Electro-plated' in this context means that the articles are electro-plated with silver - the first metal to be used extensively in electro-plating. In many countries including USA, nickel silver is not used, but brass is used instead. Stainless steel cutlery or hollowware is sometimes silver plated, in which case it may be marked 'E.P.S.S.'. Knife blades with a cutting edge are made from stainless and are not plated with silver because it would blunt their edges. The life of silver plate depends upon its thickness and how often it is used. A household that saves its silver plated cutlery for special occasions may use it on average only once a month - elsewhere it may be used several times a day. When selecting cutlery, it is advisable to compare the thickness of silver claimed to be present on each and every piece (averages based upon half a dozen pieces are less meaningful because some pieces are likely to have a significantly thinner silver thickness than that average). Silver thickness is normally quoted in 'microns'. (One micron is one thousandth of a millimetre). As a very approximate guide, work on at least 1 micron of silver thickness for every year of intended use.

scratches that develop in use. On new highly polished silver, however, the few fine isolated scratches that first appear tend to be somewhat conspicuous until the white patina has fully developed.

Tarnish

Silver, being a noble metal, is highly resistant to corrosion, but it can be tarnished by sulphides that are always present to some extent in the atmosphere and in many foods, green vegetables and eggs being the most potent. Tarnish consists of a superficial film of silver sulphides. Initially it is a light gold colour, but, with prolonged exposure to sulphides, it can develop into a blue-black discolouration.

Sulphides in the atmosphere originate mainly from combustion of gas oil, coke, wood etc. and from living creatures. To avoid the need for frequent cleaning, it is best to store silver cutlery in a box or drawer in a room without a fire of any type and, if convenient, in one of the lesser used rooms. To avoid tarnishing by food, rinse it off the cutlery as soon as convenient. Tarnish resisting papers and cloths are available to store silver, which certainly reduce the rate of tarnishing.

Tarnish Removal

Four methods of detarnishing silver are available: polishing powders or pastes, chemical dip solutions, electrolytic methods and ball burnishing.

Polishing Powders and Pastes

Only those sold specifically for silver should be used; cleaners intended for chromium plate, stainless steel etc will scratch silver. Always apply the cleaner with a soft cloth or sponge - either of which should be thoroughly and freshly washed to eliminate any abrasive dust particles which could cause scratching. Some cleaners that are available in paste or emulsion form not only remove tarnish but contain tarnish inhibitors. Such products are particularly useful for hollowware (being handled, washed and wiped less frequently than cutlery, the inhibiting effect lasts longer). Over zealous pressure when cleaning with powders may remove significant amounts of silver which ultimately will wear through the plate completely.

Chemical Dip Solutions

(Often referred to as silver dip)

Provide a rapid, less arduous method of detarnishing, especially on heavily embossed designs whose crevices are difficult to clean with silver powders.



Care of Silver

The characteristic white 'patina' of silver which is responsible for much of its aesthetic appeal becomes more pronounced with age due to the optical effect of the multitude of very fine

These dip solutions convert the film of tarnish (silver sulphides) back to silver by removing the sulphides without removing any silver. However, the following precautions must be taken:

- 1 Never leave silver plated cutlery in the dip solution for more than 10 seconds.
- 2 Do not use dip solutions to remove very heavy tarnish. They will convert the silver sulphides to silver but, because heavy tarnish is thicker, the surface of the restored silver may have a matt finish.
- 3 Dip solutions can stain or even etch stainless steel knife blades. Any drops that fall onto blades or other stainless steel equipment should be rinsed off immediately.



Electrolytic Methods

Tarnish can be removed from silver by immersing it in a hot solution of washing soda of about 30 grams per 5 litres whilst the cutlery or hollowware is in contact with aluminium.

Proprietary kits are available but the process can be carried out on a DIY basis in a plastic bowl with a sheet of aluminium foil laid in the bottom so that the cutlery is in contact with the foil. When the foil eventually darkens and becomes brittle, it becomes ineffective and needs replacing. As in the case of chemical dip solutions, the process is not suitable for use on very heavily tarnished silver upon which it can produce a dull white finish.



Ball Burnishing

This is a bulk process for use in large catering establishments. The cutlery is placed in a rotating drum containing steel ball bearings, water and a corrosion inhibitor to prevent the steel balls from rusting. Its prime purpose is to brighten and harden the surface so that it becomes more resistant to scratching and wear. However, it will also remove light to moderate tarnish, except in the crevices of heavily patterned pieces.

Despite the apparent severity of the process, it does not wear off the silver if carried out under intelligent supervision and in accordance with the machine supplier's instructions. Problems likely to occur are:

Entanglement of fork prongs which may cause some to bend. This can be avoided by positioning the compartment separators closer together so that the forks stay orientated across the barrel. A matt scratched finish, caused by having insufficient water in the burnisher - this can occur as a result of leakage if the machine's lid has not been adequately tightened or if its seal is defective.



Developments of grooves on the sides of vessels such as tea post. This is caused by the compartment separators being too close together, thus allowing steel balls to become entrapped between the separators and the sides of the vessel - to the detriment of the latter. Compartment widths should be adjusted to suit the width of vessel being burnished.

Hollowware can be damaged if large heavy items are burnished in the same compartment.

Silver cutlery should be washed thoroughly after cleaning.

Care of Stainless Steel Cutlery

Stains

First, it must be emphasised that staining is a rare phenomenon and that in most cases it is due to something that becomes firmly deposited on the steel, rather than to any attack of the steel itself. Probably the most common cause of staining is attack by one of the proprietary dip solutions used for removing tarnish from silver. Although excellent for cleaning silver and E.P.N.S., these solutions should never be allowed to come into contact with stainless steel; they contain acids that etch the steel, first giving it an iridescent rainbow stain and ultimately etching it a dull grey. Even if care is taken to dip only the silver handle of a knife, it is so easy, when lifting it from the solution, to let drips fall onto the stainless steel blades of other cutlery that happen to be lying around.

All tap water contains dissolved mineral salts that would leave an extremely thin film on any article on which it was allowed to dry out without wiping. In most cases, the resultant stain will wipe off, but occasionally more vigorous treatment is needed, using a polishing preparation, such as stainless steel cleaners.

Detergents, especially unnecessarily strong solutions of detergent, can leave an indelible rainbow stain on stainless steel if they are not rinsed off and are allowed to dry, out on its surface. This is a common problem with some dishwashing machines when the rinse cycle is malfunctioning.

Very hard water can deposit a chalky film on stainless steel, but this is only likely to occur in dishwashers that use un-softened or incompletely softened water.

Very hot grease, fat or meat juices sometimes leave stubborn rainbow coloured stains on stainless steel, but this is more likely to occur on meat dishes than cutlery - again this does not mean there is

anything wrong this the stainless steel and the articles will be as good as new after the stain has been removed.

Heat by itself will impart a rainbow coloured heat tint to stainless steel, but this is only likely to occur if the cutlery is accidentally left on a hot plate or gas burner, when the cause would be immediately obvious.

Prolonged immersion in synthetic 'vinegar' (condiment) can stain stainless steel knives if left on for several hours, but more rapidly if the 'vinegar' also contains salt. Sometimes rust coloured stains occur. Wet fragments of steel wool that find their way onto cutlery may go rusty and leave indelible rust stains on the stainless steel. Other rust coloured stains may come from corrosion pits in the cutlery, although the pits themselves may be so small as to be barely visible.

Most stains that resist ordinary rubbing with a soapy cloth can be removed with stainless steel cleaners.

Finally, it must be pointed out that there may be other causes of staining that have not yet been identified.

Pits

When stainless steel corrodes, it does not rust all over like non stainless steel but acquires small localised pits or holes. Remember its STAIN LESS steel which means it will rust or corroded under some circumstances.

The majority of spoons and forks are made from stainless steels that have such excellent corrosion resistance that they are virtually immune to pitting. For knives, however, the blade steel is selected to give a compromise between corrosion resistance and cutting properties. In order to achieve a lasting edge, steel that is much harder but of lower corrosion resistance that spoon and fork steel is used. The corrosion resistance of this steel is strongly influenced by care in manufacture (thorough hardening and avoidance of overheating when grinding etc) but only marginal improvements are achieved by the selection of alternative steels, however, expensive. Research is continually being carried out in the search for significantly better steels and method of treatment.

Prolonged contact with water is probably responsible for more pitting trouble than anything else. Knives have been made from stainless steel for such a long time that the highly corrosive effect of tap water, caused by the traces of mineral salts it contains is not appreciated. Why then do blades in one establishment last for years without trouble, whilst in others

pitting becomes apparent within a few months? The answer lies in the length of time the blades are wet; knives that are left undried or actually immersed in water overnight can receive, in this time, as much exposure to the corrosive effect of water as three or four months' ordinary use where they are in contact with water for only a few minutes each time they are washed.

Common salt and liquid bleaches or disinfectants are very corrosive and will greatly accelerate the corrosive action of water. Some water softeners are regenerated with salt. If they are not functioning correctly, the softened water can have a high salt content. After adding salt to water softeners in a dishwasher, make certain that it is put through the rinse programme recommended by the supplier before washing knives in the machine. Detergents, on the other hand, are normally harmless when fully dissolved - indeed they often inhibit corrosion by water. If, however, certain powder detergents are allowed to come into contact with blades in hot water before the detergent is fully dissolved, pits and/or stains can form within a few minutes. Undissolved table salt can have a similar effect.

If pitting does occur, a diligent enquiry into the washing procedure is recommended to find out whether the cutlery is ever left in contact with water for a long item.

Managers of catering establishments are not always aware of what really happens in their kitchens - for example, probably only the person directly involved may know that dirty cutlery is always left soaking in a bucket of water until someone has time to wash it, or that the last batch of knives to be washed in the early hours is left unwiped to dry overnight in a humid basement.

Washing Cutlery in Dishwashers

Dishwashing machines provide a welcome relief from the task of washing up but to maintain knives in good condition a few simple precautions are necessary. Special hardenable stainless steels are generally used for knives to give them a lasting edge but these steels can become slightly pitted or corroded if left repeatedly and for too long in contact with moisture.

- Whenever possible wash knives immediately; do not leave them wet overnight and do not subject knives to the 'rinse and hold' cycle. The use of the dishwasher as a dirty storage cabinet causes many cases of knife corrosion.



Cutlery



- As soon as the dishwasher has completed its cycle, remove the knives and wipe them dry. It is particularly undesirable to leave them overnight in the damp atmosphere of a dishwasher.
- Observe the dishwasher manufacturer's instructions concerning the type and quality of detergent used and the method of loading cutlery in the compartments provided.
- Water with a high salt content is particularly corrosive to stainless steel. Dishwashers are often fitted with water softeners that must be regenerated with salt. After adding salt, make certain that the machine is put through the programme recommended by the supplier before washing knives in the machine.
- Cutlery with handles of wood, plastic, bone or china should be washed by hand unless it is stated to be suitable for dishwashers.
- If any stains are produced by hard water, detergent or by any other cause, they

can usually be removed by rubbing them with a non-abrasive metal cleaning paste or liquid. Detergent stains can often occur with regular dishwasher use and show themselves as rainbow like stains, these can easily be removed with lemon juice.

- Do not allow undiluted dishwasher detergent to come into contact with silver or silver plated items as this may result in permanent staining of the surface. Some dishwasher manufacturers are not aware of this and position the cutlery basket immediately below the detergent dispenser.
- Do not place silver plated or silver cutlery in at the same time stainless steel items, as it can increase the risk of the stainless steel corroding. Don't place knives with silver/ silver plated handles in the dishwasher at all.

This information is given without liability in connection with its application or use in particular circumstances