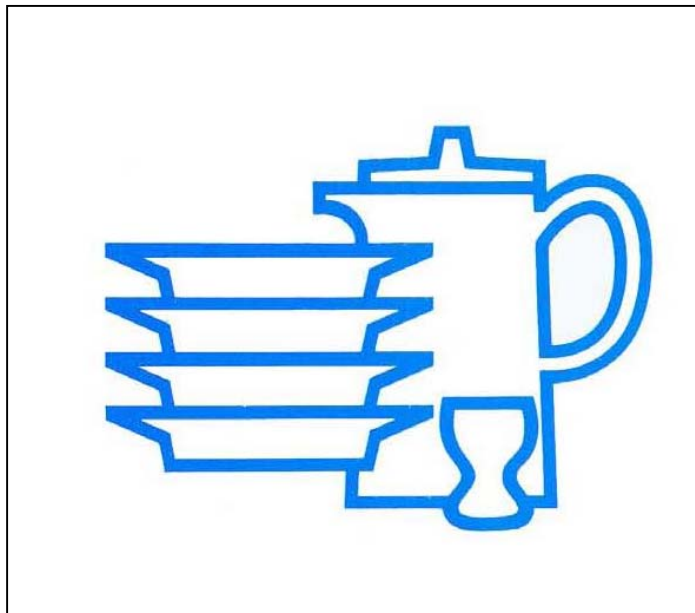


# **Commercial dishwashing & wash ware made of porcelain (china)**

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<b>What is porcelain (china)?</b>	<p>Porcelain (china) is a ceramic material. Kaolins to which quartz and feldspar have been added are subjected to biscuit firing at temperatures of approx. 900°C, then glazed and glost-fired at temperatures ranging from 1,350°C to 1,450°C.</p> <p>Porcelain comes both with and without decoration.</p>
<b>How can porcelain be recognized?</b>	<p>Unlike earthenware (pottery) and stoneware, both of which have a porous, non-translucent, coloured body, porcelain is translucent when held against the light and produces a clear sound.</p> <p>The porcelain that is most frequently used has a pure white body. Porcelains with a coloured body are rarer.</p>
<b>What properties does porcelain (china) have?</b>	<p>Glazed porcelain has a highly impermeable, hygienic surface and a large capacity for storing heat. Porcelain is readily wettable.</p> <p>The hardness of porcelain guarantees a high level of chemical and mechanical resistance and, consequently, a long service life. Porcelain does not react adversely to contact with edible acids and salt.</p>
<b>Do these properties make automated washing easier?</b>	<p>Food residues can be removed with ease from the smooth surface. Neither water nor food residues can penetrate the impermeable, non-porous surface. This is important from the point of view of hygiene.</p> <p>The combination of a large capacity for storing heat and a rinse aid solution makes for efficient drying, which is made all the easier by the fact that porcelain is highly wettable.</p>
<b>Does cleaning undecorated porcelain in a dishwasher pose any problems?</b>	<p>If detergent and rinse aid are dosed correctly, there are no problems (see VGG technical information Sheet "<a href="#"><u>Commercial dishwashing &amp; dosing</u></a>").</p>

<p><b>And what about decorated porcelain?</b></p>	<p>Problems are rarely encountered any more even with decorated porcelain.</p> <p>Porcelain surfaces featuring dark tones can also be cleaned and rinsed quite efficiently in catering-sector dishwashers provided high levels of water hardness are avoided and the total mineral content of the water is not too high.</p> <p>However, where the total mineral content is high, problems can arise, particularly in the case of porcelain in dark tones, as the evaporation residue is more clearly visible against the dark background (see VGG Technical Information Sheet "<a href="#">Commercial dishwashing &amp; water</a>").</p>
<p><b>What distinctions are made between the different types of decoration?</b></p>	<p>We distinguish between</p> <p><b>underglaze, inglaze and onglaze decorations</b></p> <p><i>Underglaze decoration</i> is protected by the glaze.</p> <p>Inglaze decoration is applied to ready-glazed product. At firing temperatures between 1,150°C and 1,250°C, the colours sink into glaze that undergoes a process of re-melting. In the process, the colour pigments become fused by the glaze mass and are, therefore, better protected.</p> <p>Porcelain featuring inglaze decoration is just as dishwasher-proof as porcelain with underglaze colours. Inglaze decoration is also frequently referred to as 'sink-in' or 'fast-fire'.</p> <p>Despite stable colour ranges and careful processing, onglaze decoration cannot be compared with inglaze and underglaze decoration in terms of its ability to withstand the rigours of the catering sector.</p> <p>Although adjusting paints to enable them to cope with catering-sector automatic dishwashing conditions is somewhat more complex in the case of hand-painted porcelain and precious-metal decoration, even gold décor is manageable nowadays.</p> <p>If the manufacturer states that gold decoration is <b>dishwasher-proof</b> in the context of the catering sector, then there is no reason why it should not be used.</p>

<p><b>What has to be borne in mind when purchasing porcelain that will be exposed to automated dishwashing systems?</b></p>	<p>There are both practical and aesthetic considerations to be borne in mind when selecting porcelain for commercial use.</p> <p>Smooth, straight, wide open and rounded, i.e. functional shapes, without hollows or double walls in which water can collect, are especially suitable for automated dishwashing systems. Nowadays, dishware featuring underglaze and inglaze has almost become the norm in canteens, hospitals and catering establishments.</p> <p>Porcelain that is identified by the manufacturer as being of a quality suitable for use in the catering sector should be used.</p>
<p><b>Can traditional bulbous shapes also be washed in a dishwasher?</b></p>	<p><b>In principle, yes.</b></p> <p>However, it should be borne in mind that in dishwashers not only do all the surfaces come into contact with the detergent solution but, above all, that they also have to be reached by a powerful jet of detergent.</p> <p>This is not always possible, for example, in dishes with pronounced bulges and/or spray shadows. With dishes of this kind, the wash results can turn out to be poor.</p>
<p><b>Are the dishes also dried?</b></p>	<p>During the period of contact with the hot detergent solution, the porcelain is heated as required. The addition of rinse aid to the fresh water rinse results in the surfaces of the dishes being completely wetted by the rinse aid solution. The residual water drains off the heated dishes to leave a film; what remains is dried by the porcelain's own heat or by downstream drying equipment.</p> <p>Normal porcelain dishes store sufficient heat to ensure that this process works, provided that, at the same time, the correct rinse aid solution film is produced through accurate dosing. (See VGG Technical Information Sheet. <a href="#">Commercial dishwashing &amp; dosing</a>).</p>
<p><b>Are there limits to the service life of porcelain?</b></p>	<p>Porcelain has a long service life. Mechanical influences such as stacking and scouring can cause scratching and ablation of the glaze on the porcelain. Porcelain dishes with damaged glaze surfaces are considerably more difficult to clean, and the wash results are then usually no longer satisfactory.</p> <p><b>It is recommended that damaged items be replaced.</b></p>

<b>What surface changes can occur?</b>	<p>If pieces of crockery frequently slide along stainless steel surfaces or metal surfaces, discoloration (metal abrasion) can occur on the porcelain at the contact points. Stacking may then cause them to be passed on to the interior surfaces and to those exposed to actual use. Dishwashing will do nothing to eliminate discoloration of this nature.</p>
<b>What has to be borne in mind when using porcelain for inductive heating?</b>	<p>These dishes are equipped on the underside with a metal coating, which is heated by means of induction.</p> <p>The metal coating has to be produced such that it can be washed with the other uncoated pieces of crockery.</p> <p>As a result of frequent fluctuation in temperature and chemical influences, discoloration may occur in the coatings, however, they do not represent a health hazard.</p> <p>Porcelain that is identified by the manufacturer as being of a quality suitable for use in the catering sector should be used.</p>
<b>Technical advice provided by the member companies of the VGG</b>	<p>This technical information material, which has been drawn up by experienced practitioners, is intended to draw the attention of the reader to the fact that automatic dishwashing in catering cannot be carried out successfully if it is approached superficially and without the appropriate involvement of all those participating in the dishwashing process.</p> <p>Only an understanding of the technical processes involved and of the interdependencies that those processes trigger coupled with teamwork on the part of all those involved, in particular, the operator of the dishwasher and his/her staff together with regular maintenance of the dishwasher, the dosing equipment and the water treatment system by the manufacturer will produce the dishwashing results that the user expects to achieve.</p> <p>Ongoing cooperation between the manufacturers of the dishwashing equipment, the agent and dosing equipment, the water-treatment equipment and the dishware will ensure constant realignment to accommodate practical requirements with maximum benefit to the customers they share and the environment which they are committed to protecting.</p>

	<p>For enquiries regarding this Technical Information Sheet “Commercial dishwashing &amp; wash ware made of porcelain (china)” please contact</p> <p><b>Arbeitsgemeinschaft Gewerbliches Geschirrspülen, Feithstraße 86, D-58095 Hagen, Germany Phone: +49 (0)2331/ 377 544 – 0, Fax: +49 (0)2331/ 377 544 – 4, E-mail: <a href="mailto:info@vgg-online.de">info@vgg-online.de</a>.</b></p>
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