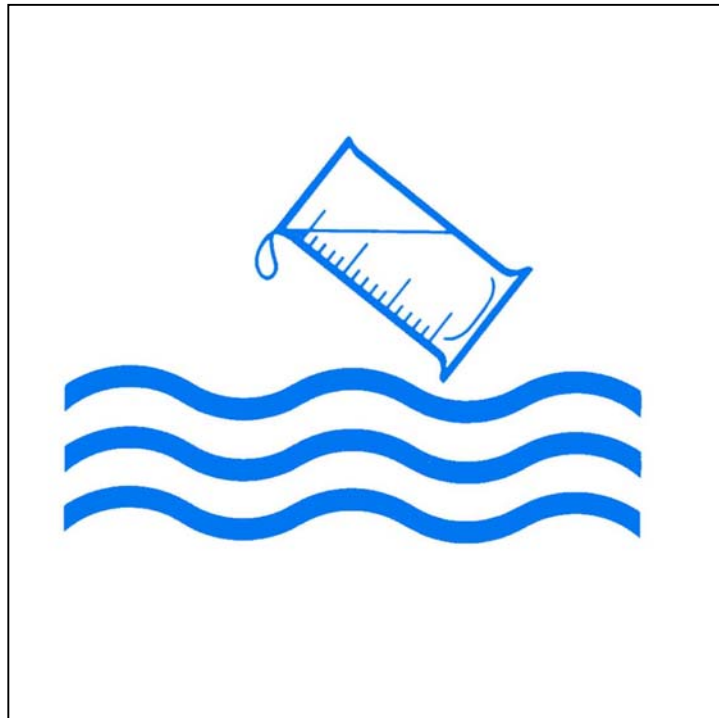


# Commercial dishwashing

&

# dosing

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<p><b>Why is accurate and constant dosing of agents necessary?</b></p>	<p>Only if an adequate concentration of agents is constantly maintained over the entire warewashing process is it possible to ensure that perfect wash results are achieved consistently, economically and in a hygienic and environmentally friendly way.</p> <p>Automatic dosing equipment is therefore available for the dosing of agents such as detergent and rinse aid for all commercial warewashers.</p>
<p><b>What is meant by the concentration of agents in the warewasher?</b></p>	<p>The concentration of agents is the amount of detergent in the wash tank and/or of rinse aid in the fresh water rinse, expressed in g/l or ml/l.</p>
<p><b>How is the correct concentration determined?</b></p>	<p>After thorough checks of the prevailing technical conditions, of the water quality, of the average degree of soiling and drying-on and of the type of washware have been carried out, the required quantities of detergent and rinse aid are set by the service engineers on site (see VGG technical information sheet <a href="#">dishwashing &amp; Commercialagents</a>).</p> <p>A precise check of the detergent concentration is made by means of titration of the detergent solution.</p>
<p><b>Dosing manually</b></p>	<p>This method involves dosing detergent manually into the machine, generally in powder form.</p> <p>This method is very imprecise and invariably leads to marked fluctuations in detergent concentration.</p> <p><b>Note</b>  <b>Underdosing leads to poor, unhygienic warewashing results, corrosion and the build-up of deposits.</b></p> <p><b>Overdosing causes too great a loading on the environment, is uneconomical and can adversely affect rinsing results.</b></p>
<p><b>What standards does dosing equipment have to meet?</b></p>	<p>It must dose precisely and consistently do so reliably, as well as having to conform to the current safety regulations.</p> <p>Malfunctions should be readily apparent optically and/or acoustically.</p> <p>Topping up dosing containers and replacing product packs should be straightforward and user-friendly.</p> <p>It is absolutely essential that staff is trained to operate these systems.</p>

<p><b>How is the required detergent concentration controlled/regulated?</b></p>	<p>Four methods are currently used for doing this:</p> <ul style="list-style-type: none"> <li>• <b>Regulating conductivity:</b> The electrical conductivity of the detergent solution is used to maintain the concentration at the desired level. A conductivity sensor, coupled to an electronic monitoring system, ensures appropriate dosing of the detergent.</li> <li>• <b>Time/quantity dosing:</b> Time-dependent dosing of the detergent is used to maintain the concentration at the desired level. Since the dosing quantity is a fixed variable relative to the time unit, over a preselected period detergent is predosed depending on the initial filling of the tank and post-dosed depending on the amount of fresh water required.</li> <li>• <b>Continuous dosing:</b> The dosing pump delivers at a fixed delivery rate for as long as the rinsing process continues.</li> <li>• <b>Dosing proportional to the through-flow quantity:</b> fresh-water-quantity-dependent dosing of the detergent is used to maintain the concentration at the desired level. Here, the dosing pump is activated via a water meter, depending on the water consumption of the warewasher, until the required detergent concentration is reached.</li> </ul>
<p><b>What steps have to be taken with regard to dosing before the wash starts?</b></p>	<p>Dosing equipment is usually activated by the filling process. Pre-dosage ensures that the correct detergent concentration will be in place ready for the start of the warewashing process.</p> <p>In conductivity-controlled dosing equipment in batch warewashers, pre-dosage takes place during the first wash cycle.</p> <p>In simple systems, manual pre-dosage is required.</p> <p>It should be noted that the wash can start only when the operating temperature has been reached.</p>
<p><b>Where is the detergent dose added?</b></p>	<p>The detergent is fed via a dosing nozzle into the wash tank, generally into the final wash tank in multi-tank machines.</p>

<p><b>How does dosing equipment for powder detergents work?</b></p>	<p>In the case of electrically operated dosing equipment of this kind, detergent in powder form is flushed directly into the wash tank of the warewasher using fresh water.</p>
<p><b>How does dosing equipment for solid detergents work?</b></p>	<p>Solid detergents are first dissolved in fresh water and dosed directly from the pack into the wash tank via a closed system.</p>
<p><b>How does dosing equipment for liquid detergents work?</b></p>	<p>For liquid detergents, there is self-priming and self-venting dosing equipment which operates along the following lines:</p> <p><b>Pumps with an electric drive:</b></p> <p>These are primed with detergent and then dose it via a tank inlet nozzle into the warewasher's wash tank. Diaphragm pumps and hose pumps are used.</p> <p><b>Pumps with an electromechanical drive:</b></p> <p>These are vacuum-primed with detergent and then dose it via a tank inlet nozzle into the warewasher's wash tank.</p>
<p><b>How does dosing equipment for rinse aid work?</b></p>	<p><b>Dosing equipment for rinse aid</b> works according to the same principle as dosing equipment for liquid detergents. Special designs are sometimes used, since as a lower quantity has to be delivered, sometimes against pressure.</p> <p>Mechanically operated dosing equipment is driven and controlled by means of the water pressure in the fresh water rinse.</p> <p><b>Dosing equipment for solid rinse aids:</b> The solid material is first dissolved in fresh water in an intermediate container and then dosed like a liquid rinse aid.</p>
<p><b>What is a central dosing system or central dosing equipment?</b></p>	<p>This is the supply of agents to one or more commercial warewashers by means of automatic dosing from a central location.</p> <p>The warewashers and dosing station are often located separately.</p>
<p><b>What has to be borne in mind when switching to a different product (agent)?</b></p>	<p>When switching to a different product, dosing systems and storage containers should be rinsed with fresh water.</p> <p>The information given on the safety data sheets should be observed.</p>

<b>Specialist advice provided by member companies of the VGG</b>	<p>This technical information sheet, which has been drawn up by experienced practitioners, is intended to draw the attention of the reader to the fact that commercial automated warewashing cannot be carried out successfully if it is approached superficially and without the participation of all those involved in the warewashing process.</p> <p>Only an understanding of the technical processes and of the interdependencies that these entail, teamwork on the part of all those involved, in particular the operator of the warewasher and his/her personnel, and regular maintenance of the warewasher, dosing equipment and water treatment system by the manufacturer will produce the washing results expected by the user.</p> <p>Consistent cooperation between warewasher, agent and dosing equipment manufacturers as well as manufacturers of water treatment equipment and wash ware will ensure constant and optimum adaptation to practical requirements, to the benefit of the customers they share and of the environment.</p> <p>Enquiries regarding this technical information sheet “Commercial dishwashing &amp; dosing” should be addressed to</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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