	<b>Technical Information</b>	<b>730-132-EN</b>		<b>V04</b>
	<b>Handling of detergents for cleaning of medical instruments</b>	Created	26.02.2015	JM
		Changed	06.08.2021	KP
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**Different types of detergents are available on the market:**

**1. Alkaline / mild alkaline detergent**

Alkaline detergents offer an increased cleaning efficacy using an increased pH-value. Hereby complex organic non water-soluble soils become hydrolyzed, which means becoming water-soluble and so they can be washed off.

Alkaline detergents are very efficient to wash off many soils, e.g. proteins. They can easily be stored over a longer period of time and have higher cleaning efficacy with increasing temperature.

Alkaline detergents cannot be used in certain cases due to their high pH-value, as some materials instruments are made of, e.g. aluminum, could get damaged by corrosion.

**2. Enzymatic detergent**

Many detergents contain enzymes. Enzymes are proteins specialized decomposing certain water-insoluble proteins into water-soluble proteins possible to be washed off.

Detergents contain a selection of different enzymes. They are especially composed to optimally remove the soils on instruments in hospitals. As proteins can be detected in almost every soil, most enzymatic detergents contain protease enabling to decompose them.


Enzymes are specially developed for detergents to be used between 45°C and 60°C.

An enzymatic cleaner can partially lose its efficacy due to the following most common reasons:

**Too high temperature in the program** – If the enzymatic cleaner is used in a program at a temperature higher than 60°C the enzyme is decomposed itself and does not work anymore.

**Wrong storage conditions** – enzymatic cleaners must be stored in a cool place. Even storage temperatures of about 25°C can reduce the efficacy. In case the detergent was not correctly stored by the distributor, the full efficacy of the cleaner might have been deteriorated already.

**Exceeded expiry date** – as enzymes are proteins as well, the enzymatic cleaner gets self-destructed over time. Consequently the cleaners should only be used until the expiry date.

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### 3. Combination of products – mild alkaline enzymatic detergents

Many manufacturers of detergents combine the advantages of alkaline and enzymatic cleaners.

Those combined products can still be used in programs which reach a temperature of 55°C / 60°C as the enzyme is still effective. In some programs the temperature is afterwards increased up to 75°C or 80°C in order to use the alkaline component efficiently.

Combined detergents have a shorter storage time and are more sensitive regarding decomposition as the proteins - consequently as well the enzymes - are degraded due to the higher pH-value.

Several manufacturers solve this problem by delivering the alkaline detergent and the enzymatic liquid in separate canisters which get compounded in the washer disinfectant. It is more difficult to apply 2-component cleaners correctly in the WD, but they can be better stored.

### 4. Monitoring of the full efficacy of the detergent solution

The washer disinfectant is not able to monitor whether the detergent has lost its full function due to an exceeded expiry date, wrong storage conditions or longer use in ultrasonic basins. Modern washer disinfectants are able to measure the amount of water, the water quality and the dosage quite accurately. They cannot detect whether a connected canister contains a detergent with a proper quality or if it is ineffective or a completely different liquid has been used.

The only chance detecting a non-effective detergent is using a correctly selected cleaning indicator which has been washed off by using a suitable detergent in a correct program. If any parameter of the program and/or the detergent changes, the cleaning indicator will not be washed off.