

Hygiene Concept Kamstrup

1. Objective of our Hygiene Concept

Kamstrup has prepared a Hygiene Concept to ensure that our water meters do not include any hazardous bacteria (e.g. *Pseudomonas aeruginosa*) and that all materials used in drinking water installations are approved materials.

2. Design and development of Kamstrup products

All materials are carefully selected to comply with the requirements of international drinking water directives. Furthermore, our water meters are by design fitted with state-of-the-art ultrasonic technology and do not include any moving parts. In combination with a 24-hour drying period, this construction ensures that no residual water remains inside of the water meter.

Our water meters have obtained the following drinking water approvals:

- Germany: DVGW W421-certified (KTW for chemical parameters and W270 for microbiological resistance)
- Germany: UBA-BWGL
- Austria: ÖVGW QSW 601
- Netherlands: KIWA
- Great Britain: WRAS
- France: ACS
- USA: NSF-61
- Switzerland: SVGW
- Belgium: Belgaqua
- Czech Republic: SCU
- Poland: PZH
- Romania: DRSPB
- Denmark: Approved for drinking water, indicated by "Dråbemærket"
- Italy: DM 174/2004
- Hungary: NNK

3. Automated production

Our state-of-the-art automated production in Denmark guarantees the highest product quality and the best hygienic conditions, with manual production steps largely avoided and control and monitoring performed only by skilled engineers. All processes have been clearly defined and fully documented according to ISO 9001.

4. Test stands

Our hygiene concept has been implemented on all accredited water meter test stands. The concept includes a number of measures to secure the hygiene of our products. The test water of all test stands is monitored electronically. Our hygiene concept comprises electronically controlled addition of hydrogen peroxide as well as regular change of test water. The hygiene of our test equipment is controlled by the following measures:

- Electronic monitoring [24/7] of the content of hydrogen peroxide in the test water
- Regular microbiological analysis of the test water for *Pseudomonas aeruginosa*, *E. coli* and coliform bacteria performed by an independent DIN EN ISO 17025-accredited laboratory
- Regular control of selected water meters smaller than DN125 (min. 6 meters per month) with test for *Pseudomonas aeruginosa* is performed by an independent DIN EN ISO 17025-accredited laboratory

The microbiological test reports are available on request. All findings are supervised and analysed by experts. According to our Kamstrup hygiene guidelines, we tolerate none of these bacteria (0 CFU/100 ml).

5. Drying, sealing and packing

Immediately after the conformity evaluation, all Kamstrup water meters dry for 24 hours after which they are sealed and packed. Water meters made of PPS are packed individually in airtight blister packaging while metal body meters are sealed using airtight patches to prevent exposure to environmental influence until they are taken into use. All water meters are packed in transport cartons prior to shipment. Since it is very impractical to ensure that large meters (DN200 and larger) will remain bacteria-free through shipment and installation, they are not hygienically processed after verification. It is therefore recommended that local regulations are followed to disinfect these meters before they are used for the first time. Meters can be ordered to be hygiene processed with treated water upon request.

6. Storage in Kamstrup factory

Kamstrup water meters are individually produced according to customer order and customer configuration. Due to our state-of-the-art production system, storage times in our factory are short-term. Thus, there is no risk of contamination.

7. Quality management

Since 1993, Kamstrup has been certified and accredited according to ISO 9001.

8. Certificates

Quality management – ISO 9001

Environmental management – ISO 14001

Information security – ISO 27001

Laboratory accreditation – ISO 17025

Work and health safety management – ISO 45001

9. Installation measures

There are no special measures to be taken in connection with the installation of Kamstrup water meters. The insignificant residues of disinfectant is non-hazardous during installation.

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