

A high-speed photograph of water being poured from a glass pitcher into a clear glass. The water is captured in mid-pour, creating a dynamic, splashing effect as it hits the bottom of the glass. The background is a soft, light blue gradient.

# DRINKING WATER SEALING SOLUTIONS

# Drinking Water - Sealing Solutions

Clean and potable drinking water is a basic need of every human being. It is the most important nourishment and the basic prerequisite for life.

The quality of drinking water is therefore subject to particularly high standards.

For this reason, the Drinking Water Directive EU/2020/2184 applies within the European Union is implemented in Germany by means of the Drinking Water Regulation (TrinkwV). These regulations define the requirements for drinking water.

Accordingly, drinking water must be colourless, odourless, tasteless and cool. Drinking water must not contain any pathogens or other substances that are harmful to health. In addition, it must contain dissolved mineral substances in certain concentrations.

The term drinking water does not only refer to water that is intended for drinking or preparing food. Most drinking water is used for personal hygiene or for cleaning laundry and dishes.

Drinking water, as it comes out of the pipes, has usually travelled a long way. Consistent drinking water quality must be guaranteed from extraction, treatment, distribution and storage through to consumption by the end consumer.

In order to ensure this, all products that are part of drinking water systems must fulfil drinking water hygiene requirements in order to be classified as safe. Seals are among the most important components of this system. Their hygienic suitability must be proven by certificates and declarations of conformity.

The requirements for hygienic suitability are defined at national level by UBA assessment principles and EN standards.

The purpose of the regulations is to ensure that materials that come into contact with drinking water have no impact on the environment.

The requirements for hygienic suitability are defined at national level by UBA assessment principles and EN standards.

The aim of the regulations is to ensure that materials that come in contact with drinking water do not affect the odour and taste of the water, promote the migration of any undesirable substances into the drinking water or stimulate the growth of microorganisms.

We are committed to working continuously on innovative solutions and further developments that fulfil the requirements for materials in contact with drinking water and have a long service life.

The sealing materials from ULMAN Dichtungstechnik GmbH fulfil the requirements for testing and evaluating materials that are in contact with drinking water.

## **Germany**

- KTW Assessment basis (Assessment basis for plastics and other organic materials which are in contact with drinking water)
- DIN EN 16421 (DVGW worksheet W270) impact of materials on water intended for human consumption, propagation of microorganisms)
- DIN EN 681-1 (Elastomeric gaskets - material requirements for pipe gaskets used in water supply and drainage applications - Part 1: Vulcanised rubber)

## **UK**

- WRAS (Water Regulations Advisory Scheme – BS 6920 - Suitability of non-metallic materials and products for use in contact with water intended for human consumption with regard to their effect on the quality of the water)

## **France**

- ACS (Attestation de conformité sanitaire) – France



# Requirements for Seals in Drinking Water Applications

- Material with required proof of hygienic suitability
- Toxicological harmlessness
- No support of microbial growth
- Resistant to limescale and deposits
- Low compression set
- Long service life
- Abrasion resistance
- Low friction

In addition to recipe testing against so-called positive lists, which specify which ingredients are used in production, physical and also microbiological tests are carried out to determine which substances may migrate out of the material or whether microbial growth is promoted by ingredients in the formulation.

## Material: EPDM

Ethylene-Propylene-Diene Rubber (abbreviation EPDM) is a so-called terpolymer and is composed of the monomers ethylene of the monomers ethylene, propylene and diene.

There are two different systems with regard to cross-linking: Peroxide cross-linked EPDM materials have an application temperature range of approx. -40°C to + 150°C.

Materials cross-linked with sulphur, the temperature range is slightly restricted. However, lower temperature ranges can be achieved with special compounds.

The hardness of the material can vary between approx. 30 and approx. 90 Shore A.

EPDM is the most commonly used material in the drinking water sector. Due to its good chemical resistance, the material can also be used in contact with CIP/SIP media.

## Characteristics

- Highly resistant to weather and moisture
- Ozone resistant
- High thermal resistance
- High elasticity
- Good ageing resistance
- Chemical resistance

## Chemical Resistance

- Polar media such as water (hot water and steam), alcohols, glycol-based brake fluids, detergents, caustic soda and potassium hydroxide solutions
- Not resistant to non-polar media such as mineral oil or fuels

## Areas of use / Fields of Application

- Fittings
- Valves (pressure, safety, etc..)
- Hoses
- Screw connections
- Coolers
- Filters
- Reducing pressure
- Pumps
- Water preparation technology
- Dosing technology
- Softening systems, etc.
- Tube systems
- Sealing technology for sensors
- ...

## ULMAN-Materials Drinking Water Applications

Material	Germany			UK	France
	KTW-BWGL	DIN EN 16421	DIN EN 681-1	WRAS	ACS
E6105	Available	In review*	-	In extension	-
E7108	Available	Available	Conform	In extension	Conform
E7131	Available	Available	Conform Type WA**	Available	Available
E7331	Available	Available	Conform	In extension	Conform
E7352	Available	In review	-	-	-
E8121	Available	Available	Available Type WB***	Available	Conform
E8124	Available	In review*	-	In extension	-
E9404	Conform	Conform	-	In extension	-
S7107	Conform	-	-	In extension	-

In review\* = currently having certificate of conformity in accordance with transitional regulation UBA

Typ WA\*\* = Drinking water supply, cold (up to 50 °C)

Typ WB\*\*\* = Drinking water supply, hot (ununterbrochene Temperatur bis 110 °C)

### Do you have any questions?

We will be happy to advise and support you on a wide range of issues in the field of general and specialised sealing technology. Do not hesitate to contact us:

**ULMAN Dichtungstechnik GmbH** - Max-Planck-Straße 32 - 71116 Gärtringen - Germany

Phone +49 (0) 70 34 / 2518 - 0 E-Mail: [info@ulman.de](mailto:info@ulman.de)

[www.ulman.de](http://www.ulman.de)

