

Information on hygiene tests

Scope

With the tests according to the KTW-BWGL of UBA (KTW evaluation criteria for plastics and other organic materials in contact with drinking water, currently valid for plastics, organic coatings, lubricants, elastomers and thermoplastic elastomers) and other test specifications such as silicone transition recommendation, enamel / ceramics evaluation criteria document, DVGW W347, DIN 19636-100 / AFNOR or DIN EN 16421 / DVGW W270, it is examined whether the product or part impairs drinking water quality by releasing substances into the drinking water in unacceptable quantities or by enhancing microbial growth.

Formulation assessment

The formulation is the detailed list of all starting substances of the material from which the product or part is manufactured. Depending on the material type, the formulation must comply with the relevant positive list of the KTW-BWGL or the related other test specifications. It is also determined which of the starting materials have a migration limit that must be analyzed as part of the migration test.

We require the full disclosure of the formulation for this assessment (for risk group P1 and P2). All starting substances used to manufacture the organic material including additives and aids have to be disclosed. The formulation has to contain the chemical name of the starting substance including the CAS number, the amount used, its function, trade name and manufacturer. Please use our form.

For the disclosure of the formulation, a confidentiality agreement can be signed. On request, we can provide you with our template.

Migration test (KTW test)

Once the formulation assessment is completed, the migration test is carried out in accordance with the requirements of the respective test specifications (e.g. KTW-BWGL) in accordance with DIN EN 12873-1. The test is mandatorily carried out in cold water range at $23 \pm 2^\circ\text{C}$. It can also be carried out in warm water ($60 \pm 2^\circ\text{C}$) or hot water range ($85 \pm 2^\circ\text{C}$). The test water is examined for the basic requirements and the additional requirements resulting from the material and the formulation assessment.

For multi-layer products, an extended migration test must be carried out in the warm water range after prior storage for 30 days at room temperature.

Please coordinate the test samples required for the migration tests directly with our contact persons. For components in risk group P1, samples are usually taken during the inspection by the certification body.

Testing the enhancement of microbial growth

DIN EN 16421 procedure 2 in association with the KTW evaluation criteria or DVGW worksheet W 270 describes a test method for determination of enhancement of microbial growth on organic materials in contact with drinking water. This is a material test and is only in exceptional cases carried out on the product, e.g. for multi-layer systems and pipes ID < 80 mm.

Test costs

The test costs depend on the tests to be carried out and, in the case of the migration test, on the formulation and the temperature ranges. The test costs can be provided on request.

Test duration

The duration of the formulation assessment mainly depends on the completeness of the formulation disclosure. Please note that information or formulations from sub-suppliers often have to be included in the formulation assessment. Confidentiality agreements can also be signed with these suppliers.

The duration of the migration test (after completed formulation assessment) is usually approx. 8-12 weeks from the start of testing, approx. 15 weeks for extended migration test.

The duration of the DIN EN 16421 (or W270) test is 4 months from the start of the test.

Test samples

Please **do not apply any labelling or stickers to the test samples**. Please also ensure that storage, packaging and transport do not have any influence on the samples, e.g. by introducing organic impurities.

I Test samples for KTW test (migration test)

1. Pipes and hoses

For type test and for monitoring test, we require for each material the following hose length resp. number of pipe sections with flat turned ends depending on the diameter and the temperature range:

Dimension (ID)		Cold water test	Cold and warm water test
Hose	ID 6 mm to 7 mm	30 m hose on a roll	60 m hose on a roll
	ID 8 mm and larger	15 m hose on a roll	30 m hose on a roll
Pipe	Up to Ø 25 mm	10 pipe sections each 1 m or 1 x 10 m on a roll for PE-X	20 pipe sections each 1 m or 1 x 20 m on a roll for PE-X
	Ø 32 mm to 50 mm	4 pipe sections each 1 m	6 pipe sections each 1 m
	Ø 63 mm to 110 mm	4 pipe sections each 0.5 m	6 pipe sections each 0.5 m
	larger Ø 110 mm	2 pipe sections each 0.5 m	3 pipe sections each 0.5 m

2. Ancillaries / fittings / parts

For the testing of parts, e.g. injection moulded parts, we require the total surface area specified in the table, i.e. a sufficient number of parts to achieve this total surface area. The surface area of the individual part has to be stated.

	Type test	Monitoring test
Ancillaries	Original parts	Original parts
Components of containers	6000 cm ² total surface area ^{*)}	4000 cm ² total surface area ^{*)}
Container (sections)	5 pieces à 200 mm x 200 mm ^{*)}	5 pieces à 200 mm x 200 mm ^{*)}

^{*)} The selection of the parts to be tested has to be agreed with the TZW or inspector. Depending on the geometry and temperature range, larger/smaller surfaces may be required.

Parts made of the same material (same formulation), which are manufactured using the same manufacturing process and approximately the same manufacturing conditions, can be covered by one test.

2.1 Material

If the test cannot be carried out on the part, the following test specimens can be used as an exception. It must be ensured that the test specimens have the same composition and manufacture as the products actually produced.

Temperature range	Type test	Monitoring test
Cold water (23°C)	3 plates à 200 mm x 200 mm + 6 plates à 100 mm x 80 mm	5 plates à 100 mm x 80 mm
Warm-/hot water (60°C/ 85°C)	20 plates à 100 mm x 80 mm	5 plates à 100 mm x 80 mm
Chlorine demand	2 plates à 100 mm x 80 mm	(2 plates à 100 mm x 80 mm)

Thickness of each plate should be approx. 2 - 3 mm.

For special samples please contact us in advance.

3. Lubricants

For the test of lubricants, we require 500 g of the lubricant.

II Test samples for DIN EN 16421 procedure 2

Material test	16 plates à 200 mm x 200 mm, thickness 2 mm to 10 mm	
Pipes	ID 10 mm to 15 mm	16 pipe sections à 1 m
	ID 16 mm to 25 mm	16 pipe sections à 0.5 m
	ID 26 mm to 50 mm	16 pipe sections à 0.3 m

The plates must be made from the material to be tested. In case of coatings, for example, the material must be applied to steel or glass plates.

Deviating dimensions have to be agreed with us in advance. This may result in higher testing costs.

It is possible to manufacture plastic plates in the required dimensions by a company commissioned by us. For this purpose, we require sufficient quantities of granulate.

Pipes with an internal diameter of less than 10 mm and an external diameter of more than 50 mm cannot be tested on the pipe test bench.

Additional information and contact

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