2 Quality Assurance

2.1 Quality Assurance Systems

Various national and international authorities and institutions provide regulatory supervision on quality control measurements. The external supervision for pipes & fittings for potable cold & hot water system certificates from abroad are given by SKZ or IMA, who is authorized by the DVGW (German institute for gas and water) as controlling organization. External supervision aims to audit **quality assurance systems** by which test equipments and procedures verify installation standards, as well as hygienic and toxicity tests.

2.2 Standards

ISO 15874	Plastic piping system for hot and cold water installations – Polypropylene (PP)
Part 1	General
Part 2	Pipes
Part 3	Fittings
Part 5	Fitness for purpose of the system
Part 7	Recommendations for the assessment of conformity
DIN 8077	Polypropylene (PP) pipes – PP-H, PP-B, PP-R, PP-RCT – dimensions
DIN 8078	Polypropylene (PP) pipes – PP-H, PP-B, PP-R, PP-RCT – general quality requirements and testing
DIN 16962	Pipe joints and components for pressure systems of Polypropylene (PP)
DIN 16928	Pipes of Thermoplastic Materials, Pipe Joints, Elements for Pipes, Laying; General Directions
DVGW	
W544	Plastic pipe systems for drinking water – pipes
W534	Plastic pipe systems for drinking water – fittings
W270	Assesment of microbiological growth
DVS 2207-11	Socket welding, butt-welding and electrofusion welding of Polypropylene pipes and components
DVS 2208-1	Machines and tools for the welding of Polypropylene pipes and components
ISO 7 / EN 10226	Pipe threads where pressure tight joints are done on the thread
EN - ISO 228	Pipe threads where pressure tight joints are not made on the threads

2.3 System Control

The production of **K-Aqua** superior German quality piping system calls for the regulation and control of all areas of the operations. All results are documented and archived:

- Testing and accepting incoming goods
- Process control
- In-process inspection
- Final inspection tests

Regulations for the quality control of **K-Aqua** sanitary piping system include:

- DIN-guidelines
- DVGW working sheets
- Supervisory Regulations of IMA Dresden

These standards and guidelines feature the minimum requirements for internal control.
Conformance to the superior quality standards is verified through independent authorities, by internal audits and laboratory tests. **K-Aqua** highest quality standard is controlled by IMA Dresden.

Kessel Wassertechnologie GmbH is a highly qualified and experienced manufacturer in extrusion and injection moulding.
This is reflected in our internal quality standards and procedures, which are illustrated by the constant quality of our products.

2.4 Internal Control

A team of highly trained and qualified QC engineers, equipped with a state of art laboratory, ensures that all tests are carried out in compliance with our quality control policies, which includes:

- Testing all raw material
- Measuring and inspecting our production equipments
- Auditing our production procedures
- A final inspection for the quality of our finished products
- All internal quality audits are documented and archived in accordance with the highest standard quality control policies

2.5 Testing and Accepting Incoming Goods

All incoming goods are carefully inspected, to ensure that the raw material conforms with the set requirements. Goods that have not been tested do not get released for production.
The incoming raw material is tested according to DIN EN ISO 1133.

2.6 In-Process Inspection

The quality plan requires that all inspections are carried out at the beginning as well as during production. As production starts all relevant data are checked by the Quality Assurance Department.
Pre-production samples are tested by the laboratory technicians for:

- Surface finish
- Dimensional accuracy
- Data from extrusion and injection moulding machines
- The product is only released if optimal test results are achieved

2.7 Process Control

We have an extensive quality control process in the field of extrusion and injection. This enables constant observation and control of production. This ensures that only perfect quality products are packed and stored. All data received during production is studied and analyzed, in details.

2.8 Final inspection

QC requires that inspections and tests are carried out on all finished products. The results are all documented. Finished products are only released to storage when all tests and inspections have conformed to the authorized procedures and specifications. The final inspection test includes a time laps procedure. This measures the usability of the products in their field of application, as well as removing production weaknesses. These inspections are the method for quality assurance during production and for design tests. The results document the system quality and serve to optimize the manufacturing process.

The final inspection covers the following procedures:

- Dimensional control
- Surface finish
- Measurement of the melt flow index
- Impact bending test
- Heat reversion test
- Homogeneity of the material
- Behavior under long period of stress

2.9 External Control

External supervision consists of measuring the fixed scope at fixed intervals. The respective supervising institutions appoint the appropriate authorized inspection organization to carry out external supervision. Inspection includes:

- External tests of products
- Internal audit of **K-Aqua** quality assurance system and test procedures
- Calibration of the test equipment
- Hygienic and toxicity tests

2.10 Guarantee

When **K-Aqua** components are correctly installed and used, the trouble free and satisfactory operation of the installed system can be expected on the long run. Should a fault ever occur, however, our after sales service is ready to help you.
Purchases of **K-Aqua** components are covered by the guarantee rights stipulated in the purchase contract with your dealer. In accordance with the provisions of law (product liability) the manufacturer is responsible within the scope of the German product liability legislation for damage and injury caused to objects and persons respectively by faulty **K-Aqua** components. A guarantee of 10 years is granted on all the pipes and fittings manufactured and distributed by **K-Aqua**, within the scope of the German product liability legislation and the manufacturer's liability insurance.

Product liability insurance
For the coverage of our liability for product damage (personal injury and material damage and especially dismantling and installation costs), we have concluded an extended business and product liability insurance.

2.11 Certificates/External supervision

DVGW

IMA DRESDEN

SKZ

kiwa

TÜVRheinland®
DIN CERTCO

Product liability insurance:
For the coverage of our liability for product damage (personal injury and material damage and especially dismantling and installation costs), we have conduced an external business and product liability insurance which is valid for 10 years.