TECHNICAL INFORMATION - COATING
AVK GATE VALVES

BLAST CLEANING:

All cast components are blast cleaned according to ISO 12944-4, SA 2½.

The components are cleaned in a shot-blasting plant. The cleaned parts are held with fibre-free gloves and are transported to the oven without delay according to GSK specifications.

When viewed, the surface shall be visibly free from oil, grease, dirt, mill scale, rust, paint and foreign objects. Any remaining traces of contamination shall show only as slight stains in the form of spots or stripes. The surface shall have a uniform metallic colour, visually and compared with test plates.

The process ensures an optimum bonding of the coating, which is essential for corrosion resistance.

EPOXY COATING:

The valve bodies and bonnets and other components are fusion bonded epoxy coating in compliance with DIN 3476 part 1 and EN 14901, GSK guidelines.

The high quality epoxy coating is GSK approved and applied manually or using a fluidized bed epoxy coating system. After the valve components have been blast cleaned, the clean and preheated components are submerged in epoxy powder. The powder melts when in contact with the preheated components and cures when the components enter the cooling tunnel shortly after the coating process.

Test procedure

- Coating thickness
  The coating layer thickness shall be no less than 250 µm.

- Pore-free coating
  The coating must be completely free of penetrating pores to avoid subsequent corrosion of the casting underneath. A 3V holiday detector with a brush electrode is used to electrically reveal and locate any pores in the coating.

- Impact resistance
  The impact resistance test is carried out at room temperature right after the coating process by means of a stainless steel cylinder dropped on the coating surface through a one meter long tube corresponding to an impact energy of 5 Nm. After each impact the component is electrically tested, and no electrical breakthrough shall occur.

- Cross linkage
  One drop of methyl isobutyl ketone are put on a horizontal epoxy resin coated surface of the test piece at room temperature. After 30 seconds the test area is wiped with a clean white cloth. It is checked that the test surface has not become neither matt nor smeared, and that the cloth remains clean. The test is carried out 24 hours after the coating process.

- Adhesion
  The adhesion of the powder coating is tested on one side of a test plate four times a year for each coating plant according to GSK guidelines using the punch separation method according to DIN 24624. The coating thickness over a dispersed area of the test item shall be within the range 250 µm to 400 µm.

  The test pieces are immersed for seven days in deionised water at 90°C, and then dried in an oven for 3 hours. A conditioning phase of 3 to 5 days in normal atmosphere is then allowed to elapse. No blisters may arise during the period immersed in the water bath.

  The surface of the test piece is degreased and then roughened with abrasive paper. The roughened surface is cleaned from dust with oil-free compressed air and recleaned. The adhesion is tested with a minimum pulling force of >12 N/mm².

- Cathodic disbonding
  Cathodic disbonding tests are carried out on one of each type of component at least twice a year.
  No bubbles in the coating may develop during the test for cathodic disbonding.
  For this test, the coating thickness over a dispersed area of the test item shall be within the range 250 µm to 400 µm.

Approvals:

The coating is approved for use in drinking water systems, meeting all specified toxicological conditions, by the following institutes:

Expect... AVK

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- Hygiene Institute, Germany
- KIWA, the Netherlands
- WRC, UK
- CARSO L.S.E.H.L., France

INTERNAL ENAMEL:

Internal enamel is an alternative to internal epoxy, when extra protection against aggressive fluids is needed. Enamel is a ceramic coating with a completely smooth surface, and a durability and resistance like glass against aggressive fluids making it resistant to abrasive, corrosive and chemical media.

At high temperatures the enamel is applied on the valve surface, and the valves are put in the furnace. A chemical fusion of the enamel and the ductile iron takes place offering an excellent protection against creeping corrosion. The smooth surface makes it difficult for impurities and microorganisms to root.

The layer thickness is 200 µm - 600 µm according to DEV.

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