

Water-Based, Water-Washable, Fluorescent Penetrant

1 General Description

Britemor® 921(W) is a next generation water-washable, fluorescent penetrant. It is classified as a level 1 penetrant according to EN ISO 3452-2. It is suitable for the detection of defects, which are open to the surface.

Britemor 921(W) is a blend of water, surfactants, corrosion inhibitors, co-solvents and biocides, which are brought into a stable condition by using the micro-emulsion technology. This brand-new and patent-pending nanotechnology allows the usage of water as main carrier and a significant higher amount of dye content providing the following product advantages:

- ⊕ Excellent COD / BOD values:
 - Less load on waste-water treatment systems.
 - Depending on the regulations of the local authorities, a direct draining into the sewage system is also possible.
 - Minimal impact on the environment.
- ⊕ Excellent sensitivity characteristics:
 - Reliable test results also with critical parts.
- ⊕ Easy washing and low fluorescent background characteristics:
 - Water savings and process optimization.
- ⊕ Low viscosity:
 - Less drag-out and consumption in comparison to standard penetrants.

Britemor 921(W) can be used for metals and non-porous ceramic parts during production and maintenance work. Because of the corrosion inhibitor package Britemor 921(W) is also safe for use on sensitive metals such as aluminum, magnesium and steel.

2 Physical and Chemical Properties

Property	Unit	Typical Value	Test Method
Sensitivity Level			
Appearance		Yellow liquid	Visual inspection
Density	g/cm ³	1.02	ISO 12185
Flash Point	°C	> 100	ASTM D 93
Viscosity at 40°C	mm ² /s	16.6	ASTM D 445
COD	g/L	798	DIN 38409 (H41-1)
BOD	g/L	149	DIN EN 1899-1

3 Chemicals Required

Britemor® 921(W), WD9 Developer

4 Operation Procedure

Britemor® 921(W) may be applied by brushing, tank immersion or by spraying (special equipment maybe required for water-based products). The following typical process sequence illustrates the recommended method of use for general industrial applications. **However, where relevant, the process specifications of the approving authorities must be closely followed.**

Step 1) Pre-Cleaning and Drying

Surface contaminations such as rust, paint residues, grease, scale etc. must be fully removed. Ensure that the part is completely dry and not too hot or cold (between 5 °C and 50 °C).

Step 2) Penetrant Application

Apply Britemor® 921(W) to the surface, ensure a suitable dwell period and allow components to drain as necessary. The combined application and drainage period should be at least 5 minutes (for ceramics it can be less). If the drain time exceeds 20 minutes, the penetrant should be re-applied to the surface.

Step 3) Penetrant Removal by Water-Washing

Temperature: 15 – 35 °C
Duration: 30 – 60 seconds
Pressure: 0.8 – 1.7 bar

Make sure that one or a combination of the following methods is used:

- a) air agitated water rinse tank
- b) spray rinse tank
- c) manual spray rinse

Step 4) Developing

Britemor® 921(W) was especially developed for a usage in combination with the new water-based developer WD9. Because of this an intermediate drying is not necessary and the wet components can directly be immersed in the WD9 developer bath for approx. 5 s.

Please note: Increased immersion times should be avoided. WD9 comes as liquid concentrate (mixing ratio WD9/water: 1/9). The operation procedure of WD9 developer should be closely followed during bath set-up. Heating and agitation of the batch is not necessary, which allows energy savings.

Step 5) Drying

Recommend is the usage of an air recirculating oven at 50 – 60 °C, for 15 minutes max. Longer times may be required for larger components. To assist drying, either the use of clean, filtered, low pressure, compressed air (1.7 bar/25 psi maximum) can be used. Use the minimum oven time required to obtain thoroughly dry components.

Step 6) Inspection

Inspection has to be done under black (UV) light in a darkened area. The UV-A irradiance at the surface inspected shall be 10 W/m² (1.000 µW/cm²) or greater. The total amount of visible light shall not exceed 20 lx. In this context it is recommendable to use the following Chemetall NDT equipment:

- HIL 100: LED UV High Intensity Lamp powered by mains
- HIL 200: LED UV High Intensity Lamp powered by battery and mains
- UVe/Lux Lightmeter

Conformances of Britemor® 921(W):

✓ EN ISO 3452-2

5 Effects on Material

When Britemor® 921(W) is used in the recommended manner, it will have no deleterious effects on commonly used metals. Equipment/tanks should be constructed of stainless steel. Some grades of plastic and rubber may be softened by prolonged contact with Britemor® 921(W) and it is advisable to check compatibility before using.

6 Safety Guidance

Before operating the process described it is important that this complete document, together with any relevant Safety Data sheets, is read and understood. For transport, storage, use and waste treatment of chemicals in concentrated or diluted form as well as bath solutions, the appropriate local legislation must be followed. Further specific information on the products can be obtained from the relevant Safety Data Sheets. The user should also pay strict attention to information and hazard symbols shown on product labels.

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