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## TESTING OF MATERIALS FOR USE WITH DRINKING WATER

### BS 6920 : 2000 - SITE APPLIED PRODUCTS - SPECIAL REQUIREMENTS.

#### 1. SITE APPLIED PRODUCTS.

These include coatings, paints and sealants that are applied on site by the end-user or his agent/contractor. Even with the best controlled procedures it is difficult to exercise the same degree of control over the application and curing of products on site as would be achievable within a factory environment. To ensure that site applied product samples are realistically prepared one of the following approaches is adopted -

- we prepare and cure the test samples - this approach is not available for spray applied products unless they can be brush applied also.
- you visit us with any specialist equipment needed for sample preparation; we witness the sample preparation and then take responsibility for curing of the product in our own special climatic cabinets.
- we witness sample preparation on site and then take responsibility for curing of the product in our own special climatic cabinets.

#### 2. CURING.

BS 6920-2.1 : 2000 (clause 7.2) gives two different set of curing conditions -

- materials for use in water suppliers' installations -  $7\pm 2^{\circ}\text{C}$  for a maximum of 21 days
- materials for use in dwellings and other buildings -  $12\pm 2^{\circ}\text{C}$  for a maximum of 7 days

**NOTE** : if you recommend that your product will cure adequately in a shorter period at these temperatures, then you should tell us and we will use this shorter cure period.

We can use other curing conditions, but in this case you must provide written instructions which demonstrate how these conditions will be achieved on site and any the Water Fittings and Materials Directory listing of your product will highlight these special conditions.

We can control the humidity (if appropriate) and for solvent based products ensure an adequate changing of air in the environmental cabinet throughout the cure period.

#### 3. TEST SAMPLE PREPARATION.

##### 3.1. Test sample preparation by our own staff.

You **MUST** supply us with the full user instructions, including details of how the product will be used and cured on site, together with mix ratios as weight:weight and, as appropriate, wet film thicknesses - microns, data sheets, and health and safety information (Materials Safety Data Sheets - MSDS). If your product has a primer or undercoat used with the water contact material please provide full details - the test samples must include these materials.

Full details of sample preparation and curing will be given in the final report, and this information will be used as the basis of your listing by the Water Regulations Advisory Scheme (WRAS) in the Water Fittings and Materials Directory.

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We will prepare all samples according to BS 6920 : Section 2.1, Clause 7, including the use of one of the two standard curing times/temperatures (see "2" ), unless you tell us otherwise. We will make a charge for test sample preparation.

See "important notes" below -

**IMPORTANT NOTES.**

1. *Sample Size* - for dry products please supply a maximum pack size of 5 Kilo; for liquid products please supply a maximum pack size of 0.5 Litre (one-part products) and 1 Litre (multi-part products).

**If you supply larger quantities we will charge you for sample storage in addition to disposal or return of all unused product to you - see note 4 below.**

2. *Sample Containers* - if you supply the product in a non-standard container you must bear all responsibility for any possible interaction between the product and the container.

3. *User Instructions* - **you must provide us with a set of the full User Instruction sheets, including details of how the cure conditions will be achieved on site.**

4. *Health and Safety* - **we cannot prepare your test samples in our laboratory unless you send us full Health and Safety information - MSDSheets etc** (Control of Substances Hazardous to Health Regulations)

5. *Sample Disposal* - at the end of testing we have to dispose of unused test samples. This can be undertaken by -

- you arrange collection - no charge

- cementitious and water miscible products - we arrange disposal - no charge.

- one-part non-water miscible liquid products - we arrange carriage to your premises - there will be a charge for this.

- multi-part products - we dispose of these after mixing/curing - there will be a charge for this.

**3.2. Test sample preparation using specialist equipment.**

In some cases specialised equipment is needed to apply the product. In these cases we can arrange an "on-site" visit to witness the preparation of the test samples. Alternatively, if the equipment is mobile, we can arrange for you to prepare the test samples here (we have suitable space for large industrial equipment, including a three-phase electricity supply), but we do NOT have any "spray booths".

3.2.1. *We Visit You* - if you want us to make an on-site visit to witness sample preparation we will need the following details before our visit -

- full product details, including information about all primers and undercoats used, data sheets, health and safety information (MSDS), and typical curing conditions.
- full directions to the site where the samples will be prepared (a map would be helpful), together with an on-site contact name(s) and telephone number.
- an indication of suitable dates for preparing the test samples - the actual date of sample preparation will be determined by curing times and the start date of the next suitable batch of test samples.

During our visit to you -

- it is your responsibility under the 1974 Health and Safety at Work Act to make available personal protective equipment (PPE) if required. This PPE must be of a good standard and its function and operation must be satisfactorily explained.
- on arriving at the site of application we reserve the right to refuse to witness the proposed application if, in our opinion, safety precautions available (including PPE are inadequate for the potential hazards identified in the product MSDS.

Our charges for the on-site visit will be based upon -

- time out from base charged on an hourly rate (per whole hour)
- all reasonable travel costs by public transport, or our standard mileage rate (by car) plus subsistence charges.
- all samples plates supplied (if needed).
- if we attend the site to witness sample preparation but this cannot proceed or be completed for reasons such as unresolved health and safety issues or equipment failure you will be liable for the full costs of the visit.

Sample curing -

- the time during transportation back to our test laboratory will be part of the final curing conditions. Therefore you must confirm what these are before we visit the site of application so that we bring the necessary equipment (e.g. cold boxes) with us.

3.2.2. *You Visit Us* - if you want to visit us to prepare your test samples we will need the following details *before* your visit -

- full product details, including information about all primers and undercoats used, data sheets, health and safety information (MSDS), and typical curing conditions. NOTE - you cannot prepare your test samples on our premises unless you send us, in advance of your visit, full Health and Safety information (Control of Substances Hazardous to Health Regulations) for the product(s).
- full details of facilities required, including any special services.
- an indication of suitable dates for preparing the test samples - the actual date of sample preparation will be determined by availability of facilities, curing times and the start date of the next suitable batch of test samples.

Once we have received this information we will allocate a suitable date for the test sample preparation and then confirm this with you. On arrival you must report to the Gainsborough House reception.

Our charges for your visit will be based upon -

- time taken for sample preparation, from arrival on site to departure, charged on an hourly rate (per whole hour)
- all samples plates and any special services/reagents supplied (if needed).

**NOTE - before you can work on our premises you will have to comply with our Health and Safety Requirements and complete a Safety Authorisation Form (specimen copy available in advance).**

#### **4. TESTING.**

Testing has to be started as soon as the cure period is complete *except* in the case of cementitious products which are given a pre-conditioning treatment first (see section 6.4).

If any test has to be repeated fresh test samples have to be prepared and cured first, and an additional charge will be made for this sample preparation; this means it is usually best to do all the tests at the same time. If we need to prepare fresh samples for any retesting we will normally ask you for fresh material(s) for this.

#### **5. NON STANDARD PRODUCTS - SPECIAL TESTING CONDITIONS.**

##### **5.1. Hydrophilic Water Stops.**

Most of these products are designed for use under restraint (compression) conditions and not in direct contact with potable water. The BS 6920 test procedures are not suitable for use with water stops. The approval of these products will be based upon the following -

- full product details, including instructions for use.
- full details of product formulation and method of manufacture.
- toxicological details of any biocide used in the product (these details will be available from the biocide manufacturer).

You should make a formal submission to the DWI CCM, indicating clearly the unsuitability of the BS 6920 tests for this product type.

##### **5.2. Primers and Solvent Cements.**

Although these products may not be designed for use in contact with potable water, they may be part of an assembly or construction and thus come into contact with water.

5.2.1. *Primers* - where these are part of a paint/coat system they are tested as part of this system.

In other cases, however, primer products may be used to condition surfaces before the application of products such as sealants etc; in these cases small areas of the primer may be exposed to water - these primers are tested by applying them to an area of 1000mm<sup>2</sup> on a sanded glass panel or other suitable substrate.

5.2.2. *Solvent cements* - if solvent cements are used in the assembly plastics pipe systems it is likely that small areas of the cement may be in contact with water. These cements are tested by applying them to a pipe or recommended fitting for which they are designed - the solvent cement is painted onto an area of 1000 mm<sup>2</sup> and allowed to cure for a minimum of 60 minutes before testing. The sample, including the 1000 mm<sup>2</sup> area of cement, is then tested as normal; the final test results cover **both** the material of the pipe/fitting **and** the solvent cement.

## **6. CEMENTITIOUS PRODUCTS.**

### **6.1. Cementitious Admixtures.**

Preparation of test samples of these products must take into account the following factors.

6.1.1. *Test Sample Size* - samples will be tested fully immersed in the test water; they must have a total surface area of 15000 mm<sup>2</sup>. For full BS 6920 testing we require a minimum of **SIX** cast cubes, each 5cm x 5cm x 5cm - we regret we cannot supply moulds of this size; alternatively we can cast blocks of a suitable size using polycarbonate Petri Dish bottoms.

6.1.2. *Reference Samples* - in the case of admixtures we normally prepare additional test blocks of the cementitious mixture *without* the admixture for use in the Extraction of Metals Test. If this cannot be done no allowance can be made for possible aluminium leaching from the cement component of the complete product, and any leaching of aluminium from the product in excess of 200 µg L<sup>-1</sup> will result in the failure of the product.

6.1.3. *Aggregate* - if aggregate will be present in the final product (concrete) used to cast the test cubes care must be taken with the choice of size of the aggregate in relation to the size of the test cubes. Most admixtures are, in fact, tested using sand/cement mortars without aggregate.

### **6.2. Cementitious Release Agents.**

When these are tested the shuttering/mould release agent is applied to the mould in accordance with the manufacturer's instructions and then a block of a suitable cement mortar cast in the mould. After demoulding and curing the test block is pre-conditioned and tested.

### **6.3. Traditional Cementitious Products.**

If your cementitious product does not contain any polymeric ingredients/admixtures they cannot be tested to the Water Regulations Advisory Scheme (WRAS) Tests of Effect on Water Quality/BS 6920. For approval purposes you should normally contact the Drinking Water Inspectorate Committee on Chemicals and Materials of Construction for use in Water Supplies and Swimming Pools.

### **6.4. Preconditioning.**

These products will give a temporary rise in the pH value of water in contact with them. In the case of some of the tests this effect will be enhanced by the use of aggressive test water, e.g. distilled or demineralised. This change in pH will cause potential failures in one or more of the following tests -

- Odour and flavour of Water Test
- Growth of Aquatic Microorganisms Test
- Cytotoxicity Test.

To ensure that failures caused in these tests are not due to transient pH effects, we pre-condition all cementitious materials following the requirements of Clause 7.8.2.3 of BS 6920-2.1. This involves sequential 24 hour soaks of the test samples in non-aggressive water until the pH of the soak water falls below 9.0 on two sequential occasions.

[We have a separate detailed information sheet for cementitious materials - available upon request.]