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TESTING OF MATERIALS FOR USE WITH DRINKING WATER

BS 6920 : 1996 - TEST BROCHURE.

1. THE TEST REQUIREMENTS.

To meet the requirements of the United Kingdom Water Regulations Advisory Scheme (WRAS) non-metallic products/materials used with drinking water must comply with test requirements (BS 6920) in each of the following categories -

- the taste and appearance of water
- the ability to support the growth of microorganisms in water
- the ability to leach metals and other substances into water.

These tests take a minimum of 8 weeks to complete.

Note - if your material is likely to be used by a public water supply company in the preparation or conveyance of water it may need to satisfy more comprehensive toxicological requirements to ensure legal compliance with Regulation 25 of the Water Supply (Water Quality) Regulations 1989.

2. THE INDIVIDUAL TESTS.

A. **Taste of Water.** (BS 6920, Section 2.2).
This test shows the effect of materials on the taste of water and takes up to 14 days to complete.

B. **Appearance of Water.** (BS 6920, Section 2.3).
This test shows the effect of materials on the colour and turbidity of water and takes up to 14 working days to complete.

C. **Growth of Aquatic Microorganisms.** (BS 6920, Section 2.4).
This test shows whether materials can support the growth of microorganisms in water by measuring the use/uptake of dissolved oxygen; it takes a minimum of 7 to 8 weeks to complete. An additional control has to be included in this test in the case of cementitious materials - there is an additional charge for this.

D. **The Extraction of Substances that may be of Concern to Public Health.** (BS 6920, Section 2.5). This is a toxicity test which uses a monkey kidney (VERO) cell line. The sample is soaked in water, and then this water is tested for toxic reactions with the tissue culture; the test takes a minimum of 7 working days to complete.

E. **The Extraction of Metals.** (BS 6920, Section 2.6).
This test shows whether metals can leach from materials into water; this test may take up to 4 weeks to complete.

3. SPECIAL TESTS.

3.1. **Mixed Samples.**
In certain cases it is possible to test more than one related material at once in some of these tests. If satisfactory results are obtained then no further testing is needed; if unsatisfactory results are obtained then some repeat testing will be necessary and this retesting will be charged *pro rata.*

3.2. **High Temperature Tests.** (BS 6920 : Part 3 : 1990).
These tests are used with products/materials that are going to be in contact with hot potable water (>40°C). The soaking tests (Taste, Appearance, Substances of Concern to Public Health and the Extraction of Metals tests) are carried out at a chosen temperature up to 85°C. A surcharge is made for these tests.
Note - you must tell us the test temperature to be used for these tests in Section 5.3 of our Application Form.

3.3. **Partial Testing.**
To help you we can carry out just one or more of the tests in the first instance. If satisfactory results are obtained we can continue, at your request, with the remaining tests.

4. SAMPLE SUBMISSION.

- Please send us a minimum of SEVEN samples (see Section 5) of each product/material that you want us to test, together with a completed copy of the Application Form.
  Note - several products/materials can be included on the same Application Form.
- Please identify each product/material clearly (on the bag, **not** the sample); please give details of formulations (this information will be treated strictly confidentially).
- Unless you give us specific instructions we will use our experience to decide the best test sequence for your product/material(s).
- Product Modification. If you need to modify a product, perhaps to overcome unsatisfactory results in one test, you cannot assume that the performance in the other tests will remain satisfactory; please check with us so that we can offer our expert guidance.

5. NATURE OF SAMPLES.
5.1. **General Requirements.**

All samples are tested fully immersed in the test water.
- Test samples must comply with BS 6920 : Section 2.1 (Samples for Testing).
- You should send us a minimum of **TEN** samples, each with a total surface area of 15,000mm5.
- Sample dimensions must not exceed 150 mm in length or 70 mm in width.

For sheet products the preferred sample size is 125mm x 60mm x 2 to 5mm thick.

Please note -

- the sample exceptions given in Section 6 and 7 overleaf.
- we cannot test pellets or granules - these must be moulded into suitable test pieces.

5.2. **Sample Handling.**
Pack the samples in clean polyethylene or paper bags clearly identified on the bag, not the product.
Note - samples with self adhesive labels or tape attached to them CANNOT be tested.

5.3. **Cutting Samples to Size.**
If your test samples are too large to test we can cut them to size. With large cross-section post-cured rubber compounds this may not be an acceptable option, however, since a significant surface area of non-post-cured rubber would be exposed to the test water; in this case we would ask you to cut samples to the correct size ***BEFORE*** the post-cure treatment.
Note - if we cut test samples to size we take all reasonable care to avoid cross-contamination BUT we cut test samples to size at your risk. Where we have to saw test samples to size we reserve the right to charge £10 per material for this service.

6. COATINGS AND PAINTS. Please ask for the separate information sheets on these products.

6.1. **Coal Tar Containing Products.**
To comply with regulations, the Water Regulations Advisory Scheme (WRAS) will **not** list products containing coal tar, even if the coal tar containing component is not directly in contact with potable water.

6.2. **Factory Applied/Processed Coating and Paints.**

- Please apply these to all the surfaces of panels of a non-rusting material with similar adherent properties to the material(s) for which they are to be used - often stainless steel is suitable.
- Ensure that the finished size of the test plates are as given in 5.1 (General Requirements), and that the samples are given the same maturing and curing condition as production samples, including all primers and undercoats.

Note - all surfaces and edges of the test panels must be covered completely with the product.

6.3. **Site Applied Products. [Please see our separate brochure for more details]**

These include coatings and paints for application by the end-user.

- To meet the requirements for Site Applied Products we must prepare the test samples ourselves.
- You MUST supply us with the full user instructions (including mix ratios as weight:weight and wet film thicknesses - microns), data sheets, and health and safety information, together with all primers and undercoats.
- 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 Regulation Advisory Scheme in their Directory.
- Unless you instruct us to the contrary we will prepare all samples according to BS 6920 : Section 2.1, Clause 5.2.7, including the use of one of the two standard curing times/temperatures -
  - materials for use in water suppliers' installations - 7°C for a maximum of 21 days
  - materials for use in dwellings and other buildings - 12°C for a maximum of 7 days
- A charge will be made for test sample preparation.

Notes -

- Sample Size - for dry products please supply a maximum pack size of 5 Kilo, and for liquid products a maximum pack size of 1 Litre. **If you supply larger quantities we will charge you for either disposal or return of all unused product to you.**
- If you supply the product in a non-standard container you must take responsibility for any possible interaction between the product and the container.
- **We cannot prepare your test samples in our laboratory unless you send us full Health and Safety information** (Material Safety Data Sheets)
- Non-standard curing conditions - at your request we can use these, but any Directory listing of your product will include the requirement for special curing conditions.
- In certain cases where specialised equipment is needed to apply the product an "on-site" visit can be arranged to witness the preparation of the test samples. A charge will be made for this.
- If we need to repeat any test we will have to make and cure fresh test samples; we will ask you for fresh material(s) for this.

7. SPECIAL SAMPLE REQUIREMENTS.

7.1. **Plastics Products.**

- Whilst we can test most plastics materials in either sheet or component form - we cannot test granules.
- Glass reinforced polyesters and other thermosetting plastics materials, plus glass-filled plastics should be tested in the final component form.
- Please consult us if your plastic material contains any recycled materials.

Note - any plastics materials designed for use in the production of extruded pipes should be sent to us as pipe samples.

7.2. **Non-homogeneous Products.**

- In many fittings (e.g. hoses and tanks) water comes into contact with one surface only; if such products are not homogeneous and the outer surface is made from a different material/finish from the water contact material, you should prepare samples of the product/material with the water contact finish on ALL surfaces.
- For reinforced hoses, please send us also at least two metres of the complete hose; these will be tested according to BS 6920: Section 2.2.2. A surcharge will be made for this testing.

7.3. **Elastomeric (Rubber) Products.**

- Since differences can occur in final processing and curing conditions of sheet, moulded and extruded samples, it is important that you submit these products in their final component form.
- We can test experimental sheets, but unless they have received identical curing/post-curing treatments to those given to the components manufactured from them, the Water Fittings and Materials Directory listing will be for the material only and not the components.
- Most elastomeric products will be held for some time after manufacture before final use; therefore you should not submit freshly cured elastomeric products within one month of manufacture UNLESS the final product will be used in contact with potable water before this time period has elapsed.
- If a mould release agent is used in the preparation of test samples it should be identical to that used for manufactured products (some mould release agents may affect the performance of elastomeric products in the tests).
- **Do NOT use sealed plastics (polyethylene etc) containers or bags to store rubber samples in or to send them to us - use clean paper envelopes/packets wherever possible.**
- *Please contact us if you have any query about elastomeric product test sample requirements.*

7.4. **Lubricants.**

- Please send us a minimum of 250 grammes of each lubricant in a suitable container.
- If lubricants are used on components which are to be tested, send the components without lubricant so that they can be tested separately.

7.5. **Flexible Hoses and Tubing.**

- Please send us a minimum of five metres of the product, preferable as one piece; if more than one piece has to be used please ensure that two 1 metre lengths are included.

Note - see Section 7.2 also.

7.6. **Solder Fluxes.**

- Please send us a minimum of 25 grammes of the flux, together with full user instructions; where a specific solder is recommended please send us sufficient of this also.

7.7. **Cementitious Products and Additives.**

These are usually "site-applied" products - they have to be prepared in our laboratories.

- Please send us with all necessary materials (including the mortar/cement mix), together with full user instructions, data sheets and health and safety information.
- A charge will be made for sample preparation, together with a surcharge to cover the additional work necessary in the Growth of Aquatic Microorganisms Tests.

7.8. **Small Components.**

- - You must supply sufficient numbers of the components to give SEVEN separate composite samples each with a surface area of 15,000 mm5.
- - In the case of "O" rings the total number of items required to give one composite sample can be calculated as follows -

Number required to give 15,000 mm^2 = $\frac{15{,}000}{\pi^2(R^2-r^2)}$

where - R = outer radius in mm, and r = inner radius in mm.

7.9. **Fluids for Indirect Heating Systems.**

Please ask for the separate leaflet covering the testing of these products.

8. HELP!

If you need any help with sample requirements or in completing the Application Form please let us know BEFORE you send your samples to us; we will be glad to help you.

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