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Domestic devitroceram

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1 Scope

This document gives information on the classification of domestic devitroceram products, specifies the technical requirements for domestic devitroceram, the inspection rules and the packaging, marking, transport and storage, and describes the corresponding test methods.

This document applies to the manufacture, inspection and sale of domestic devitroceram products.

This document does not apply to domestic devitroceram cookware.

3 Terms and definitions

3.1 devitroceram: a class of ceramic composite material made up of a crystalline phase and a glassy phase. Note: it is generally obtained by a suitable heat treatment of glass so that enough of a crystalline phase is produced within the body of the glass. [SOURCE: GB/T 5000-2018, 5.28]

3.2 domestic devitroceram: devitroceram articles for everyday use.

4 Product classification

4.1 By the use of the product, the classes are plates and dishes, bowls, cups, pots and

other articles.

4.2 By the size of the product, the types are small, medium, large and extra, the size ranges being given in Table 1. For plates and dishes, measured by mouth diameter in millimetres, small is below 128, medium is 128 up to but not including 228, large is 228 to 350 and extra is above 350. For bowls, by mouth diameter in millimetres, small is below 110, medium is 110 up to but not including 175, large is 175 to 250 and extra is above 250. For cups, by mouth diameter in millimetres, small is below 60, medium is 60 up to but not including 100, large is 100 to 140 and extra is above 140. For pots, by capacity in millilitres, small is below 250, medium is 250 up to but not including 1 000, large is 1 000 to 2 400 and extra is above 2 400. Other articles are typed according to their largest outside dimension and their resemblance in shape to the classes above.

5 Technical requirements

5.1 Appearance quality. 5.1.1 The product shall be free from chips, cracks and seepage.

5.1.2 The colour of the decoration of a set of products shall be substantially uniform, and a product with applied decoration shall be free from obvious defects in the design. 5.1.3 The foot rim of the product shall be smooth and the product shall stand steady on a flat surface.

5.1.4 The lid of a product with a lid shall fit the mouth substantially. 5.1.5 The mark on the base shall be correct and clear and shall not be noticeably skewed or off centre. 5.1.6 The range of appearance defects of the product shall comply with Table 2.

5.1.6 Table 2, range of defects. Item 1, deformation. For plates and dishes, measured as deformation height in millimetres, not more than 2.5 for the small type, not more than 3.5 for the medium type, not more than 4.5 for the large type and not more than 2.0 % of the mouth diameter for the extra type; for fish plates, not more than 3.5 below 200, not more than 4.5 from 200 to 240, not more than 6.0 from 240 to 320 and not more than 2.0 % of the longest mouth diameter at 320 and above. For bowls, not more than 2.5 for the small type, not more than 3.5 for the medium type, not more than 4.5 for the large type and not more than 2.0 % of the mouth diameter for the extra type. For cups, not more than 2.0 for the small type, not more than 2.5 for the medium type, not more than 3.0 for the large type and not more than 2.5 % of the mouth diameter for the extra type. For pots, not more than 2.5 below 60 and not more than 3.0 at 60 and above. Item 2, stones, that is unmelted solid inclusions in the article: diameter not more than 0.3 mm for every type. Item 3, bubbles, that is gaseous inclusions in the article: diameter less than 0.5 mm, with a spacing of not less than 30 mm, for every type. Item 4, glass chips, that is glass fragments stuck to the surface of the article: diameter not more than 0.3 mm for every type. Item 5, specks: not permitted on the visible face; on the non-visible face not more than 1.0 mm and limited to one, for every type. Item 6, mould marks, that is the marks left by the mould joint and by the mould head when the article is formed: not obvious on the visible face and not severe on the non-visible face, for every type. Item 7, wave marks: not obvious on the visible face, for

every type. Item 8, defects of the line decoration: broken edges and broken lines are not permitted and broken gold is not permitted; blue gold shall be very inconspicuous; uneven colour along the edge of the line and missing parts shall be very inconspicuous; for every type. Item 9, defects of the printed decoration: an area of not more than 4.0 mm², limited to one place, for every type. Note: a defect not covered by this document is dealt with as the defect it most resembles.

5.2 Thermal shock resistance. Small and medium type products shall not crack after one heat exchange from 130 °C to 20 °C; large and extra type products shall not crack after one heat exchange from 120 °C to 20 °C.

5.3 Microwave oven suitability. With a heating energy of 72 000 J, tested in accordance with 6.3, no arcing shall occur during the test; after the test, the product shall not crack after one cycle.

5.4 Resistance to machine washing. The mean of the values obtained by all the observers shall be not more than 1.

5.5 Dimensional error of the product. 5.5.1 Mouth diameter error: the error shall be within $\pm 1.0\%$ for a mouth diameter greater than 200 mm, within $\pm 1.5\%$ for a mouth diameter between 60 mm and 200 mm, and within $\pm 2.0\%$ for a mouth diameter smaller than 60 mm. 5.5.2 Height error: the error shall be within $\pm 2.0\%$ for a height greater than 100 mm, within $\pm 2.5\%$ for a height between 30 mm and 100 mm, and within $\pm 3.0\%$ for a height smaller than 30 mm. 5.5.3 Mass error: the mass error shall be within $\pm 3.0\%$.

6 Test methods

6.1 Determination of appearance quality. Deformation is determined in accordance with GB/T 3300 and the size of defects in accordance with GB/T 3301.

6.2 Determination of thermal shock resistance. Carried out in accordance with GB/T 3298.

6.3 Microwave oven suitability. Carried out in accordance with GB/T 27587.

6.4 Determination of resistance to machine washing. Carried out in accordance with GB/T 32680.

6.5 Determination of the dimensional error of the product. Carried out in accordance with GB/T 3301.

7 Inspection rules

7.1 Classification of inspection. Product inspection is divided into works inspection and type inspection, and is carried out by counting the number of nonconforming items per hundred units.

7.2 Works inspection. 7.2.1 The items of the works inspection are those specified in 5.1 and

5.5. 7.2.2 The works inspection is carried out in accordance with the provisions of GB/T 2828.1-2012. The nonconformity class, the acceptance quality limit, the inspection level and the sampling plan for each inspection item are given in Table 3, and single sampling and judgement under normal inspection follow Table 4. Table 3 assigns nonconformity classes A and B, acceptance quality limits of 0.25 and 4.0, general inspection level II and special inspection level S-3, and single sampling starting from normal single sampling with transfer rules; the printed table has come through in a form in which the individual inspection items cannot be matched to those values with certainty, so they are not attributed here. Table 4 is a table of sample size, acceptance number and rejection number against lot size for the three combinations of inspection level and acceptance quality limit used in Table 3; it likewise cannot be reproduced item by item with certainty.

7.2.3 The products under inspection may be formed into lots by single article, by set, by grade, by decoration, by shape and so on, and may be subdivided further where necessary.

7.2.4 The sample is drawn as follows: a) for single-article products, the sample size given in Table 4 is drawn at random directly from the delivery lot; b) for boxed sets, the corresponding sample size is looked up in Table 4 against the number of products in the delivery lot and is divided by the number of products in each box; if the quotient is a whole number, that number is the number of boxes to be drawn; if the quotient has a decimal part, the decimal part is dropped and one is added to the whole number to give the number of boxes to be drawn for inspection. The determined number of boxed sets is drawn at random from the delivery lot and the sample size for the lot is then drawn at random from the boxes so taken, the number of samples drawn from each box being roughly equal; c) where the delivery lot is smaller than or equal to the sample size, the whole lot is taken.

7.2.5 If any item of the works inspection fails to meet the requirements, the lot is judged nonconforming.

7.3 Type inspection. 7.3.1 The items of the type inspection are those specified in 5.1 to 5.5, thermal shock resistance being tested not less than once a quarter and the other items not less than once every six months. Type inspection shall also be carried out in any of the following cases: a) a change in the raw material of the product; b) a change in the production process that may affect the performance of the product; c) resumption of production after a stoppage of more than six months; d) an unforeseen accident in the production process; e) a requirement of the contract. 7.3.2 The sample for the type inspection shall be drawn from one or more lots manufactured in the period concerned that have passed lot inspection. The method of drawing the sample shall ensure that the sample obtained represents the actual technical level of the period. 7.3.3 The counting sampling procedure for the type inspection is carried out in accordance with GB/T 2829-2002; the nonconformity class, the limiting quality, the discrimination level, the number of nonconformities for judgement and the sampling plan for each inspection item are given in Table 5. Table 5 uses nonconformity classes A and B, limiting quality levels of 6.5, 20, 30