International Standard 6783

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Coarse aggregates for concrete — Determination of particle density and water absorption — Hydrostatic balance method

Gros granulats pour béton — Détermination de la masse volumique réelle et de l'absorption d'eau — Méthode de la balance hydrostatique

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6783 was developed by Technical Committee ISO/TC 71, *Concrete, reinforced concrete and pre-stressed concrete*, and was circulated to the member bodies in January 1980.

It has been approved by the member bodies of the following countries :

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Belgium
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Coarse aggregates for concrete — Determination of particle density and water absorption — Hydrostatic balance method

1 Scope and field of application

This International Standard specifies a method for the determination of the particle density and water absorption of coarse aggregates, having a nominal size greater than 4 mm, for concrete.

2 References

ISO 565, *Test sieves — Woven metal wire cloth and perforated plate — Nominal sizes of apertures.*

ISO 3310/1, *Test sieves — Technical requirements and testing — Part 1 : Test sieves of metal wire cloth.*

ISO 3310/2, *Test sieves — Technical requirements and testing — Part 2 : Test sieves of metal perforated plate.*

ISO 4847, *Concrete — Sampling of normal weight aggregates.*[1)]

ISO 6274, *Concrete — Sieve analysis of aggregates.*

3 Definitions

3.1 particle density[2)] (ϱ_p) : The ratio of the mass of a sample of aggregate particles to the volume it occupies (including both permeable and impermeable pores normal to the particles).

It is expressed as mass per unit volume, i.e. kilograms per cubic metre (kg/m^3).

3.2 water absorption : The increase in mass of a sample due to the penetration of water into the permeable pores of dry aggregate particles.

It is expressed as a percentage of the dry mass.

4 Apparatus and materials

4.1 Balance, of adequate capacity (3 kg or more, depending on the sample size) and accurate to within 0,1 % of the mass of the material to be weighed. It shall permit the basket (4.2) containing the sample to be suspended and weighed in water.

4.2 Wire basket of mesh approximately 1 to 3 mm or a perforated container (perforations of diameter approximately 1 to 3 mm) of convenient size, preferably chromium plated and polished, with wire hangers (not thicker than 1 mm) to allow suspension from the balance.

4.3 Watertight tank, in which the basket (4.2) may be freely suspended.

4.4 Two dry soft absorbent cloths.

4.5 Closeable container, of similar capacity to the basket.

4.6 Test sieve (wire cloth or perforated plate), of aperture size 4,0 or 4,75 or 5,0 mm[3)] complying with the requirements of ISO 3310/1 or ISO 3310/2.

4.7 Water, free from any impurity (for example dissolved air) that would significantly affect its density.

In case of doubt, distilled water, or tap water which has been freshly boiled and cooled to room temperature, shall be used.

5 Sampling

Sample the aggregate in accordance with ISO 4847.

Prior to testing, thoroughly wash the sample on the 4,0 or 4,75 or 5,0 mm test sieve (4.6), as appropriate, to remove all finer particles, particularly clay, silt and dust, which would be lost during the test and thus affect the results, and drain.

1) At present at the stage of draft.

2) In some countries, the terms "bulk specific gravity" or "relative density" are used.

3) Depending on the sieve series according to ISO 6274, as used in the laboratory.