BRITISH STANDARD

BS EN 15798:2010

Products used for the treatment of swimming pool water — Filter media

ICS 13.060.25; 71.100.80

BSI
British Standards

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee CII/59, Chemicals for drinking water treatment.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

Products used for the treatment of swimming pool water - Filter media

Produits utilisés pour le traitement de l'eau des piscines - Médias filtrants

Produkte zur Aufbereitung von Schwimm-und Badebeckenwasser - Filtermaterialien

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EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 15798:2010) has been prepared by Technical Committee CEN/TC 164 “Water supply”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2010, and conflicting national standards shall be withdrawn at the latest by July 2010.

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Introduction

In respect of potential adverse effects on the quality of swimming pool water, caused by the products covered by this European Standard:

a) this European Standard provides no information as to whether the products may be used without restriction in any of the Member States of the EU or EFTA;

b) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of these products remain in force.

NOTE Conformity with this document does not confer or imply acceptance or approval of the products in any of the Member States of the EU or EFTA. The use of the products covered by this document is subject to regulation or control by National Authorities.

1 Scope

This European Standard is applicable to filter media (virgin granular activated carbon, silica sand and silica gravel, pumice, pyrolyized coal material, anthracite and calcium carbonate) used for treatment of swimming pool water. It describes the characteristics of filter media and specifies the requirements and the corresponding test methods for filter media. It gives information on their use in swimming pool water treatment.

This standard does not concern powdered diatomaceous earth, perilite, zeolite and similar materials used with filter cartridges.

2 Normative references

The following referenced document is indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1018, *Chemicals used for treatment of water intended for human consumption — Calcium carbonate*

EN 12485, *Chemicals used for treatment of water intended for human consumption — Calcium carbonate, high-calcium lime and half-burnt dolomite — Test methods*

EN 12902, *Products used for treatment of water intended for human consumption — Inorganic supporting and filtering materials — Methods of test*

EN 12904, *Products used for treatment of water intended for human consumption — Silica sand and silica gravel*

EN 12906, *Products used for treatment of water intended for human consumption — Pumice*

EN 12907, *Products used for treatment of water intended for human consumption — Pyrolyzed coal material*

EN 12909, *Products used for treatment of water intended for human consumption — Anthracite*

EN 12915-1, *Products used for the treatment of water intended for human consumption — Granular activated carbon — Part 1: Virgin granular activated carbon*

3 Description

For the identification, the commercial form and the chemical properties see the relevant subclauses of EN 1018, EN 12904, EN 12906, EN 12907, EN 12909 and EN 12915-1.

4 Physical properties

For the physical properties, the product shall conform to the requirements specified in the relevant subclauses of EN 12904, EN 12906, EN 12907, EN 12909 and EN 12915-1.

5 Chemical properties

5.1 General

This document specifies the minimum purity requirements for filter media used for the treatment of swimming pool water. Limits are given for impurities commonly present in the products. Depending on the raw material and the manufacturing process other impurities may be present and, if so, this shall be notified to the user and when necessary to relevant authorities.

NOTE Users of the products should check national regulations in order to clarify whether it is of appropriate purity for treatment of swimming pool water, taking into account water quality, required dosage, and contents of other impurities and additives used in the products not stated in the product document.

Limits have been given for impurities and chemical parameters where these are likely to be present in significant quantities from the current production process and raw materials. If the production process or raw materials lead to significant quantities of other impurities, by-products or additives being present, this shall be notified to the user.

5.2 Impurities and main by-products

For virgin granular activated carbon the content of ash, water and water-soluble material shall conform to the requirements specified in EN 12915-1.

For calcium carbonate the impurities and main by-products shall conform to the requirements specified in EN 1018.

5.3 Water-extractable substances

For virgin granular activated carbon and pyrolyzed coal materials the level of water-extractable substances shall conform to the requirements specified in EN 12915-1 and EN 12907 respectively.

NOTE Polycyclic Aromatic Hydrocarbons (PAH): the sum of the detected concentrations of fluoranthene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene.

5.4 Specific properties

For virgin granular activated carbon the iodine number of the powdered activated carbon shall be not less than 600 mg/g.

NOTE In certain applications lower values are acceptable.

6 Test methods

The methods for sampling and analysis are those specified in EN 12485, EN 12902 and EN 12915-1.

7 Labelling - Transportation - Storage

7.1 Means of delivery

Virgin granular activated carbon shall be delivered in paper sacks (10 kg to 25 kg), semi-bulk containers (polypropylene bags, metal or cardboard drums, or corrugated boxes containing 200 kg to 800 kg), or in bulk (up to 50 m^3).

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Pumice, silica sand, silica gravel, anthracite, pyrolyzed coal material and calcium carbonate shall be delivered in bags, semi-bulk containers, or bulk.

In order that the purity of the product is not affected, the means of delivery shall not have been used previously for any different product or it shall have been specially cleaned and prepared before use.

7.2 Risk and safety labelling according to the EU Directives[1)]

Virgin granular activated carbon, pumice, silica sand, silica gravel, calcium carbonate, anthracite and pyrolyzed coal material are not subject to labelling regulations at the date of the publication of this document.

NOTE Annex I of the Directive 67/548/EEC on Classification, packaging and labelling of dangerous substances and its amendments and adaptations in the European Union contains a list of substances classified by the EU. Substances not in that Annex I should be classified on the basis of their intrinsic properties according to the criteria in the Directive by the person responsible for the marketing of the substance.

7.3 Transportation regulations and labelling

Steam virgin granular activated carbon, pumice, silica sand silica gravel, calcium carbonate, anthracite and pyrolyzed coal material are not dangerous substances at the date of the publication of this document.

Chemically activated virgin granular carbon is listed as UN Number[2)] 1362.

RID[3)] ADR[4)]: class 4.2, classification code S2, packing group III.

IMDG[5)]: class 4.2.

IATA[6)]: Prohibited.

7.4 Marking

The marking shall include the following :

a) the name:

   1) "virgin granular activated carbon "; or

   2) "pumice"; or

   3) "silica sand"; or

   4) "silica gravel"; or

   5) "calcium carbonate"; or

   6) "anthracite"; or

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1) See Bibliography, [1].

2) United Nations Number.

3) Regulations concerning International carriage of Dangerous goods by rail.

4) European Agreement concerning the international carriage of Dangerous goods by Road.

5) International Maritime transport of Dangerous Goods.

6) International Air Transport Association.

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7) "pyrolyzed coal material";

b) trade name, grade or particle size range;

c) the net mass;

d) the name and address of supplier and/or manufacturer;

e) the statement "This product conforms to EN 15798".

7.5 Storage

7.5.1 Long term stability

Pumice, silica sand, silica gravel, anthracite and pyrolyzed coal material can be stored for an unlimited period of time.

Calcium carbonate can be stored for unlimited period of time if kept dry.

Virgin granular activated carbon is stable but hygroscopic. It can be stored for an unlimited time if kept dry and away from volatile materials.

7.5.2 Storage incompatibilities

Virgin granular activated carbon shall be kept away from oxidants (e.g. hydrogen peroxide, potassium permanganate, chlorates, nitrates), volatile solvents and moisture.

NOTE Local regulations could apply to bulk storage (e.g. in silos).

Calcium carbonate shall be kept away from acids.

Annex A
(informative)

General information on filter media

A.1 Origin

A.1.1 Raw materials

Virgin granular activated carbon can be produced from virtually any carbonaceous material, e.g. coal, lignite, peat, coconut shell and wood.

Natural pumice, natural silica sand, silica gravel, natural anthracite coal, natural coal and natural limestone.

A.1.2 Manufacturing process

For activated carbon, the carbonaceous material is subjected to controlled oxidation during which a highly porous structure is developed. The raw material is activated, thermally (most common) or chemically. Thermal activation involves heating to between 800 °C and 1 100 °C in the presence of an oxidizing gas (usually steam) under carefully controlled conditions for several hours. Chemical activation involves heating to between 400 °C and 700 °C in the presence of a dehydrating agent (e.g. phosphoric acid). After activation the material is cooled, then prepared, e.g. by pulverizing and sieving to extract the desired particle size, and packaged.

Pumice, silica sand and silica gravel are produced by quarrying, dredging or crushing, cleaning, drying, and sieving.

Calcium carbonate is manufactured by quarrying, crushing, cleaning and subsequent screening of natural limestone or carbonisation of calcium hydroxide.

Anthracite is produced by mining, crushing, cleaning, drying and sieving.

Pyrolyzed coal material is produced from natural coal, thermally treated in a special oven, and sieved.

A.2 Properties

For the particle size range, the density, the chemical composition, the adsorption properties and the hydraulic characteristics see the relevant subclauses in the annex of EN 1018, EN 12904, EN 12906, EN 12907, EN 12909 and EN 12915-1.

A.3 Use

A.3.1 Function

Virgin granular activated carbon and pyrolyzed coal material are used for the removal of excess oxidants such as chlorine, ozone and permanganate from swimming pool water. They can be used to prevent fouling of resins and/or membranes.

If granular activated carbon or pyrolyzed coal material are used as a filter medium for removal of suspended solids, specific tests related to the performance of filter media might need to be carried out.

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Pumice, silica sand, silica gravel and anthracite are used as filtering materials. Calcium carbonate is used as a filter medium to adjust pH value and hardness of water.

A.3.2 Form in which the product is used

It is used as delivered.

A.3.3 Treatment dose

The amount of the filter media depends on application. Filtration rate and filter media depth vary with the suspended matter content of the pool water to be filtered.

A.3.4 Means of application

Virgin granular activated carbon and pyrolyzed coal material are used either in purpose built adsorbers or in existing filters. Water flows through the bed and dissolved impurities are removed by adsorption within the pores of the material. Physical filtration of suspended solids also occurs; trapped solids can be removed by backwashing at intervals. Once the concentration of the parameter(s) to be removed reaches some predetermined level in the treated water, the granular activated carbon is removed, reactivated, and replaced.

Pumice, silica sand, silica gravel, calcium carbonate and anthracite are used in open or closed, single or multi media, filters.

A.4 Rules for safe handling and use

It is recommended to handle the filter media so as to avoid dust formation and the use of a dust mask is recommended when handling dry product.

Virgin granular activated carbon preferentially removes oxygen from air. In closed or partially closed containers and vessels, oxygen depletion can reach hazardous levels. If workers are to enter a vessel containing carbon, appropriate sampling and work procedures for potentially low-oxygen areas should be followed.

Certain types of chemically activated carbon might have special requirements for transport and storage in bulk; advice should be sought from the manufacturer.

Local regulations can require transfer equipment to be electrically grounded to avoid ignition/explosion of dust by discharge of static electricity.

A.5 Emergency procedures

A.5.1 First aid

In case of skin contact, it is recommended to wash with soap and water.

In case of eye contact, it is recommended to flush with plenty of water for 15 min.

In case of inhalation, it is recommended to move to fresh air.

A.5.2 Spillage

It is recommended to sweep and to discard in a refuse container or repackage.

A.5.3 Fire

For virgin granular activated carbon, anthracite and pyrolyzed coal material, it is recommended to use foam extinguishers. Self-contained breathing apparatus should be worn because carbon dioxide and carbon monoxide can be produced during combustion.

For pumice, silica sand, silica gravel and calcium carbonate no special requirements are necessary.

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Bibliography

[1] 67/548/EEC: Council Directive of 27 June 1967 on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances and its amendments and adaptations.

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Chiswick High Road,
London, W4 4AL, UK
Tel +44 (0)20 8996 9001
Fax +44 (0)20 8996 7001
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