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Datasheet for the decision of 10 September 2009

Case Number: T 1865/06 - 3.3.07

Application Number: 01986464.4

Publication Number: 1341970

IPC: B01J 20/06

Language of the proceedings: EN

Title of invention:
An adsorptive-filtration media for the capture of waterborne or airborne constituents

Applicant:
Sansalone, John J.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 123(2)

Relevant legal provisions (EPC 1973):
EPC Art. 111(1)

Keyword:
"Amendments allowable (yes)"
"Remittal (yes) - fresh case - outstanding issues"

Decisions cited:
-

Catchword:
-

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Case Number: T 1865/06 **-** 3.3.07

D E C I S I O N
of the Technical Board of Appeal 3.3.07
of 10 September 2009

Appellant: Sansalone, John J.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 26 May 2006 refusing European application No. 01986464.4 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: S. Perryman
Members: F. Rousseau
G. Santavicca

Summary of Facts and Submissions

I. The appeal lies from the decision of the examining division refusing European patent application No. 01986464.4, published under international publication No. WO 02/44088.

II. The decision of the examining division was based on claims 1 to 10 according to the then pending request submitted at oral proceedings held on 29 March 2006, independent claim 1 reading as follows:

"1. An alkaline cementitious pavement comprising a porous cementitious pavement substrate with a hydraulic conductivity ranging from 1.0 to 0.0001 cm/sec and an amphoteric substance, comprising an oxide of the group consisting of iron, manganese, and aluminum, and exhibiting a net positive or negative charge depending on the pH level, the amphoteric substance being bonded to said substrate such that waterborne ionic constituents are captured by said amphoteric substance."

III. The examining division considered that the application as filed failed to provide a basis in the sense of Article 123(2) EPC for the alkaline nature of the pavement. Furthermore, should the added subject-matter not be taken into account, the subject-matter of claim 1 would be held to be anticipated by document (1) US-A-4 708 516 on the ground that this prior art disclosed an asphalt pavement with a hydraulic conductivity of between 0.1 and 10 feet per day, or in excess of 1000 feet per day, wherein the pavement could include Portland cement, which was known to contain the

oxides of iron and aluminium and optionally minor amounts of manganese oxides.

IV. With the statement setting out the grounds of appeal filed on 04 October 2006, the Applicant (Appellant) submitted a new set of claims in respect of which the grant of a patent was requested. In support of the argument that document (1) was not novelty destroying, because Portland cement does not contain oxides of aluminium, manganese or iron, the following documents were *inter alia* cited :

(10) Cement Chemistry" (2nd Edition) by HFW Taylor, pages 3 and 4
(11) Lea's Chemistry of Cement and Concrete (4th Edition), pages 104, 105, 132-134.

V. In the annex accompanying the summons to oral proceedings dated 30 June 2009, the Board indicated that the claims submitted with the statement setting out the grounds of appeal did not appear to find a basis in the original disclosure. Moreover, although the claimed subject-matter was considered to be novel over document (1), the following documents relevant to the issues of novelty and inventive step were introduced into the proceedings by the Board pursuant to Article 114(1) EPC:

(15) Storm water technology fact sheet, porous pavement, United States Environmental Protection Agency, EPA 832-F-99-023, September 1999,
(16) C. Dierkes et al. "Heavy metal retention within a porous pavement structure", 8th International

Conference on Urban Storm Drainage, Sydney 30.8.-3.9.1999, Proceedings IV, pages 1955-1962,

(17) John J. Sansalone and S.G. Buchberger, "Partitioning and first flush of metals in urban roadway storm water", Journal of Environmental Engineering, Volume 123, Issue 2, pp 134-137, Feb. 1997, and

(19) John J. Sansalone, "Adsorptive infiltration of metals in urban drainage — media characteristics", The Science of The Total Environment, Volume 235, Issues 1-3, pages 179-188, 1999.

VI. With a letter dated 01 September 2009, the Appellant submitted in replacement of the set of claims attached to the statement setting out the grounds of appeal four sets of claims forming his Main and First to Third Auxiliary Requests respectively.

VII. In a facsimile letter dated 09 September 2009 the Board drew attention of the Appellant to document (20) GB-A-2 142 329, which confirmed as indicated in the annex to the summons to oral proceedings, that porous cementitious pavement substrates having the hydraulic conductivity defined in the claims were generally known to the public before the claimed priority date. It was also pointed out that such pavements may conventionally contain a pigment based on α-Fe_2O_3.

VIII. At the oral proceedings before the Board held on 10 September 2009 the Appellant no longer maintained the former requests. He submitted a fresh set of three claims superseding all previous requests. The claims of that request read as follows:

"1. A method of producing a porous, cementitious material comprising a porous cementitious pavement substrate with a hydraulic conductivity ranging from 1.0 to 0.0001 cm/sec on which an amphoteric substance selected from the group consisting of oxides of iron or manganese, and exhibiting a net positive or negative charge depending on the pH level has been coated in order to capture waterborne ionic constituents, the method comprising the steps of:
a. providing and thoroughly mixing cement and aggregate;
b. mixing water with said cement and aggregate into a slurry while maintaining a water to cement ratio of less than one;
c. initiating curing of said slurry under pressure and in the presence of steam; and
d. continuing said curing at ambient temperature and pressure until said cementitious pavement substrate is substantially dry,
e. the method further including the step of applying the manganese oxide or iron oxide coating to said cementitious pavement substrate after it has become at least partially dry.

2. A cementitious pavement obtainable by the method of claim 1.

3. The pavement according to claim 2, wherein the depth of said pavement is at least 0.154 metres (six inches)."

IX. As regards novelty, the Appellant did not dispute that document (20) discloses a cement concrete material having a hydraulic conductivity of 0.1 to 0.0001 cm/sec and the addition to that cement concrete of a red oxide

for colouring in an amount of 3 to 5%. However, based on a declaration from Mr C. Berretta and two figures illustrating the situations in document (20) and in the present application, all submitted at the oral proceedings before the Board, the Appellant argued that the claimed subject-matter was distinguishable from the pavement disclosed in document (20). The additives employed in document (20) had to be added in a conventional manner, i.e. to the wet cement slurry and mixed therein before the cement was hardened. Although not specified in document (20), such pigments were fine powder particles of approximately 0.1 to 10 micrometres in size. When the red oxide particles were mixed into a cement slurry as suggested in document (20), the red oxide particles would become encapsulated in the highly impermeable cement paste. As the cement slurry cured, the evaporation of excess water left pores between the individual pieces of courser aggregate to provide the cured concrete with the porosity described in document (20). However, the creation of these pores would not expose the red oxide particles to the open pore space. The much smaller oxide particles should still be encapsulated by the hydrated cement paste, even on the surface of the internal pores in the concrete. Since the red oxide particles were encapsulated in the hardened cement paste, water flowing though the concrete structure could not come into contact with waterborne ionic constituents. In contrast thereto, the iron or manganese oxide used in the present application was present on the entire cement surface, including the pores. If given sufficient time to form a scanning electron micrograph image of the concrete coloured material of document (20), the Appellant would have been able to show that the red oxide particles were

encapsulated by the cement paste and that none of them was present on the surface of the cement. Hence, the claimed subject-matter was considered to be novel over document (20).

X. The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of Claims 1 to 3 filed at the oral proceedings on 10 September 2009.

XI. At the end of the oral proceedings the Board's decision was pronounced.

Reasons for the Decision

1. The appeal is admissible.

Amendments

2. The method of claim 1 is based on method claim 44 as originally filed, which refers back to independent claim 40, supplemented with the feature that the cementitious material treated in claim 44 is a porous pavement with a hydraulic conductivity ranging from 1.0 to 0.0001 cm/sec. While original claim 44 is directed to a method of producing a porous cementitious material which comprises the step of applying a manganese or iron oxide to the cementitious material of claim 40, i.e. the substrate to be coated, the passages of the original disclosure dealing with the step of applying a coating of an amphoteric substance, in particular iron oxide or manganese oxide (page 15, lines 14-29; page 16, lines 3-22) make clear that the porous cementitious

material can be a pavement having a hydraulic conductivity ranging from 1.0 to 0.0001 cm/sec. Thus, claim 1 of the present request does not extend beyond the content of the application as filed. It also results from the above that a cementitious pavement obtainable by the method of claim 1 as defined in claim 2 is also disclosed in the application as filed. As regards amended claim 3, the minimum depth of 0.154 metres (six inches) of a porous pavement having a hydraulic conductivity ranging from 1.0 to 0.0001 cm/sec, which pavement may be treated with an amphoteric compound in order to improve the capture of waterborne ionic constituents, is disclosed in the paragraph bridging pages 22 and 23 of the original application, in particular page 23, lines 7-9. The Board is therefore satisfied that the claims as amended comply with the requirements of Article 123(2) EPC.

Novelty over document (1)

3. The method of claim 1 requires the step of applying a coating of manganese oxide or iron oxide on the porous cementitious pavement substrate. Document (1) which discloses a porous pavement comprising Portland cement as mineral filler (see in particular column 6, lines 66-67) was held by the examining division to be novelty destroying based on the reasoning that Portland cement was known to contain iron oxide and optionally manganese oxide. It is true that chemical formulae in cement chemistry are often expressed as sums of oxides, possibly including iron oxide and manganese oxide. As shown by the Appellant with document (10) (paragraph 1.1.3) and document (11) (paragraph 3.3.), this definition, however, follows from the nomenclature

conventionally used to give the chemical composition of cements, but does not mean that the oxides recited have (with the exception of CaO in small amounts) any separate existence within the structure of the cement or can be identified as such. Furthermore, the wording of the present claims makes clear that the oxides of iron or manganese are not to be understood as an indication of the elements comprised in the cement composition but as true compounds coated on the cementitious pavement substrate. Moreover, document (1) discloses neither the use of any iron or manganese oxide in the method of producing the pavements described therein nor their presence as resulting from such method. Accordingly, the subject-matter of claims 1 to 3 is novel with regard to the disclosure of document (1) (Article 54 EPC).

Remittal

4. Substantial amendments have been made to define the claims relating to the cementitious pavement which amended claims were never submitted to the first instance but only at the oral proceedings before the Board. The claims submitted avoid the objections under Article 123(2) EPC and lack of novelty over document (1) on which the refusal of the application was based.

4.1 However, the examining division did not consider documents (16), (17), (19) and (20), introduced by the Board into the proceedings, which documents appear to be relevant to the issues of novelty and inventive step. As regards novelty, it was not disputed that document (20), relating to water-permeable cement concrete pavements, discloses a cement concrete material having

a hydraulic conductivity of 0.1 to 0.0001 cm/sec (paragraph bridging pages 2 and 3, examples 1-3, page 3, lines 30-39) to which a red oxide (page 2, lines 44-46), i.e. a pigment based on α-Fe_2O_3, can be added in an amount of 3 to 5%. As the method of producing a cementitious material according to present claim 1 allows the use of red oxide in the cement slurry used for forming the substrate, there is thus a ***prima facie*** argument that the cementitious pavement disclosed in document (20) anticipates those obtainable by the method of claim 1, for which protection is sought in present claim 2. The Appellant, however, argued that the product obtainable by the method of claim 1, would differ from those obtained in document (20), as the mandatory coating step of the substrate in the presently claimed method would lead to iron oxide exposed on the surface of the concrete, whereas in document (20) the red oxide pigment particles would all be encapsulated in the hardened cement paste and none of them would be present on the surface of the hardened cement. The Appellant argued that experimental evidence of this could be given, if sufficient time were given.

4.2 Concerning inventive step, documents (16), (17), (19) and (20) also appear arguably more relevant than document (1), which in the writing procedure before the examining division was considered as suitable closest prior for assessing inventive step.

4.3 In these circumstances the Board considers it appropriate to exercise the power conferred by Article 111(1), second sentence, EPC 1973 to remit the present fresh case to the examining division for further prosecution so that the Appellant has the

opportunity, if he chooses, to submit further evidence, and for the remaining issues to be considered without loss of an instance.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the fist instance for further prosecution on the basis of claims 1 to 3 submitted at oral proceedings on 10 September 2009.

The Registrar: The Chairman:

S. Fabiani S. Perryman