

Señora

**María José Lamus Becerra**

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**Superintendencia de Industria y Comercio**

E. S. D.

**Referencia:** Solicitud de PCT Patente de Invención denominada  
**Composición de Concreto y Ligante Hidráulico con Tiempo de  
Secado Reducido.**

**Asunto:** Respuesta al Requerimiento No. 6763 del 25 de julio de 2019.

**Expediente No. NC2017/0011804**

**Juan Carlos Cuesta Quintero**, mayor de edad, identificado como aparece al pie de mi firma, obrando en mi calidad de apoderado de la sociedad **Holcim Technology Ltd**, doy respuesta al Oficio No. 6763 del 25 de julio de 2019, bajo los siguientes términos:

#### **1. Reivindicaciones.**

- El Examinador objeta los términos “ligante hidráulico”, “árido”, “aditivo”, “aditivo orgánico”, “material cementoso suplementario” o “agente reductor de agua” ya que definen los componentes por su función o actividad pero no por su estructura química, nombre o componente específico.

No estamos de acuerdo en la necesidad de limitar el ámbito mediante la especificación de compuestos o componentes específicos ya que supondría una limitación indebida a injustificada del ámbito de protección. En opinión del solicitante, estos términos no deben ser interpretados como características funcionales, esto es como características definidas en términos de la función desarrollada, de los efectos conseguidos, sino como características generales que se refieren a grupos de compuestos comúnmente conocidos para un experto en la materia.

Por otro lado, hay que señalar que el término “aditivo que reduce la contracción” y “aditivo orgánico” están incluso definidos en la reivindicación 1 como compuestos específicos ya que la reivindicación 1 establece que dichos términos se refieren a polipropilenglicol, polietilenglicol y/o un derivado de glicol éter.

Además, la solicitud hace referencia a que se entiende por “ligante hidráulico” que se refiere a ingredientes que se endurecen después de la adición de agua. En la solicitud se citan como ejemplos de “ligantes hidráulicos” el cemento Portland (ver página 1 párrafo 3) y como “material cementosos suplementarios” las escorias de

alto horno granuladas, cenizas volátiles, puzolanas o mezclas (ver página 6 párrafo 3).

Por último “agregado” es un término común en el campo técnico de la invención para referirse a una categoría de materiales particulados de grano entre grueso y medio que se usan en construcción.

En definitiva, un experto en la materia no tiene problema alguno en determinar el significado y los límites definidos por estos términos. Por lo tanto, no creemos necesario limitarlos injustificadamente.

- El Examinador objeta la reivindicación 1 por no se clara al no mencionar las proporciones en que se encuentran cada uno de sus componentes.

El solicitante no está de acuerdo con esta objeción en la medida que la cantidad del ligante hidráulico (280-310 Kg/m<sup>3</sup>), de agua (140-160 L/m<sup>3</sup>) y del aditivo que reduce la contracción (3-4 L/m<sup>3</sup>) que son esenciales

Para conseguir el efecto técnico de la invención se definen explícitamente en la reivindicación 1.

- El Examinador objeta las expresiones “en la que el aditivo que reduce la contracción” y “la resistencia a la compresión del concreto” ya que considera que corresponden a un resultado a alcanzar y no definen la composición.

El solicitante no está de acuerdo con los argumentos planteados por parte del Examinador en esta objeción. Entendemos que las expresiones a las que hace referencia el Examinador son características funcionales que definen los componentes o la composición de la invención y que proporcionan al experto en la materia indicaciones claras sobre la invención sin ninguna carga indebida. Por lo tanto, entendemos que las expresiones son claras y la objeción sobre estas expresiones no está debidamente justificada.

## 2. Examen de patentabilidad.

### Novedad:

El Examinador opina que el documento D1 (WO2011008936), D2 (WO2014009298) y D3 (WO2006102634) anticipan la presente invención.

EL documento D1 se corresponde con US2011015306 que ya fue citado en los procedimientos PCT donde se emitió un IPRP positivo (adjuntamos IPRP). El concreto de

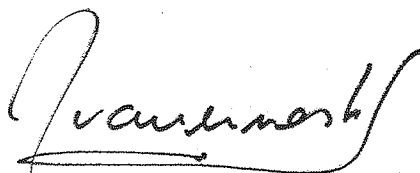
acuerdo con la reivindicación 1 muestra un ratio agua /cemento significativamente más alto (0,45-0,57) que la composición de la muestra 12 y 13 de la tabla 8 del ejemplo 5 de D1 (página 44 y 45), que muestra un ratio agua/cemento de 0,23 o 0,25 respectivamente (punto 2 y 4.2 del IPRP). La reivindicación 1 es por tanto novedosa respecto de D1 sin ningún género de duda.

El documento D2 no describe que el aditivo que reduce la contracción esté presente en la en la mezcla de concreto en una cantidad de 3-4 L/m<sup>3</sup>. Por otro lado, solicitamos clarificación del Examinador sobre donde aparece la cantidad mencionada en la tabla 1 de la acción oficial ya que la fuente citada por parte del Examinador no parece contener esa información.

El documento D3 no describe que la composición contenga un cemento Portland de alta reactividad y una finura Blaine de 4500-6500 cm<sup>2</sup>/g. Esta diferencia, está de hecho confirmada por el examinador.

En vista de todo lo anterior, ruego a usted estudiar nuevamente la solicitud con base en las modificaciones realizadas y proceder de conformidad.

Cordialmente,



**Juan Carlos Cuesta Quintero.**

C.C. 79.339.809 de Bogotá

T.P. 43.273 del C.S. de la J.



# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

## PCT

To:

KESCHMANN, Marc  
Haffner und Keschmann Patentanwälte GmbH  
Schottengasse 3a  
A-1014 Wien  
AUTRICHE

25. Aug. 2017

### NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

21.08.2017

Applicant's or agent's file reference  
48 112

#### IMPORTANT NOTIFICATION

International application No.  
PCT/IB2016/000665

International filing date (day/month/year)  
18.05.2016

Priority date (day/month/year)  
26.05.2015

Applicant  
Holcim Technology Ltd.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international  
preliminary examining authority:



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# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                          |                                                                                                                                                                      |                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Applicant's or agent's file reference<br>48 112                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>FOR FURTHER ACTION</b>                                |                                                                                                                                                                      | See Form PCT/PEA/416 |
| International application No.<br>PCT/B2016/000665                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | International filing date (day/month/year)<br>18.05.2016 | Priority date (day/month/year)<br>26.05.2015                                                                                                                         |                      |
| International Patent Classification (IPC) or national classification and IPC<br>INV. C04B28/04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                          |                                                                                                                                                                      |                      |
| Applicant<br>Holcim Technology Ltd.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                          |                                                                                                                                                                      |                      |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>8</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>5</u> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4bis, 70.2(e), 70.16 and 91.2).</p> <p><input type="checkbox"/> superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No. I and the Supplemental Box (see Rule 70.16(b)).</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing, in the form of an Annex C/ST.25 text file, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3ter of Annex C of the Administrative Instructions).</p> |                                                          |                                                                                                                                                                      |                      |
| <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                          |                                                                                                                                                                      |                      |
| Date of submission of the demand<br><br>27.03.2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                          | Date of completion of this report<br><br>21.08.2017                                                                                                                  |                      |
| Name and mailing address of the international preliminary examining authority:<br> European Patent Office P.B. 5818 Patentlaan 2<br>NL-2280 HV Rijswijk - Pays Bas<br>Tel. +31 70 340 - 2040<br>Fax: +31 70 340 - 3016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                          | Authorized officer<br><br>Kolb, Ulrike<br><br>Telephone No. +31 70 340-9597<br> |                      |

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

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**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on
  - ☒ the international application in the language in which it was filed
  - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3(a) and 23.1(b))
    - ☐ publication of the international application (under Rule 12.4(a))
    - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a) and (b))
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-11 as originally filed

**Claims, Numbers**

1-13 filed with telefax on 12-06-2017

- ☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing (*specify*):
  4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing (*specify*):
  5. ☐ This report has been established:
    - ☐ taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
    - ☐ without taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91(Rules 66.4bis and 70.2(e)).

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6. ☒ With regard to top-up searches (Rules 66.1 *ter* and 70.2(f)):
- ☒ A top-up search was carried out by this Authority on 04.04.2017 (all discovered documents are listed in the Supplemental Box Relating to Top-up Search).
  - ☐ Additional relevant documents have been discovered during the top-up search.
  - ☐ No top-up search was carried out by this Authority because it would serve no useful purpose.
7. ☐ Supplementary international search report(s) from Authority(ies) has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

\* If item 4 applies, some or all of those sheets may be marked "superseded".

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

|                               |             |             |
|-------------------------------|-------------|-------------|
| Novelty (N)                   | Yes: Claims | <u>1-13</u> |
|                               | No: Claims  |             |
| Inventive step (IS)           | Yes: Claims | <u>1-13</u> |
|                               | No: Claims  |             |
| Industrial applicability (IA) | Yes: Claims | <u>1-13</u> |
|                               | No: Claims  |             |

2. Citations and explanations (Rule 70.7):

see separate sheet

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

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**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1.1 Reference is made to the following documents:

- D1 FR 3 006 311 A1 (ITALCEMENTI SPA [IT]) 5 December 2014
- D2 WO 2011/053103 A2 (OSLEJS JANIS [LV]; KRAVALIS KASPARS [LV]; PRIMETEH AS [LV]) 5 May 2011
- D3 WO 2014/015289 A1 (U S CONCRETE INC [US]) 23 January 2014
- D4 DATABASE WPI  
Week 199642  
Thomson Scientific, London, GB;  
AN 1996-421759  
& JP H08 208302 A (ASAHI KASEI KK) 13 August 1996 (1996-08-13); &  
JP H08 208302 A (ASAHI CHEMICAL IND) 13 August 1996
- D5 US 2009/301009 A1 (FALK JOERGEN [SE] ET AL) 10 December 2009

1.2 The following documents have been cited by the applicant:

- D7 US 2011/015306 A1 20 January 2011
- D8 US 2012/097072 A1 26 April 2012

We refer to your letter dated 12.06.2017. We would like to draw the attention of the applicant to the objection under point 5.

**2 Independent claim**

Concrete composition comprising

- 140 - 160 l/m<sup>3</sup> water (w/c = 0,45- 0,57)
- 280 - 310 kg/m<sup>3</sup> hydraulic binder comprising a Portland cement of high reactivity

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having a Blaine fineness of 4500-6500 cm<sup>2</sup>/g

- sand
- aggregates
- 3 - 4 l/m<sup>3</sup> shrinkage reducing admixture being an organic admixture.

3.1 The present application meets the criteria of Article 33(2) PCT, because the subject-matter of claim 1 is new with respect to D1 and D2.

3.2.1 D1 discloses (abstract; page 2, line 7 - line 14; page 2, line 19 - page 3, line 6; page 4, line 12 - line 28; page 5, line 19 - line 23; page 7, line 4 - line 12; page 7, line 32 - page 10, line 30; page 12, line 16 - line 17) a self-placing concrete composition. Example 3 defines a mixture comprising:

- w/c = 0,5
- Portland cement of high reactivity (Blaine < 6000 g/cm<sup>2</sup>)
- sand
- aggregates
- polycarboxylate ether superplasticizer
- no shrinkage reducing admixture.

3.2.2 The subject-matter of claim 1 mainly differs from the product known from D1 in that 3 - 4 liter per cubic meter of shrinkage reducing admixture are mandatory present in the composition.

3.3.1 D2 discloses in example 4 a zero shrinkage after 150 days of hardening concrete composition for a floor slab comprising 160 l/m<sup>3</sup> water, 320 kg/m<sup>3</sup> Portland CEM III (of increased fineness and thus, relatively higher reactivity; commonly 4.150 cm<sup>2</sup>/g Blaine fineness), 1890 kg/m<sup>3</sup> sandstone, 30 kg/m<sup>3</sup> steel fiber, 12 kg/m<sup>3</sup> ethylene glycol (density 1,11 g/cm<sup>3</sup> => 10,81 l/m<sup>3</sup>), 4 kg/m<sup>3</sup> naphthalene plasticizer. CEM III is known for providing relatively high early strength, especially after one day; likewise, it reaches a higher final strength than CEM I or CEM II.

D2 suggests (p. 3, l. 3 - 5; ex. 6: 50 kg/m<sup>3</sup> CaO and 8 kg/m<sup>3</sup> ethylene glycol) the combination of two shrinkage reducing additives, namely ethylene glycol and free lime (CaO). Furthermore, it is suggested (p. 3, l. 20 - 30) to add 5 - 15 kg/m<sup>3</sup> nano-sized pozzolanic dust. D2 lists (cl. 2) polycarboxylate as water reducing agent alternative to naphthalene. D2 remains silent about the drying time of the concrete.

3.3.2 The subject-matter of claim 1 therefore differs from this known product known from D2 in that

- a significantly smaller amount of the shrinkage reducing additive glycol ethylene is present in the composition, namely maximum 4 l/m<sup>3</sup> instead of more than double 10,81 l/m<sup>3</sup>.
- the amount of Portland CEM III is limited to a smaller amount, namely 310 kg/m<sup>3</sup> instead of 320 kg/m<sup>3</sup>; thus, less binder is present per cubic meter of concrete.
- overall, the ratio of water, binder, shrinkage reducing agent per cubic meter is different

4.1 The present application meets the criteria of Article 33(3) PCT, because the subject-matter of claim 1 involves an inventive step starting from D7.

4.2 D7 is regarded as being the prior art closest to the subject-matter of claim 1, since it solves the same problem, namely to provide concrete compositions with reduced drying times.

D7 discloses in table 8 (see example 5 in paragraphs 166 - 167) the compositions of samples 12 and 13 which comprise 740 lbs Hanson cement, 60 lbs pozzolan (either silica fume or metakaolin), 1200 lbs fine sand, 1950 lbs coarse sand, 16,2 oz/lbs superplasticizer of polycarboxylate type, 0,5 oz defoamer, w/c ratio 0,23 resp. 0,25. The drying time to achieve 75% relative humidity was 28 days.

4.3 The subject-matter of claim 1 differs from the composition known from D7 in that

- a significantly higher water/cement ratio is used, namely 0,45- 0,57
- a shrinkage reducing agent is mandatory present in an amount of 3 - 4 l/m<sup>3</sup>

4.4.1 The technical effect relating to these differences is explained by the applicant in his letter dated 27.03.2017 as follows:

- In the fresh state, the rheology of the concrete composition according to the invention is similar to that of conventional concrete for floor applications (reduced viscosity, reduced slump and reduced setting time).
- The setting time and strength development of the concrete composition according to the invention is also similar to that of conventional concrete.
- When the curing has taken place, the drying times of the concrete composition according the invention are significantly reduced since the use of shrinkage reducer admixtures under specific conditions of the water and binder amounts per cubic meter of concrete acts as an accelerator for the drying of the concrete.
- Furthermore, the concrete composition has no stickiness.

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4.4.2 Mix #5 comprises all essential features and mix #6 combines the shrinkage reducing agent with CaO. In both cases, a water reducer and slag as supplementary cementitious material are present in the mixes. It was shown, that in comparison to mix #1, which does not comprise a shrinkage reducing agent and required 100 days to dry to 80% humidity, mix #5 requires only 39 days to reach the same level of humidity.

4.4.3 No comparative examples were provided with respect to the mixture known from D7, but the problem was plausibly explained in the description (p. 4, l. 12-22). No example was provided for a mix that shows a technical effect when only the components defined as essential in current claim 1 are present.

4.5 According the applicant (see his letter dated 27.03.2017), the subjective technical problem on which the invention is based is: to provide a non-tacky concrete composition which combines several opposing properties, namely reduced drying times once hardened while at the same time good workability of the fresh concrete is provided and bleeding water is generated at the concrete surface.

4.6 The technical solution defined in claim 1 is regarded as to involve an inventive step, since the skilled person, starting from the composition known from D7, would not find any hint in the relevant state of the art D2 - D5, to carry out significant modifications and to add a shrinkage reducing agent in combination with a comparably higher amount of water.

**Re Item VIII**

**Certain observations on the international application**

**5 Clarity (Art. 6 PCT)**

Dependent claim 4 as well as the corresponding passage in the description (p. 6, l. 27 - p. 7, l. 2) need to be deleted, since they attempt to define a composition that lies outside the range defined in claim 1. Thus, the requirements for a dependent claim are not fulfilled.

**6 Miscellaneous**

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6.1 In table 1, only mixes #5 and #6 are according the invention. All other mixes should be tagged "comparative" or "not according the invention".

6.2 The description has to be strictly adapted to the amended set of claims to be submitted.

Printed: 08-08-2017 09:26

408REPLY

EP 16 726 930

12. Jun 2017 13:22

Haffner & Keschmann

Nr. 1189 S. 1/9

# HAFFNER & KESCHMANN

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Wien, am 12.06.2017

**Betreff:**  
International Patent Application PCT/IB2016/000665  
Holcim Technology Ltd.  
Unser Zeichen: 48112 mr

**Response to the written opinion (PCT Rule 66) of April 13, 2017**

Dear Ladies and Sirs,

Applicant may comment on the objections raised in the Written Opinion of the International Preliminary Examining Authority as follows.

The novelty and inventive step objections with regard to cited documents D1 to D6 could be overcome via the arguments and amendments as filed accompanying the Request for international preliminary examination.

In order to overcome the clarity objections as raised in the above mentioned written opinion the following amendments in the claim version as actually on file were performed:

- Incorporation of claim 5 (former claim 6), whereby the shrinkage reducing admixture is an organic admixture based on polypropylene glycol, polyethylene glycol and/or a glycol ether derivative, preferably in a liquid mixture with surfactants, in claim 1.

HAFFNER & KESCHMANN  
PATENTANWÄLTE GMBH  
INTELLECTUAL PROPERTY  
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- Incorporation of claim 8, whereby the Portland cement has a Blaine fineness of 4500-6500 cm<sup>2</sup>/g, in claim 1.

- Claim 15 was deleted.

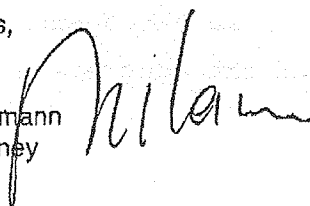
With regard to the objection that the presence of a water reducer seems to be an essential feature for obtaining a reduced drying time and that thus the additional technical features as defined in claims 11 and 12 (new claims 9 and 10) are considered to be essential and need to be incorporated into claim 1 we may comment as follows.

The opinion of the International Preliminary Examining Authority cannot be followed. Due to the fact that in the examples according to the invention, i.e. examples 5 and 6, water reducer is added to the mixture, it can not be concluded that a water reducer is essential for the present invention. The water reducer serves to improve the workability of the concrete mass and is therefore preferable (cf. page 7, lines 21-26). However, the water reducing agent is not considered essential for achieving the inventive effects.

Considering the aforementioned arguments and amendments applicant requests to issue a positive international preliminary report on patentability. If there are any remaining issues, the Examiner is encouraged to issue another written opinion or to contact the undersigned by phone.

Best regards,

Marc Keschmann  
Patent Attorney



Encl.

Amended set of claims

Amended set of claims with mark-ups

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## Amended Claims:

1. Concrete composition comprising, in a mixture with water, a hydraulic binder, sand and aggregates, wherein the hydraulic binder comprises a Portland cement of high reactivity, wherein the Portland cement has a Blaine fineness of 4500-6500 cm<sup>2</sup>/g, characterized in that the hydraulic binder is present in an amount of 280-310 kg per cubic meter of concrete, that a shrinkage reducing admixture is present in an amount of 3-4 L per cubic meter of concrete, wherein the shrinkage reducing admixture is an organic admixture, in particular based on polypropylene glycol, polyethylene glycol and/or a glycol ether derivative, preferably in a liquid mixture with surfactants and that water is present in an amount of 140-160 l per cubic meter of concrete.
2. Concrete composition according to claim 1, wherein the reactivity of the hydraulic binder is selected such as to obtain a 28d compressive strength of the concrete of > 52,5 MPa.
3. Concrete composition according to claim 1 or 2, wherein the reactivity of the hydraulic binder is selected such as to obtain a 1d compressive strength of the concrete of > 20 MPa.
4. Concrete composition according to any one of claims 1 to 3, wherein the shrinkage reducing admixture is present in an amount of 0-1 L per cubic meter of concrete and the hydraulic binder is present in an amount of 310-340 kg per cubic meter of concrete.

5. Concrete composition according to any one of claims 1 to 4, wherein the hydraulic binder comprises a supplementary cementitious material, preferably ground granulated blast furnace slag, fly ash, pozzolans, ground limestone or mixtures thereof.
6. Concrete composition according to claim 5, wherein the supplementary cementitious material is present in an amount of 1-20 wt.-% of the hydraulic binder.
7. Concrete composition according to claim 5 or 6, wherein the supplementary cementitious material has a Blaine fineness of 4500-6500 cm<sup>2</sup>/g.
8. Concrete composition according to any one of claims 1 to 7, further comprising an expanding agent, such as CaO, preferably in an amount of 0,5-3 wt.-% of the hydraulic binder.
9. Concrete composition according to any one of claims 1 to 8, further comprising a water reducing agent, which is preferably present in an amount between 0,4 and 1 wt.-% of the hydraulic binder.
10. Concrete composition according to claim 9, wherein the water reducing agent comprises poly-carboxylate ether or polynaphthalene sulfonate.
11. Concrete composition according to any one of claims 1 to 10, wherein the amount of water and hydraulic binder is selected so as to reach a flow of the freshly mixed concrete at 10 min of at least 100 mm +/- 10 mm.

12. Concrete composition according to any one of claims 1  
to 11, wherein the concrete, within less than 30-50 days,  
in particular less than 30-40 days, after placing has a  
5 relative humidity of 80% according to ASTM F2170.

13. A construction element comprising concrete or made of  
concrete produced using a concrete mix composition  
according to any one of claims 1 to 12.

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