

Search query (5): [SP]: field of the invention[0001] the present invention relates to a method to produce aggregates from unsettled cementitious mixtures. particularly, the present invention relates to a method to prepare pellets with predicted particle size from fluid cementitious materials, to be used in diverse applications, including but not limited to substitution of aggregates in concrete mixtures for various functions. furthermore, through this method one can produce aggregates with predicted particle size from any kind of unsettled cementitious mixtures, for example from mixtures with high fluidity, high binder content, low gravel to sand ratio and/or with high admixtures content. background of the invention[0002] on a daily basis, a significant amount of concrete produced at a ready-mix plant is not used. for example, contractors normally order an extra amount of concrete than the one needed for the job in hands, in order to account for unexpected setbacks, for example, shortage of concrete due to errors in calculations. when no setbacks occur, the superfluous concrete is returned to the plant, where it is recovered.[0003] another example of concrete that may be produced and not used is when, by mistake, a product is delivered to a customer with a different mix design than the one ordered, therefore having different properties than the ones requested by the client, for example, lower strength than the one required for the job or low workability retention.[0004] another example of concrete that may not be used and therefore is returned to the plant is when, due to a poor mix design, during the handling, transporting and placing, the cement paste and fine aggregates are separated from the coarse aggregates. this is called concrete segregation. if it happens during transportation, the concrete should be properly remixed before being used. nevertheless, if setting time has already started, then it should not be used and is returned.[0005] if the returned concrete has not settled yet, the drum of the ready-mix truck is washed, the excessive material removed and used in concrete production. in case the returned concrete has already hardened, it is crushed and reused as aggregate or landfilled.[0006] in any case, returned concrete represents a loss to the concrete manufacturer, since it is product that has been fabricated and cannot be sold. companies do their best to avoid returned product, for example by implementing gps systems in trucks which are connected to a central station, so that concrete can be immediately redirected once an order changes. nevertheless, said method is not foolproof and new solutions are being studied to deal with the issue.[0007] one solution for the returned concrete is its conversion into aggregates.[0008] japanese unity model 3147832 refers to the usage of a polymer which is encapsulated inside a water soluble bag. when in contact with the fluid concrete, the paper bag dissolves and the polymer disperses inside the mix. after around 3 minutes under constant mixing, the polymer absorbs some of the returned concrete water and expands, incorporating the fines that exist in the mix, forming a kind of gel structure. this structure then covers the coarser aggregates, forming a granular material that can be used as roadbed material.[0009] the method disclosed in the jp 3147832 u does not have the paper bag as optional. the present method does not need a paper water soluble bag, making it easier to be industrially applied. also, jp 3147832 u does not disclose a method to predict the properties of the granular material obtained, namely the particle size, los angeles of the particles produced or the time to produce the pellets, like the present method does.[0010] ep 2468695 also describes a method to recycle fresh unset concrete, forming granular materials through the addition of two components: a flash setting accelerator and a super-absorbent polymer. the polymer acts in a similar way to what is described in jp 3147832 u. the flash setting accelerator is said to reduce the porosity of the final granular materials, reducing the water absorption and consequently improving the mechanical properties of the final materials. because of this, ep 2468695 claims that the granular materials obtained through their method may be used as aggregates in the construction industry.[0011] the present invention avoids using a flash setting accelerator while using a higher dosage of super-absorbent polymer than ep 2468695. this allows achieving granular materials with good mechanical properties, as seen in the examples, that may be used as coarse aggregates in new fresh concrete mixes. the avoidance of flash setting accelerator and usage of only one component makes the present invention easier and more cost effective to be adopted by the industry. in addition, ep 2468695 shows no direction on how to predict the properties of the granular material obtained.[0012] in conclusion, the prior art has not so far disclosed a method to produce aggregates with predictable size and tailored to diverse applications in the construction industry sector.[0013] the problem to be solved is providing a method to reuse returned cementitious mixtures that would normally be disposed of, to produce materials that can be used as coarse aggregates in fresh concrete mixtures. description of the invention[0014] the present invention provides a method to produce aggregates, comprising the steps of: (a) adding at least one pelletizing agent to an unsettled cementitious mixture, (b) mixing constantly the mixture of step (a) in a mixer to produce pellets, (c) discharging the pellets obtained in step (b) and (d) drying the pellets formed in step (c), herewith method of the invention. [0015] another embodiment is the method of the invention, wherein said method is to produce coarse aggregates and wherein the method comprises the steps of: (a) adding at least one pelletizing agent to an unsettled cementitious mixture, (b) mixing constantly the mixture of step (a) in a mixer to produce pellets, (c) discharging the pellets obtained in step (b) to form a pile, (d) drying the pellets formed in step (c) for a curing time of minimum t_1 to maximum t_2 depending on the curing temperature according to the following equations: $t_1 = a \cdot x - 0.047 \cdot x \cdot t$ (degrees centigrade) $t_2 = b \cdot x - 0.04 \cdot x \cdot t$ (degrees centigrade) wherein a is a parameter from 50 to 55, b is a parameter from 75 to 80 and t (degrees centigrade) represents the curing temperature in celsius degrees and (e) transforming the pile into a bed of dried pellets. [0016] another embodiment is the method of the invention, wherein the solid active content of the pelletizing agent is at a concentration in the range of 0.2 to 10 kg/m³ with respect to the unsettled cementitious mixture, preferably in the range of 0.8 to 10 kg/m³ and more preferably in the range of 0.8 to 3 kg/m³. [0017] another embodiment is the method of the invention, wherein the pelletizing agent in step (a) is selected from the group consisting of cellulose, chitosan, collagen, polyacrylamide and co-polymers of polyacrylamide and polyacrylics, polyamines, polyvinylalcohols, polysaccharides, lactic acid, methacrylic acid, methacrylate, hydroxyethyl, ethylene glycol, ethylene oxide, acrylic acid, inorganic flocculants and inorganic coagulants. [0018] another embodiment is the method of the invention, wherein the pelletizing agent is acrylamide-based, preferably a copolymer of acrylate and acrylamide monomers. this component brings the advantages of being effective, easily available in the market and non expensive. [0019] another embodiment is the method of the invention, wherein the water-to-cement ratio of said unsettled cementitious mixture is between 0.15 and 1.5. [0020] the unsettled cementitious mixture may be, for example, mortar or concrete. preferably, said cementitious mixture has a consistency selected from the group consisting of s0, s1, s2, s3, s4 and s5, more preferably a consistency selected from the group of s2, s3, s4 or s5, since the method has shown to be effective with highly fluid cementitious mixtures. [0021] also self-compacted concrete (sc) may be used as unsettled cementitious mixtures, with consistencies ranging from sf1 to sf3. [0022] the consistencies indicated above are slump test's consistencies, according to tables 3 and 6 of the european standard en 206-2013. [0023] the slump test of a concrete or mortar is carried out using a 300 mm high hollow steel cone with handles, a steel tamping rod, a steel base plate and a tape measure. the cone is positioned on the base plate with the smaller opening on top. fresh concrete (or mortar) is poured into the cone to approximately one quarter of its depth (75 mm). when the concrete (or mortar) is too fluid, it will spread immediately over the base plate, even when the cone is still in position. in this case, the slump test is carried out with the smaller opening on the bottom (inverted cone). [0024] the layer of concrete (or mortar) is compacted 25 times. after, further concrete (or mortar) is added to fill the cone to approximately one half of its depth and again, it is compacted with 25 strokes. finally, the cone is filled to the top and compacted again, using the same procedure. the cone is then carefully lifted up and placed upside down next to the concrete stack, which will settle, or "slump" slightly. the difference in level between the top of the cone and the top of the concrete is measured, giving the slump. [0025] the different consistencies possible are summarized in table 1 and

Results: 8

1) Family number: 64382431 (US2018162774A)

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Title: METHOD TO PRODUCE AGGREGATES FROM UNSETTLED CEMENTITIOUS MIXTURES

Abstract: Method to produce aggregates from unsettled cementitious mixtures, comprising the steps of (a) adding at least one pelletizing agent to an unsettled cementitious mixture, (b) mixing constantly the mixture of step (a) in a mixer to produce pellets, (c) discharging the pellets obtained in step (b) and (d) drying the pellets formed in step (c). The pelletizing agent is selected from the group consisting of cellulose, chitosan, collagen, polyacrylamide and co-polymers of polyacrylamide and polyacrylics, polyamines, polyvinylalcohols, polysaccharides, lactic acid, methacrylic acid, methacrylate, hydroxyethyl, ethylene glycol, ethylene oxide, acrylic acid, inorganic flocculants and inorganic coagulants.

Classifications:

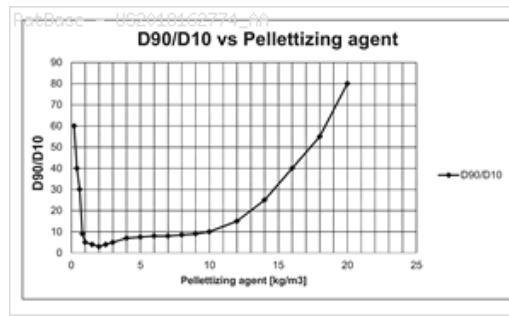
International (IPC 8-9): C04B C04B18/02 C04B24/02 C04B24/12

C04B24/26 C04B24/38 (Advanced/Invention);

C04B (Subclass/Invention)

CPC: C04B24/02 C04B24/121 C04B24/383 C04B24/2641 C04B24/2652

C04B24/2623 C04B18/021



Family:

Publication number	Publication date	Application number	Application date
CO20170011924 A2	20180209	CO20170011924	20171123
EP3303247 A1	20180411	EP20160732466	20160607
IL255373 A0	20171231	IL20160255373	20160607
MX2017014978 A1	20180413	MX20170014978	20160607
PH2017502027 A	20180402	PH20170502027	20171107
US2018162774 AA	20180614	US20160580386	20160607
WO16198087 A1	20161215	WO2015EP62689	20150608
WO16198384 A1	20161215	WO2016EP62868	20160607

Priority:

WO2015EP62689 20150608 WO2016EP62868 20160607

Probable Assignee: CEMEX RES GROUP AG

Assignee(s): (std) CEMEX RES GROUP AG ; GUERINI ALEXANDRE ; VOLPATTI GIOVANNI ; ZAMPINI DAVIDE

Assignee(s): CEMEX RESEARCH GROUP AG

Inventor(s): (std) ALEXANDRE GUERINI ; DAVIDE ZAMPINI ; GIOVANNI VOLPATTI ; GUERINI ALEXANDRE ; VOLPATTI GIOVANNI ; ZAMPINI DAVIDE

Agent(s): CAROLINA MERCEDES DAZA MONTALVO; CARVAJAL Y URQUIJO ISABEL; CARVAJAL Y URQUIJO ISABEL ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

2) Family number: 15600302 (JP2001170692A)

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Title: METHOD FOR TREATING SLUDGE MINGLED WITH CEMENT

Abstract: PROBLEM TO BE SOLVED: To provide a method for treating the sludge settled in the bottoms of cement waste liquid settling tanks in mixing plants or product manufacturing plants existing at various places throughout the country on both and the sludge produced in various construction methods using cement. SOLUTION: This method comprises adding and mixing the crushed matter of waste paper alone to and with the mud mingled with the cement or first adding and mixing the crushed matter of the waste paper to and with the sludge, then adding and mixing a water-soluble high polymer material to and with the mixture or simultaneously adding and mixing the crushed matter of the waste paper and the water-soluble high polymer material.

Classifications:

International (IPC 8-9): C02F11/00 C04B18/02

C04B18/16 (Advanced/Invention);

C02F11/00 C04B18/00 C04B18/04 (Core/Invention)

International (IPC 1-7): C02F11/00

CPC: Y02W30/95 Y02W30/97 C04B18/021 C04B18/16 C04B2103/0053

C04B2111/00724

European: C04B18/02B C04B18/16 M04B103/00P8 M04B111/00T20

PatBase	古紙破砕物 (g)	水溶性高分子 (g)	処理直後 の外見	直後の強度 スラブ値	強度 (kg/cm ²) 7日水中養生
実施例 1	50	1	粒状	0	13.7
実施例 2	70	1	粒状	0	2.8
比較例 1	0	0	泥状	自立せず	10.8

Family:

Publication number	Publication date	Application number	Application date
JP2001170692 A2	20010626	JP20000151018	20000523

Priority:

JP20000151018 20000523

Probable Assignee: TELNITE LTD

Assignee(s): (std) TELNITE LTD

Assignee(s): TERUNAITO KK

Inventor(s): (std) MIURA MASAHIRO ; NISHIMURA HIROYUKI ; UEJIMA KENICHI

3) Family number: 42943024 (JP3147832U)

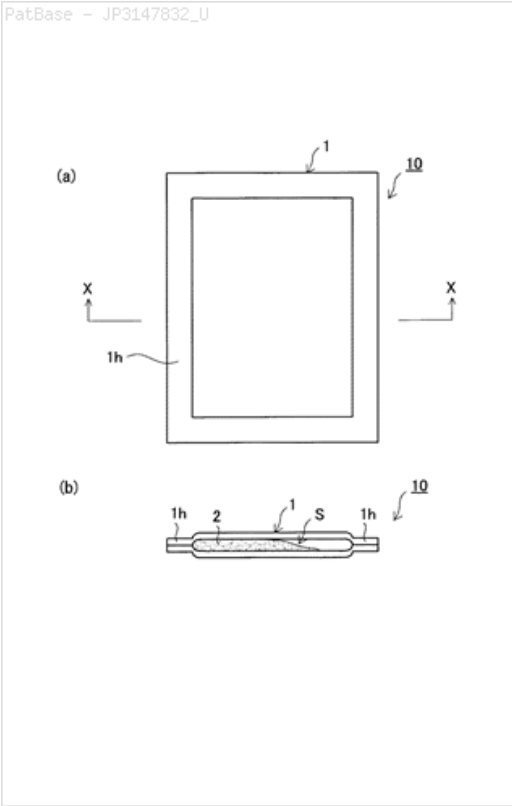
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Title: Computer processing computer processing material and residual body residual (Machine translation)

Abstract: Source: JP3147832U **Machine translation:** The present invention without requiring a space and time, and, remaining it is possible to reduce the effort and expense, the remaining Con processing material that can be recycled residual Con, and, it has been recycled by these remaining Con processing material It will provide a configuration processing body. SOLUTION A residual con processing member 10 to be put into fresh concrete that remains without being used, a package 1 formed in a bag shape with a water feed, a powder form that is sealed inside the package 1 or I; and a granular water-absorbing polymer body 2. The remaining Con processing body by remaining Con processing material 10 is obtained by processing the remaining configuration, the bone material, and includes a mixture layer of cement and water-absorbing polymer material, granulation bone material is covered by a mixture layer It is consisting of a plurality of body..BACKGROUND 1

Classifications:

International (IPC 8-9): B28C7/04 C04B24/24 (Advanced/Invention)



Family:

Publication number	Publication date	Application number	Application date
JP3147832 U	20090122	JP20080007710U	20081104

Priority:

JP20080007710U 20081104

Probable Assignee:

LTD REMICK MARUHACHI

Assignee(s):

LTD REMICK MARUHACHI

4) Family number: 43451851 (JP2009126761A)

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Title: FLOCCULANT FOR READY-MIXED CONCRETE AND METHOD FOR PROCESSING READY-MIXED CONCRETE

Abstract: PROBLEM TO BE SOLVED: To provide a flocculant for a ready-mixed concrete for agglomerating a surplus ready-mixed concrete in a drum and preventing the fluidity of a ready-mixed concrete newly charged into the drum from being lowered and a method for processing a ready-mixed concrete. SOLUTION: The flocculant for a ready-mixed concrete containing a polymer absorber as a dispersant which is selected from the group consisting of polyacrylics, polyvinylalcohols, polysaccharides and proteins and capable of absorbing water in a dispersive medium such as an organic solvent and an aqueous salt solution which does not dissolve the polymer absorber is mixed with a surplus ready-mixed concrete and discharged.

Classifications:

International (IPC 8-9): B28C7/16 C04B24/14 C04B24/26 C04B24/38 (Advanced/Invention); B28C7/00 C04B24/00 (Core/Invention)

CPC: C04B40/0039 C04B2111/00224

European: C04B40/00D4 M04B111/00M35

Family:

Publication number	Publication date	Application number	Application date
JP2009126761 A2	20090611	JP20070305604	20071127

Priority:

JP20070305604 20071127

Probable Assignee: NAGOYA SOC KK

Assignee(s): (std): HORIDEN SUMISE NAMAKON KK ; NAGOYA SOC KK ; SUMITOMO OSAKA CEMENT CO LTD

Inventor(s): (std): KANAMORI SHIGEO ; IYOTA KIYOFUMI ; AKABOSHI YUJI ; ADACHI TADASHI

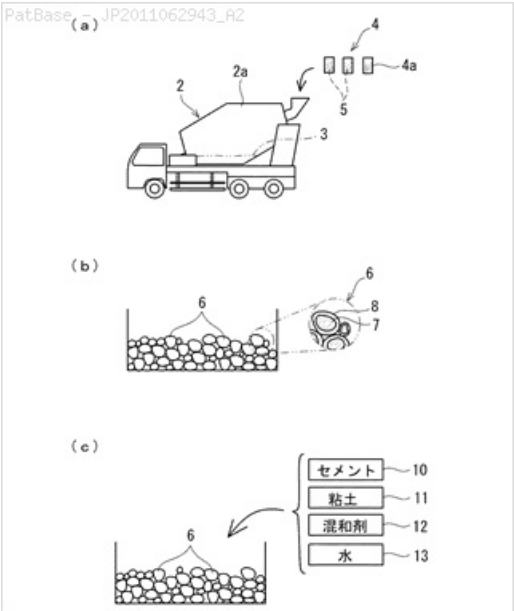
Title: UNUSED READY-MIXED CONCRETE TREATMENT METHOD, AND RECYCLED READY-MIXED CONCRETE

Abstract: PROBLEM TO BE SOLVED: To reuse unused ready-mixed concrete to resources without requiring a space or special equipment to provide inexpensive recycled ready-mixed concrete excellent in workability. SOLUTION: This unused ready-mixed concrete treatment method includes a granulated material forming process for forming a granulated material 6, wherein cement, sand, pebbles, etc. are mixed, by throwing a ready-mixed concrete treatment material 4 having a water absorbable polymer 5 sealed therein in unused ready-mixed concrete 3 and a recycled ready-mixed concrete manufacturing process for manufacturing the recycled ready-mixed concrete by using the formed granulated material 6 as recycled aggregate to knead cement 10, clay 11, an admixture 12 and water 13 with the recycled aggregate.

Classifications:

International (IPC 8-9): B28C7/16 (Advanced/Invention)

CPC: C04B18/021



Family:

Publication number	Publication date	Application number	Application date
JP2011062943 A2	20110331	JP20090216388	20090918

Priority:

JP20090216388 20090918

Probable Assignee:

MATSUMOTO TSUNEO

Assignee(s): (std):

MATSUMOTO TSUNEO

Inventor(s): (std):

MATSUMOTO TSUNEO

Title: METHOD FOR PRODUCING AGGREGATES FROM CEMENT COMPOSITIONS

Abstract: A method for producing aggregates from fresh cement compositions, included concrete and residual concrete is disclosed, comprising the addition of a) flash setting accelerators and b) super-absorbent polymers to fresh unset cement compositions and blending this mixture until granular materials are formed.

Classifications:

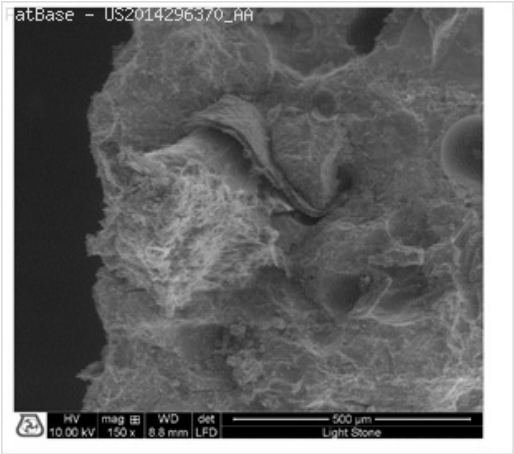
International (IPC 8-9): C02F11/00 C04B14/02 C04B18/02 C04B18/16 C04B22/08 C04B22/14 C04B24/12 C04B24/26 C04B28/02 (Advanced/Invention); C04B (Subclass/Invention)

International (IPC 1-7): C04B18/02

CPC: C04B18/021 Y02W30/95 C04B12/04 C04B2103/0051 C04B18/16 C04B18/02

European: C04B18/02B

US: 1/1 523/122 524/2



Family:

Publication number	Publication date	Application number	Application date
AU2011347648 AA	20120628	AU20110347648	20111216
AU2011347648 BB	20150416	AU20110347648	20111216
BR112013018313 A2	20180918	BR20131118313	20111216
CA2822489 AA	20130620	CA20112822489	20111216
CL2013001828 A1	20140117	CL20130001828	20130620
CL54807 B	20170912	CL20130001828	20130620
CO6761391 A2	20130930	CO20130147282	20130620
DOP2013000146 A	20131115	DO20130000146	20130620
EP2468695 A1	20120627	EP20100196236	20101221
EP2655279 A1	20131030	EP20110815442	20111216
EP2655279 B1	20181114	EP20110815442	20111216
JP2014505006 T2	20140227	JP20130545220T	20111216
JP5813131 B2	20151117	JP20130545220T	20111216
KR101905861 B1	20181008	KR20137015989	20111216
KR20140043042 A	20140408	KR20137015989	20111216
MX2013007165 A1	20140123	MX20130007165	20111216
MX341301 B	20160811	MX20130007165	20111216
PE02152014 A1	20140227	PE20130001446	20111216
RU2013128370 A	20141227	RU20130128370	20111216
SG191293 A1	20130731	SG20130048079	20111216
US2014296370 AA	20141002	US20110996070	20111216
US9216925 BB	20151222	US20110996070	20111216
VN16216 A1	20161226	VN20130001895	20111216
WO12084716 A1	20120628	WO2011EP73070	20111216
ZA201304563 A	20140925	ZA20130004563	20130620

Priority:

EP20100196236 20101221 EP20110815442 20111216 WO2011EP73070 20111216

Probable Assignee: MAPEI SPA

Assignee(s): (std): MAPEI SPA ; FERRARI GIORGIO ; MALTESE CRISTIANO ; SQUINZI MARCO ; SURICO FRANCESCO ; BANFI EMANUELE ; BROCCHI ALBERTO

Assignee(s): MAPEI S P A

Inventor(s): (std): ALBERTO BROCCHI ; BANFI EMANUELE ; BROCCHI ALBERTO ; BROCCHI ALBERT ; CRISTIANO MALTESE ; EMANUELE BANFI ; FERRARI GIORGIO ; SQUINZI MARCO ; SURICO FRANCESCO ; MALTESE CRISTIANO ; GIORGIO FERRARI ; FRANCESCO SURICO ; MARCOS SQUINZI

Inventor(s): MARCO SQUINZI

Agent(s): LORD AND CO; KIRBY EADES GALE BAKER; CLARKE MODET AND CO CHILE; SILVANA MARIA LOPEZ DIAZ; MINOJA FABRIZIO; SILVIA SALVADORI PC; SILVIA

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

7) Family number: 56595221 (JP2014087723A)

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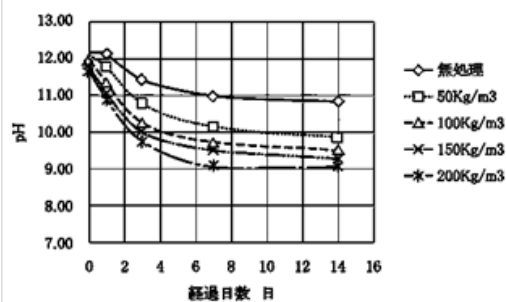
Title: NEUTRALIZATION TREATMENT METHOD FOR READY-MIXED CONCRETE SLUDGE, AND NEUTRALIZATION TREATMENT MATERIAL

Abstract: PROBLEM TO BE SOLVED: To provide a new neutralization treatment method for ready-mixed concrete sludge capable of recycling ready-mixed concrete sludge as a backfill at a low cost, and a neutralization treatment material.SOLUTION: The method comprises: a mixing step of adding ferrous sulfate, a polymer flocculant and inorganic powder to ready-mixed concrete sludge and mixing them; and a curing step of curing the mixture obtained by the mixing step. Preferably, the addition amount of the ferrous sulfate in the mixing step is 100 kg or more per mof the ready-mixed concrete sludge, and curing time in the curing step is 14 days or more.

Classifications:

International (IPC 8-9): C02F11/00 C04B18/16 (Advanced/Invention)

CPC: C04B18/021 C04B2111/00724 Y02W30/92 Y02W30/94

**Family:**

Publication number	Publication date	Application number	Application date
JP2014087723 A2	20140515	JP20120238006	20121029
JP5861611 B2	20160216	JP20120238006	20121029

Priority:

JP20120238006 20121029

Probable Assignee: ECO PROJECT KK**Assignee(s):** (std): ECO PROJECT KK**Inventor(s):** (std): MATSUI AKIRA ; OKABAYASHI SEIJI ; TAKAHASHI MASAO ; TAKAHASHI TOMOHIRO ; TOKITA TAKASHI**8) Family number: 62337389 (US2017320775A)**

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Title: METHOD FOR PRODUCING GRANULATED MATERIALS FROM CEMENT COMPOSITIONS

Abstract: A method for producing aggregates from non-hardened cement compositions, in particular from concrete or residual concrete, which method includes adding a) a water-absorbing agent and b) a crystallization deactivator to a non-hardened cement composition and mixing until a granular material has formed. The method allows unneeded residues of still liquid concrete to be converted into a practical product, which can then be reused to produce new concrete compositions. The invention further relates to a granulated cement material that can be obtained according to a corresponding method, to the use of the granulated cement material as an additive for cement compositions, and to additive combinations for cement compositions, which additive combinations include a water-absorbing agent and a crystallization activator.

Classifications:**International (IPC 8-9):** C04B12/04 C04B18/02 C04B24/04 C04B40/00 (Advanced/Invention);

C04B103/00 C04B103/10 (Advanced/Non-invention)

CPC: C04B40/0039 Y02W30/92 Y02W30/94 Y02W30/96 C04B24/04 C04B12/04 C04B2103/10 C04B2103/0051 C04B18/021**Family:**

Publication number	Publication date	Application number	Application date
AU2015341918 AA	20160512	AU20150341918	20151103
CO20170004755 A2	20171010	CO20170004755	20170511
EP3215474 A1	20170913	EP20150788414	20151103
MX2017005753 A1	20180111	MX20170005753	20151103
US2017320775 AA	20171109	US20150520807	20151103
WO16071298 A1	20160512	WO2015EP75504	20151103

Priority:

EP20140192297 20141107 WO2015EP75504 20151103

Probable Assignee: SIKA TECHNOLOGY AG**Assignee(s):** (std): SIKA TECH AG ; SIKA TECHNOLOGY AG**Inventor(s):** (std): BERGE CHRISTIAN ; BURGE CHRISTIAN ; CHRISTIAN BUERGE ; CHRISTOPH KURZ ; FRANZ WOMBACHER ; KURZ CHRISTOPH ; WOMBACHER FRANZ**Inventor(s):** CHRISTOPHE KURZ**Agent(s):** WRAYS PTY LTD; ANDREA TOBOS MATEUS; SIKA PATENT ATTORNEYS**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN

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SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW