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#	Title	Publication number	1st app. date	Applicant/Assignee	
1.	High-ductility low-shrinkage anti-cracking concrete for bridge deck pavement and preparation method thereof	CN102976697	2012-12-24	WUHAN UNIVERSITY OF TECHNOLOGY*	100 %

The invention belongs to the field of concrete structural materials, and discloses a preparation method for high-ductility low-shrinkage anti-cracking concrete for bridge deck pavement. The high-ductility low-shrinkage anti-cracking concrete for bridge deck pavement is characterized by comprising the following components in proportion: 135-155 kg/m<3> of water, a cementing material, 600-800 kg/m<3> of fine aggregate, 950-1150 kg/m<3> of coarse aggregate, 2.0-3.0 kg/m<3> of shrinkage-reducing ductility-increasing component,10-20 kg/m<3> of internal curing agent, 3.0-5.0 kg/m<3> of water reducing agent and hybrid fiber, wherein the cementing material comprises 320-380 kg/m<3> of cement and 20-40 kg/m<3> of coal ash in proportion; and the hybrid fiber comprises 0.8-1.0 kg/m<3> of organic polymer fiber and 40-50 kg/m<3> of steel fiber in proportion. According to the concrete and the preparation method for the concrete disclosed by the invention, reinforcement meshes on the bridge deck pavement layer can be cancelled.

2.	Ultra-high strength steel fibre reinforced concrete	CZ20120903	2012-12-17	CCARON ESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE FAKULTA STAVEBNÍ CZECH TECHNICAL UNIVERSITY PRAGUE* ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE FAKULTA STAVEBNÍ EXPERIMENTÁLNÍ CENTRUM	100 %

Ultra-high strength steel fibre reinforced concrete with cement matrix contains silica cement, basalt aggregate, steel fibres, admixtures and additives. The dosage of admixtures is given by the results of the porosity tests of basalt aggregate and steel fibres mixture. The admixtures are dosed so that the required workability is reached; according to real application. There is 600 to 1000 kg/m3 of silica cement in cement matrix, basalt aggregate has three sieve sizes, namely 0-4, 4-8 and 8-16, the total dose of basalt aggregate is in the range 1500 and 2000 kg/m3. Ratio of sieve sizes is determined by granulometry and mineralogical composition of particular source of basalt aggregate. Water/cement ratio ranges between 0.16 and 0.25. Two types of steel fibres are evenly distributed in the volume of hardened steel fibre reinforced concrete. The first type of fibres has rectangular section with width ranging between 0.2 and 0.5 mm, height between 1.5 and 2.0 mm and length between 25 and 35 mm with strength between 350 and 450 MPa. The second type of steel fibres has circular section with diameter ranging between 0.08 and 0.12 mm, their length ranges between 8 and 15 mm and their strength is higher than 2000 MPa. The total weight of both types of fibres ranges between 100 and 280 kg/m3.

Specimen	Dimensions (mm)	Weight (kg)	Density (kg/m³)	Load (kN)	Strength (MPa)
C1.1	98.5 100 100	2,885	2928	1440	146.2
C1.2	99 100 100	2,800	2828	1420	143.4
C1.3	99 100 100	2,840	2840	1435	143.0
C1.4	99.5 100 100	2,840	2854	1425	143.2
C1.5	99 100 100	2,850	2879	1460	147.5
C1.6	100 100 100	2,835	2835	1420	142.0
average		2,84	2862,9		144,8

3.	Shock-resistance carbon fiber assorted fiber concrete	CN102206068	2011-04-15	SHANGHAI JIAO TONG UNIVERSITY*	100 %

The invention relates to shock-resistance carbon fiber assorted fiber concrete in the technical field of building engineering. The concrete comprises the following components in percentage by volume: 98.6%-99.5% of concrete, 0.3-1.0% of wire type steel fiber, 0.1-0.3% of carbon fiber and 0.1% of polypropylene fiber. The concrete in the invention has the advantages that not only can the toughness, tensile strength and rupture strength be enhanced, but also the shock resistance, fireproofing and antiknock properties and the like can be obviously improved.

4.	Cement-based composite material with high-temperature resistance and superhigh performance and preparation method thereof	CN102092996	2010-11-30	NANJING UNIVERSITY OF SCIENCE & TECHNOLOGY*	100 %

The invention discloses a cement-based composite material with high-temperature resistance and superhigh performance and a preparation method thereof. The cement-based composite material comprises the raw materials of a gelled material, an aggregate, fibers, a water reducing agent and water, wherein the gelled material is a mixture of cement and active mineral admixture, the aggregate is yellow sand or a mixture of yellow sand and pebbles, and the fibers are organic fibers or mixtures of organic fibers and metal fibers. The cement-based composite material is produced through improvement on the basis of common concrete manufacturing, has the properties of superhigh mechanical property and high-temperature resistance, is applicable to high-temperature resistant engineering structures, and is favorable for preventing the collapse and the destruction of the construction structures in a fire disaster.

5.	Composite concrete for floor slabs and rafts	LV14122	2009-10-26	PRIMATE AES PRIMEKSS NORTH AMERICA* PRIMETEH PRIMETEH A PRIMETEH A C	100 %

The invention is in the field of construction and can be used for constructing industrial floors and foundation slabs. The offered composite concrete mixture, comprising cement, sand-stone mixture, water, plasticizer, nano-size pozzolans, shrinkage reducing additive, and steel and/or synthetic fibers, allows the construction of thin, completely jointless without limitation of area, large composite concrete slabs, with no observable shrinkage cracks or curling.

6.	Fire-resistant high performance concrete composition	WO200158826	2000-02-11	BOUYGUES TRAVAUX PUBLICS* BUIG TRAVO PJUBLIK HOLCIM TECHNOLOGY* LAFARGE RAFARUJU RHODIA CHIMIE RODIA Â· SPOT FRANCE COUNTRY 9 2 4 0 8 COOL BOWBO KE Â· PAUL Â· DUMEUME 2 5 VOIGE TREVIA PUBLICUS FRANCE REPUBLIC 7 8 1 9 0 SAINT QUENTIN AVENUE EUGENE FREYCINET 1	100 %

The invention concerns the use of organic fibres having a melting point lower than 300 DEG C, an average length l more than 1 mm and a diameter O not more than 200 mu m, in ultra high performance concrete for improving the concrete fire resistance, the amount of organic fibres being such that their volume ranges between 0.1 and 3 % of the concrete volume after setting and the concrete having a compressive strength at 28 days of at least 120 Mpa, a bending strength of at least 20 Mpa, and a spread value in non-hardened state of at least 150 mm, said values being for a concrete preserved at 20 DEG C, said concrete consisting of a particularly hardened cement matrix wherein metal fibres are dispersed.

7.	Reinforcing concrete structure and method using hybrid fiber composite	KR100940550	2009-06-08	CARECON* ORE CONSTRUCTION*	69 %

PURPOSE: A reinforcing concrete structure which improves safety of a bridge and a method using a hybrid fiber composite are provided to increase the service life and the service life of the bridge by preventing the corrosion of the concrete structure. CONSTITUTION: A plurality of pillars(200) is established on the main surface of a concrete structure(100). The pillar is fixed on the concrete structure using a main anchor. A hybrid fiber reinforcing material(300) is established between the pillars. A mortar(10) is charged between the concrete structure and the hybrid fiber reinforcing material. The hybrid fiber reinforcing material comprises a first reinforcement unit and a second reinforcement unit. The second reinforcement unit is woven in a row in the direction meeting at right angle with the first reinforcement.

8.	Advanced fiber reinforced concrete mix designs and admixtures systems	WO2016198603	2015-06-11	CEMEX RESEARCH*	68 %

A concrete mix comprising sand, fine aggregates, binder, fibers, and various admixtures, having a consistency from S2 to SF3, a compressive strength in the range of 30-80 MPa and a ductility represented by fc, ffl, fR1 and fR3 values, wherein the concrete mix contains at least 390 Kg of binder, the concrete mix comprises a paste volume of 300- 600 liters, the concrete mix contains at least two systems of fibers and a general admixture system that is composed of at least 2 sub-admixture systems.

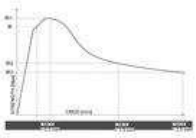

Fig. 1