The invention relates to a cement-polymer composite mixture composition, to a process for obtaining this mixture, to a process for application of cement-polymer composite mixture composition and the uses of this composition to the roads infrastructure and similar applications. The composition according to the invention is suitable for the construction of roads and highways, roads, parking, bike lanes, sidewalks, curbs and gutters, decorative paving, pools, water tanks, roofs, gutters and ditches to take over water, management of water channels rainwater or sewage, pit access, etc.

In the construction field of roads and highways are known a variety of compositions for asphalt and paved, but they are based on bitumen and polymers. New in the field, does it began to appear complex materials based on cement, various additives and water.

From the prior art, from European patent application **CN 101412609A** is known as building material and based cement-polymer. The document presents a construction material composed of polymer cement used for concrete reinforcement and restoration of buildings, including the following materials in parts by weight: 360-400 parts Portland cement, 40...50 parts of active mixture, 2 to 4 parts water to reduce the active agent, 550...600 parts of quartz sand, 1.50...8.5 parts of acrylic acid modified rosin resin and from 72.5 to 88.0 parts of acrylic ester emulsion. Polymer cement mixture benefit of a good resistance to cracking, resistance to compression and high tensile strength, good resistance to the test fixture with a cement block, a wide range of great fluidity, can adapt to different operating conditions and is mainly applied to the consolidation and restoration of concrete structures.

Another material described in the patent **KR 100846159 (B1)** consists of a mortar composition of water-soluble polymer developed to improve the tightness and frost resistance and to increase strength and improve the structure of hardened cement pores and to suppress the fines cracks. Method for preparing a cement-polymer composites soluble in water and used to repair a section of a surface of concrete structure, comprising a step of mixing the cement weight parts from 39.58 to 42.12, from 41.60 to 45.12 weight parts of quartz sand, 13 0.52 to 14, 39 parts by weight water-soluble polymer, and from 1.78 to 1.89 parts by weight of silica. Water-soluble polymer is obtained by mixing 44.89 parts by weight of solids substances with SB latex 55.11 parts by mass of water.

The Romanian patent application **a2010-00 286** it is known a cement-polymer mixture a composition and a process for obtaining it, and a process for applying the composition for paving roads and highways. Composition consists of Portland Cement 14.5...16.5%, 5.50...7.50% mountain stream water, 0.5...1.93% polymer mixture in a ratio of 1: 3.9...1 : 8, preferably at 1: 3.9...1: 4.1 reported to water, 0.2...0.25% fly ash, 0.1...0.15% carbon black coarse, 0.1...0.15% zinc oxide and 75...80% mineral units, 30...32% of sand or gravel of grain up to 4mm, 11.32%...13.32% granite of 4...8mm grain size, 33...35% granite grit of 8...16 mm, the percentages being in volume.

Polymer mixture composition specified in the above application submitted, consists of 0.2...0.25% styrene-acrylic copolymer emulsion of white color

with density of 1.06 g/cm3, solid content of 59...61%, with Brookfield Viscosity RVT 5/20 of 2000...6000, pH of 8.5...9.5, with excellent adhesion on substrates, 2.9...3.1% polymethyl vinyl plasticizer and extender additive and 0.5 ... 0,55% copolymer emulsion based of carboxy methyl cellulose derivatives and the super plasticizer admixture with a density at 20°C of 1.21...1.20 kg/l solid content of 42.4...44.4%, pH of 4.5...8.0 at 20°C and Brookfield viscosity at 23°C of 100...170mPas, the mixture being added to the polymer composition as a solution in water in a ratio of 1: 3.9...1 : 8, preferably 1: 3.9...1:4,1 and has a hardness over 6% on Los Angeles scale.

The process for obtaining the composition of the cement-polymer mixture for paved roads and highways described in the application specified that includes several phases that consist of a mix for 1-3 minutes at a temperature of 10...15°C, 15.25% Portland cement with 75% mineral aggregate, 0.1% carbon black and 60...70% of the total quantity of water, it is added 0.2% fly ash, then add the remaining water in the form of a solution containing the polymer mixture done separately, before, by mixing and stirring a time for 15 min in a ratio of 1: 3.9...1: 8, preferably 1: 3.9...1: 4.1 reported to water, continue stirring for another 10...15 minutes.

The process of applying a cement-polymer blend compositions for paved roads and highways, as shown in the application specified in the prior art, consists in that, it is disassembled the existing taxiways then at temperatures of -10...+40°C applying a smoothing layer of 20...24 cm granite of 8...16 mm grain mixed with 10% fly ash, is a cylinder compacts with 8-16 ton compactor vibrating roller and wetting, fit shuttering on the sides of the

paved road (for a road with one lane) or casings are mounted on the axis road (for double lane), it is applied the cement-polymer mixture for paved roads as defined in claim 1, in thickness of 10-11cm, with a distributor for concrete, it is allow to stand for 24 hours, then applied the final layer of cement-polymer composition by spraying with an aqueous dilution of 1: 8, when it reach a thickness of 30...34 cm total smoothing with a foundation layer of thickness of 20...24 cm and 10...11cm layer of running, still leaving the material for a relaxing time of 7 hours until the acceptance of traffic on paved road.

Cement-polymer blend composition, described in the present invention, the process of obtaining it, its application process and its use specified in the Romanian patent application **a2010-00286,** have been improved by this patent application, which contains as objects a cement-polymer blend composition, a process for its application processes cement-polymer blend composition, and the uses of cement-polymer blend composition.

Cement-polymer blend composition described in the present invention is part of a new type of materials which find widespread use in road construction industry, such as roads, national and infrastructure highways, secondary roads, county roads, road pavements, platforms and parking spaces, parking strip, wrapping bands, shoulders, agricultural or forestry roads, bicycle paths, sidewalks, curbs and gutters, walkways, building, coastal zone stabilization and envelopment, consolidation, stabilization and envelopment dams, decorative paving, pools, water tanks, roofs, gutters and ditches taking water channels rainwater drain or sewage, pit access, etc.

The composition according to the invention is used with good results in these areas because it has increased strength characteristics in use, at lower cost than the materials known to date.

The problem solved by the present invention is to achieve a composition of cement-polymer mixture by associating the components and the ratio of these components such as these lead to obtaining a product with after application works would result in improved characteristics compared to existing solutions, and consist of: lack of expansion joints, the tread color from white, gray, yellow, green, red, gray to black, the surface roughness can be controlled during casting, which is adapted to the degree of slope and the need for adherence ; composition does not disintegrate in the environment, produces no emissions of particulate, gas and other toxic substances are even organic, is not combustible composition applied on the roads, is a real barrier in wooded areas in alpine areas at risk of fire (lightning or fire caused by negligence), it represent 60% of the cost estimate for construction of a section with recipes traditional asphalt or concrete road, it is with a life expectancy of the building at 5 to 10 to 40 years depending on weather conditions.

The composition of cement-polymer composite mixture for road infrastructure, according to the invention is based on Portland cement, aggregates, additives and water, and consists of Portland Cement 14.5...16.5%, 0.5...3.5% polymer mixture, 0.2...0.25% fly ash, 1...1.15% carbon black roughly, 1...1.15% a coloring agent, and 70...80% mineral units consisting of 30...32% sand of grit or gravel to 4 mm, 11.32...13.32%

grained granite of 4...8 mm, 33...35% grained granite of 8...16 mm, up to 25% ceramic fibers, textile fibers and/or recycled textile fibers, as volumetric percentages.

The composition of the cement-polymer composite mixture made for a mountain road, of dark color, consists of 14...16.5% Portland cement, 0.5...3% mixture of polymers, 0.2...0.25% fly ash, 1...1.15% carbon black coarse, 70...80% mineral aggregates, up to 25% ceramic fibers, textile fibers and / or recycled textile fibers, as volumetric percentages.

The composition of the cement-polymer composite mixture made for a flat road, of light color, consists of Portland cement 14...16.5%, 0.5...3% mixture of polymers, 1...1.15% zinc oxide, 75...80% mineral aggregates, and up to 25% ceramic fibers, textile fibers and/or textile recycled fibers, as volumetric percentages.

The mixture form an emulsion of polymer and consists of 1...3% precursor 1 consisting of sodium formate and polyethylene terephthalate in a ratio of 1:1, mixed with 0.5...1.5% polyvinyl alcohol, 0,2...0.5% precursor 2 consisting of acrylic copolymer and polyvinyl acetate in a ratio of 1:1, 0.05...0.2% precursor 3, consisting of carboxy methylcellulose and acrylic copolymer in a ratio of 3:1, and 80...96% precursor 4 consisting of river water.

The sand used up to 4mm grain is derived from granite aggregates with a hardness over 6% Los Angeles scale, and the aggregates with dimensions of 4 ... 8mm and 8...16 mm are derived from granite with compressive strength of 185 MPa, elasticity of 34 000 MPa, tensile strength after freeze-thaw cycle of 22 MPa.

The process for obtaining a cement-polymer composite composition mixture, for a dark road, according to the invention consists in that it is realized a mix for 1-5 minutes at a temperature of -4°C...+60°C, preferably 10...15°C, 15.25% Portland cement with 70% mineral aggregate, 1% carbon black or other coloring agent, plus 0.2% fly ash, a mixture of ceramic fibers textiles, and add the mixture of polymers previously done separately by mixing and stirring for 15 min, and defined in claim 4, continue mixing for another 10...15 minutes.

The process of achieving a cement-polymer composite composition mixture, for a light road, suitable for thermal conditions caused by global warming, is that it is realized a mix for 1-5 minutes at a temperature of -4°C...+60°C, preferably 10..15°C, 15.25% Portland cement with 70% mineral aggregates, 1% zinc oxide or other coloring agent, is added 0.2% fly ash, then is added the polymer emulsion containing the mixture previously done separately by mixing and stirring for 15 min, and defined in claim 4, the ceramic or textile fibers, mixing continued for another 10...15 minutes.

The process for application of a composition of cement-polymer composite mixture on road infrastructure consists of applying on a preexisting layer of 20...40 cm of granite mixed with 10% fly ash, which is compacted with a roller compactor of 8-16 ton with a compactor for vibrating and wetting, on which is mounted on the sides of the shuttering of paved road (for a road with one lane) or casings are mounted on the axis road (for double lanes), applied continuous cement-polymer mixture as defined in claim 1, in a thickness of 10-11cm, with a distributor for concrete, vibration occurs in the depth of the mixture, the surface is vibrating with a vibrant beam mixture to define the running surface, leave to rest up to 24 hours for drying and after drying 7 hours smoothing is applied a final layer of polymer, through spraying, it reach a thickness of 10...11cm layer of running, while still leaving seating material 7...24 hours to accept traffic on paved road.

The use of the composition of the cement-polymer composite blend is suitable for construction of road infrastructure, highways, roads and infrastructure, highways, secondary roads, county roads, road pavements, platforms and parking spaces, parking strip, wrapping bands, verges, agricultural or forestry roads, bicycle paths, sidewalks, curbs and gutters, walkways, building, coastal zone stabilization and envelopment, consolidation, stabilization and envelopment dams, decorative paving, pools, water tanks, roofs, gutters and ditches acquisition of water channels rainwater drain or sewage, pit access, etc..

The benefits of applying the composition according to the invention are that:
- the roads that are used do not require expansion joints,

- the color of the tread can be controlled from white, gray, gray to black, green, yellow, red.
- the surface roughness can be controlled in the casting phase, which is adapted to the degree of slope and the necessary adhesion.
- regarding the ecological point of view, the built roads and the composition obtained according to the invention of the patent application process, do not disintegrate in the environment, produces no emissions of particulate, gas and other toxic substances.
- no fuel, representing a real barrier in wooded areas of the alpine areas of fire risk (fire caused by lightning or negligence).
- in terms of quality - price ratio, the lifetime of the building varies from 10 to 40 years depending on weather conditions, operating conditions and maintenance, the manufacturer warranty varies from 5-10 years depending the aforementioned elements, the price is 60% of estimated requirements for the construction of a section with traditional recipes, asphalt or concrete road.

- the speed of execution is 5 km/day for a road surface width 8 meters with thickness of 10cm, on a pre-existing foundation of 25-40cm depending on the geotechnical indicators.

In the construction of roads and highways has great significance for the association of components that make up the composition of the roads or highways. One factor influencing the quality of concrete after casting while it is the contraction, which means instability volume over time, this property of concrete to shrink and crack during drying is its very low for quality concretes and cements, as is the present case.

Materials which fall generally in the concrete composition influence the contraction as follows:

- **the cement:** mineralogical nature gives the greatest contraction, with increases the amount of cement in the composition increases the mass contraction formed, the cement grain also influences the contraction so that the increase of gel component involves an increase in shrinkage of cement paste formed

- **the aggregates:** the increase in aggregate supply reduces the contraction of the nature composition formed; the hardness and size distribution of aggregates influence positive their mass; grain shape as close to the ball is the best, and those obtained by crushing rock with reduced porosity and high strength; porosity and water absorption of the total aggregate and large aggregate also have influence, so that large aggregates must have a maximum absorption of 1% in 24 hours and come in compact and hard rock;
- **the sand:** it must have a high hardness, therefore contain a high amount of SiO2 and be close to the cement particle size, as dimension

- **the water:** increasing the water quantity leads to increased shrinkage of concrete, because it increases the number of pores in the concrete, and water is preferred with large amounts of Ca ions to positively influence the additives, it provides the cement and concrete workability, cohesion and hydration of cement; the water in composition is found in free form and absorbed by the granules aggregate open porosity;

- **the environmental conditions:** for preparation also influence the quality of material obtained

- **the additives and super plasticizers** : they are absorbed in the presence of Ca+2 ions, from minerals, which is not true in the presence of ions of Li +, Na+ and K + when mixing in cement, fine aggregates and water flock; main property is their fluidization for cement or concrete can be easily cast without segregation, with a small amount of air entrained in the material, the use of super plasticizers involve a reduction in the amount of water, an increase of resistance for reinforced material; super plasticizers are polymers that can interact physically and chemically with cement and sand particles and interact through several mechanisms: a) by reducing the forces of attraction between particles with different tasks deflocking inducing rejection forces between particles due to negative charges conferred to super plasticizer absorbed particles b) absorption of plasticizer molecules through Van der Waals forces and electrostatic forces on particles, c) steric obstruction between the polymer macromolecules absorbed and neighboring particles, the interaction is given by reacting chemically with the more reactive complex compounds in the composition of cement and can substantially reduce the rate of surface hydration, these interactions have practical implications, because it can prolong and grout intake can significantly reduce the mechanical properties, effect retardation of plasticizers is directly proportional to the amount of super plasticizer, an addition of super plasticizer is absorbed in other mineral phases which reduce the surface reaction rate;

- **the ash** present in the mixture increases the homogeneity; the surfaces results in more aspect after de-molding increases the impermeability of concrete, improve fire resistance and thermal shock, also slightly increase the rolling resistance,

- **the other additives** can be mineral nature and place for appearance, color, etc..

Analyzing the components presented it is concluded that the optimal dosage is necessary in order to achieve the material to provide maximum performance at minimum prices. We have analyzed the components and their association from physical and mechanical tests and concluded that those listed below are appropriate uses specified herein.

The components selected for the composition of material according to the invention were tested in ICECON and were established as optimal following components:

- 42 Portland cement
- sand or gravel sort up to 4mm
- 4-8mm granite
- 8-16mm granite
- mountain stream water
- super plasticizer polymer mixture, bonding admixture, retarders
- Carbon Black
- coloring agent, such as zinc oxide or other suitable coloring agents
- Ceramic fibers, textile fibers, recycled and / or textiles.

Sort selected granite sort up to 4 mm, 4-8 mm, 8-16 mm for this composition has the following characteristics:

- Compressive strength: 185MPa
- Elasticity: 34,000MPa
- gellivity coefficient: 0.01%
- Coefficient of softening by cycle freeze - thaw: 12% (25-50 cycles)
- Coefficient of softening after saturation: 9%
- Tensile strength after freeze - thaw tensile: 22MPa
- Declivity gradient: 9%
- Thickness of Use: 10cm

The following are considered:

Precursor 1, taken in a quantity of 1...3.5% - consisting of mixture of sodium formate and polyethylene terephthalate in a ratio of 1:1, with 0.5...1.5% polyvinyl alcohol

Precursor 2, taken in amount of 0.2...0.5% - consisting of a mixture of polyvinyl acetate and acrylic copolymer in a ratio of 1: 1, acrylic polymer emulsion characteristics presented with:

-Appearance - milky white liquid
- Solids% ± 1-60
- Brookfield Viscosity RVT 5 / 20 - 2 000 – 6000
- pH 8.5 to 9.5

- Density (g/cm3) ± 0.01 to 1.06

- Tg (° C) 9

- excellent adhesion on various substrates

Precursor 3, taken in a quantity of 0.05 ... 0.2% - consisting of carboxy methyl cellulose and an acrylic copolymer emulsion in a ratio of 3: 1, with the characteristics of carboxy methyl cellulose derivative emulsion as follow:

-Density = 1.210 kg / l at 20 ° C

- solid matter content: 43.8%

- PH = 5.8 to 20 ° C

- Viscosity = 170 mPas

- Water Content 60%

Precursor 4, taken in quantities of 80 ... 96% - consisting of the river water, A ceramic fiber, textile fibers, recycled and / or textile fibers up to 25%.

It further provides an embodiment of the composition according to the invention and its application on the paved road.

To achieve a quantity of 1m3 of cement composition of mixed polymer composite the following quantities are needed: 2185kg materials and 154liters of solid polymer. The solids weighed consist of: Portland cement 360 kg/m3, 22 kg/m3 l/m3 polymeric mixture, fly ash 4.72, 2.36 kg/ m3 carbon black coarse, 730 kg/m3 sand or gravel with granulation up to 4 mm,

and 292 kg/m3 Granite of 4 ... 8mm grain, 803 kg/m3 granite grain of 8...16 mm. Polymer mixture consists of 0.2 l/m3 precursor 2, 3l/m3 precursor 1, 0.5 l/m3 precursor 3 and is added to the polymer composition as a solution in water. All is stirred for 10-15 min at an ambient temperature, Portland cement with mineral aggregates with carbon black and ash are added all while stirring, then add the solution containing the polymer mixture, and optionally, 150kg fiber textile recycled, mixing continued for another 10 minutes.

The composition thus obtained is used for road infrastructure construction, after existing taxiways removed, leaving a foundation of 25-40cm, which is a layer of granite grit smoothing of 8...16 mm, mixed with 10% fly ash, it compacts with a cylinder with vibrating roller of 8-16 tone and wetting, install shutter on the sides of the paved road, for a road with one lane or casings are mounted on the shaft of the road for two lanes of traffic, shall apply continuous mixing the cement-polymer composite for paved roads as defined above, for the thickness of 10cm, using a distributor for concrete, allow to relax for 7 hours for drying, then apply the final layer of cement-polymer composition by spraying with polymer solution in aqueous dilution of 1: 8, when reaching a total thickness of 20cm, leaving a rest for 7...24 hours to accept traffic on paved road.

The speed of execution of such a road is 5km/day for a road surface width of 8meters and 10cm thick, on a pre-existing foundation of 25-40cm depending on the geotechnical indicators. It works at temperatures of -10°C to +40° C or up to 60°C.

The composition made according to the invention was tested and performed on samples with physico-mechanical tests according to industry standards, such as:

-density 1597-2200 kg/m3

-slip-slip-resistance, USVR, 67.5 ± 3.1

-determination of compression strength (aggregate stabilized with cement, fly ash and polymer): 5.8 to 15.8 N / mm

-grain - percentage of refusal - 89.7%

- cumulative percentage of sifting 10.3 %

Attempts have been made compared to a control sample of aggregate stabilized with cement, fly ash and polymer, on which were made:

-determination of volatile substances - Polymer Witness: 61.1 g;

-determination of density - Polymer Witness: 1.054 g / ml;

-Flow-time determination - Polymer Witness: 58 seconds;

-mechanical characterization of polymer films –Polymer Witness: Field: 21.18 / mm, maximum force: 23.03 N, tensile strength: 1.09 N / mm;

-pH-determination - Polymer Witness: 7.5;

-determination of drying time and thickness of the film - Polymer Witness (cf. Table 1):

The values obtained for laboratory testing of cement-polymer mixture composition were in the range of ± 5% measured by the control samples

Table 1

Specific features	U.M.	Values		
		1	2	3
Temperature	°C	25	26	22
Humidity	%	49	77	57
Drying Time	min.	103	84	98
Film Thickness	min.	0,55	0,23	0,45

Laboratory test reports for concrete-polymer mixture composition without adding water, made according to the invention, are given in Table 2 below:

Table 2

Nr. crt.	Characteristic	Test Method	U.M.	Value	
				Baseline	Performance obtained
0	1	2	3	4	5
The laboratory specimens cast					
1	Density	SR EN 12390/7:2005	Kg/m^3	2200-2500	2373
2	Compressive strength at 24 hours	SR EN 12390/3:2002	MPa	min.7,0	10,0
3	Compressive strength at 14 days	SR EN 12390/3:2002	MPa	min.30	40,0
4	Compressive strength at 28 days	SR EN 12390/3:2002	MPa	min.40	44,5
In samples from the field to a year of casting					
5	Determination of wear resistance	SR EN 1339:2004	$mm^3/5000mm^2$	max.25000	20000
6	Loss of	STAS	%	max.10%	8,3

	resistance after 21 cycles of saturation and drying	10473/2-86			
7	Loss of resistance after 21 freeze-thaw cycles	STAS 10473/2-86	%	max.20%	15,5
8	Loss of resistance after 21 cycles of thermal shock	STAS 10473/2-86	%	max.10%	5,9
9	Determination of compressive strength on core	SR EN 12504/1:2004	N/mm^2	-	52,6
The natural aggregate (ballast)					
10	Part leachate	STAS 4606:80	%	max.1	0,5
11	Granulosity	SR EN 933/1:2001	%	Curve size counts	Conform RI-10.10.336

12	Sand Equivalent	STAS 933/8:2001	%	min.85	90
13	Los Angeles crushing resistance	SR EN 1097/2:2002	%	max.15	10
14	Micro Deval Abrasion resistance	SR EN 1097/1:2002	%	max.15	8
The cement-polymer composite bonded					
15	Compressive strength at 7 days	SR EN 12504/1:2004	N/mm^2	-	30,1
16	Compressive strength at 28 days	SR EN 12504/1:2004	MPa	-	50,2
17	Setting Time -initial End-	SR EN 196/3:2006	s s	- -	7800 13200
The polymer					
18	Aspect	Visual	-	-	Homogeneous milky

19	Density	SR EN 2811/1:2002	g/ml	-	1,213
20	Time flow	SR EN ISO 2431:1997	s	-	24,31
21	Polymerization time	-			
	- precursor 1		min.	-	45
	- precursor 2		min	-	90
	- precursor 3		min	-	170
	- polymer solution		min	-	177

CLAIMS

1. Composition of cement-polymer composite mixture for road infrastructure, based on Portland cement, aggregates, additives and water, **characterized in that** it consists of Portland Cement 14.5...16.5%, 0.5...3.5% polymer mixture, 0.2...0.25% fly ash, 1...1.15% carbon black coarse, 1...1.15% a coloring agent and 70...80% mineral aggregates consisting of 30...32% sand granulation pit up to 4mm, 11.32...13.32% granite grit of 4...8mm, 33...35% granite grit of 8...16 mm, up to 25% ceramic fibers, textile recycled fibers and / or textile fibers, the percentages being volumetric.

2. Composition of cement-polymer composite mixture, according to claim 1, **characterized in that** for a mountain road of dark color, the composition consists of Portland cement 14...16.5%, 0.5...3% mixture of polymers, 0,2...0.25% fly ash, 1...1.15% carbon black coarse, 70...80% mineral aggregates, up to 25% ceramic fibers, textile recycled fibers and / or textile fibers, as volumetric percentages.

3. Composition of cement-polymer composite mixture, according to claim 1, **characterized in that** for a plain road, of light color, the composition consists of Portland cement 14...16.5%, 0.5...3% mixture of polymers, 1...1.15% zinc oxide, 75...80% mineral aggregates, up to 25% ceramic fibers, textile recycled fibers and/or textile fibers, as volumetric percentages.

4. Composition according to claim 1, **characterized in that** the polymer mixture is in the form of emulsion and consists of a 1...3% precursor 1 consisting of sodium formate and polyethylene terephthalate in a ratio

of 1:1, mixed with 0.5...1.5% polyvinyl alcohol, 0.2...0.5% precursor 2 consisting of acrylic copolymer and polyvinyl acetate in a ratio of 1:1, 0.05...0.2% precursor 3, consisting of carboxy methyl cellulose, and acrylic copolymer in a ratio of 3:1, 80...96% precursor 4 consisting of river water.

5. Composition according to claim 1, **characterized in that** the sand used with up to 4 mm grain is derived from granite aggregates with a hardness over 6% Los Angeles scale, and aggregates with dimensions of 4...8mm, 8...16 mm from granite compressive strength of 185MPa, elasticity of 34,000MPa tensile strength after freeze-thaw cycle of 22MPa.

6. Process for obtaining a composition of cement-polymer composite mixture, **characterized in that** for a dark road, they are stirred for 1-5 minutes at a temperature of -4°C...+60°C, preferably 10...+15°C, 15.25% Portland cement with 70% mineral aggregates, 1% carbon black or another dark coloring agent, plus 0.2% fly ash, a mixture of ceramic fibers or textiles, then added the mixture of polymers previously done separately by mixing and stirring for 15min, and defined in claim 4, continued mixing for another 10...15 minutes.

7. Process for obtaining a composition of cement-polymer composite mixture, according to claim 6, **characterized in that** for a light road, suitable to the thermal conditions caused by global warming, they are mixed for 1-5 minutes at a temperature of -4°C...+60°C, preferably 10...15°C, 15.25% Portland cement with 70%mineral aggregates, 1% zinc oxide or other pale coloring agent, is added 0.2 % fly ash, then is added the polymer emulsion containing the mixture previously done

separately by mixing and stirring for 15 min, and defined in claim 4, ceramics or textile fibers, mixing continued for another 10...15 minutes.

8. Process of application of a composition of cement-polymer composite mixture for road infrastructure, **characterized in that** on a preexisting layer of 20...40cm of granite mixed with 10% fly ash, which is compacted with a roller compactor of 8-16 tons vibrating and wetting, on which is mounted the casing on the paved road sides (for a road with one lane) or mounted on the shaft road casings (for two lanes of traffic), apply a continuous cement-polymer mixture as defined in claim 1, with the thickness of 10 to 11cm, using a distributor for concrete, vibration occurs in the depth of the mixture, the surface is vibrating with a vibrant mixture beam to define the running surface, leave it to rest up to 24 hours for drying and after drying, apply 7 hours for smoothing the final layer of polymer, through spraying, when it reach a thickness of 10...11cm layer of running, while still leaving the material to relax a time of 7... 24 hours to accept traffic on paved road.

9. Use of the composition of the cement-polymer composite mixture for construction of road infrastructure, highways, roads and infrastructure, highways, secondary roads, county roads, road pavements, platforms and parking spaces, parking strip, wrapping bands, verges, road forestry roads or agricultural operations, bicycle paths, sidewalks, curbs and gutters, walkways, building, coastal zone stabilization and envelopment, consolidation, stabilization and envelopment dams, decorative paving, pools, water tanks, roofs, gutters and ditches for water reception channels rainwater drain or sewage, pit access, etc..

COMPOSITION OF CEMENT-POLYMERS COMPOSITE MIXTURE, PROCESS FOR OBTAINING THIS COMPOSITION, PROCESS FOR APPLICATION THE COMPOSITION OF CEMENT - POLYMERS COMPOSITE MIXTURE AND USES OF THE COMPOSITION OF CEMENT - POLYMERS COMPOSITE MIXTURE

Abstract

The invention relates to a composition of cement-polymer composite mixture to a process of developing and implementing a process of composition and the composition uses cement-polymer composites for construction of road infrastructure.

Composition and process for obtaining it, and the application process according to the invention lead to the development of roads with enhanced solutions from existing knowledge and benefits consisting of: lack of expansion joints, the tread color from white - gray - gray to black, the road roughness can be controlled in the casting phase, which is adapted to the degree of slope and the necessary adhesion, the composition does not disintegrate in the environment, produces no emissions of particulate, gas and other toxic substances are even organic, not fuel Composition applied on the roads is a real barrier in wooded areas of the alpine areas of fire risk (fire caused by lightning or negligence); price represents 60% of estimated requirements for the construction of a section with recipes traditional asphalt or concrete road with lifetime of the building at 5 to 10 to 40 years depending on weather conditions.