

WHITE DRY-MIXED MORTAR AND APPLICATION METHOD THEREOF

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of building decoration materials, and in particular to a white dry-mixed mortar and a construction method thereof.

BACKGROUND

[0002] Building materials for home decoration is required to meet the requirements of energy conservation, environmental protection, beauty, sturdiness and durability, simple process and high construction efficiency. At present, a process of wall decoration construction comprises the steps of: 1) repairing a wall; 2) filling putty; 3) polishing; 4) repairing; 5) applying primer; and 6) applying top paint. It can be seen that the traditional construction process is relatively complicated, the construction period is 1-2 weeks, and the construction materials need to be added with glue, emulsion, and additives and contain harmful gases such as formaldehyde, which cannot meet environmental protection requirements.

SUMMARY OF THE INVENTION

[0003] An objective of the present disclosure is to overcome the drawbacks of the prior art and to provide a white dry-mixed mortar and a application method thereof.

[0004] In order to achieve the above objective, a technical solution of the present disclosure includes a white dry-mixed mortar, including the following components by weight percentage: 15-25% of calcite with a particle size of 0.6-1 mm, 20-30% of calcite with a particle size of 0.2-0.6 mm, 25-35% of calcite with a particle size ≤ 0.2 mm, and 20-30% of white cement with whiteness ≥ 88 .

[0005] The white dry-mixed mortar of the present disclosure is added with the calcite of different particle sizes. The calcite with the particle size of 0.6-1 mm can reduce a porosity of a white dry-mixed mortar. The calcite with the particle size ≤ 0.2 mm can increase smoothness and consistency of the white dry-mixed mortar. The white cement can increase strength and impermeability of the white dry-mixed mortar. The calcite with the particle size of 0.2-0.6 mm is used to coordinate the porosity and smoothness of the white dry-mixed mortar. The mortar obtained from the above formula is used for wall decoration, and an obtained decorative surface has the advantages of high strength (28-day compressive strength ≥ 15 MPa) and good impermeability (impermeability ≥ 1.5 MPa). The raw materials of white calcite are easily available, the manufacturing process is simple and dose not require an oven drying procedure, and the raw materials are mixed with the white cement to form the dry-mixed mortar, which has

high whiteness, and is very convenient for storage, transportation and use. The mortar can be directly mixed with water for application without adding any organic solvents or additives, which does not contain harmful gases, meets environmental protection requirements, is convenient to use, can quickly complete the wall decoration in a short work period.

[0006] As a preferred implementation of the white dry-mixed mortar of the present disclosure, the white dry-mixed mortar may include the following components by weight percentage: 20% of the calcite with a particle size of 0.6-1 mm, 25% of the calcite with a particle size of 0.2-0.6 mm, 30% of the calcite with a particle size ≤ 0.2 mm, and 25% of the white cement with whiteness ≥ 88 . Especially when the above ratio is adopted, an obtained decorative surface has the highest strength and impermeability.

[0007] The calcite of different particle sizes can be obtained by graded crushing with a crusher and screening.

[0008] As a preferred implementation of the white dry-mixed mortar of the present disclosure, when the white dry-mixed mortar is applied, a ratio of the white dry-mixed mortar to water may be 1:(0.26-0.28).

[0009] The objective of the present disclosure is to further provide a application method of the white dry-mixed mortar. The method includes: mixing the white dry-mixed mortar with water evenly to obtain a mixture, then plastering a wall with the mixture, naturally drying, and polishing. A plastering thickness can be selected according to actual needs, preferably 15 ± 3 mm, and the application process can be completed by polishing until the wall surface is smooth and there is no obvious graininess when touching.

[0010] As a preferred implementation of the application method of the white dry-mixed mortar of the present disclosure, a weight ratio of the white dry-mixed mortar to water may be 1:(0.26-0.28).

[0011] As a preferred implementation of the application method of the white dry-mixed mortar of the present disclosure, an indoor air humidity may be 55-65% during the application process.

[0012] As a preferred implementation of the construction method of the white dry-mixed mortar of the present disclosure, the natural drying may last for a period greater than or equal to 18 h. Preferably, the natural drying lasts for 24 h.

[0013] Beneficial effects: Compared with the existing mortar, the white dry-mixed mortar of the present disclosure has the following advantages.

[0014] 1) The white dry-mixed mortar of the present disclosure is adopted to decorate a white wall without traditional multiple processes. The white dry-mixed mortar can be directly added with water and mixed evenly for plastering the wall. After repairing, drying, and polishing, the decoration of the wall can be completed. The decoration process takes 1-2 days, and there is no

need to add any glue or additives. The white dry-mixed mortar does not contain harmful gases and meets environmental protection requirements.

[0015] 2) The present disclosure uses the white calcite as raw materials. The raw materials are easily available, the manufacturing process is simple and does not require an oven drying procedure. The raw materials are mixed with the white cement to form the dry-mixed mortar, which has high whiteness, and is very convenient for storage, transportation and use.

[0016] 3) The white dry-mixed mortar of the present disclosure is used for wall decoration, which can reduce construction processes and save material costs and labor costs.

[0017] 4) The white dry-mixed mortar of the present disclosure is used for wall decoration, and the obtained decorative surface has the advantages of high strength (28-day compressive strength ≥ 15 MPa) and impermeability ≥ 1.5 MPa. The mortar of the present disclosure has no impact on human health, and belongs to a new environmental protection material.

DETAILED DESCRIPTION OF THE ILLUSTRATED EXAMPLES

[0018] In order to better illustrate the objectives, technical solutions, and advantages of the present disclosure, the present disclosure will be further described below in conjunction with specific examples.

[0019] Examples 1 to 4

[0020] A composition of a white dry-mixed mortar described in Examples 1 to 4 is shown in Table 1.

[0021] Table 1 Composition of white dry-mixed mortar described in Examples 1 to 4 (%)

Group	0.6-1 mm calcite	0.2-0.6 mm calcite	≤ 0.2 mm calcite	White cement with whiteness of 88
Example 1	20	25	30	25
Example 2	15	30	35	20
Example 3	25	20	25	30
Example 4	18	26	32	24
Comparative Example 1	10	25	40	25
Comparative Example 2	30	15	30	25
Comparative Example 3	15	20	25	40
Comparative Example 4	0	30	50	20
Comparative Example 5	40	0	45	15
Comparative Example 6	33.5	41.5	15	10

[0022] Example 5

[0023] The mortars described in Examples 1 to 4 and Comparative Examples 1 to 6 were applied. The application method was as follows: 1 ton of a white dry-mixed mortar was added with 270 kg of water, and the white dry-mixed mortar and water were evenly mixed to obtain a

slurry for plastering the wall. A plastering thickness was 15 mm, and natural drying was conducted for 24 h, and then polishing was conducted until the wall surface was smooth and there was no obvious graininess when touching.

[0024] The performance of the decorative surfaces obtained from the mortars described in Examples 1 to 4 and Comparative Examples 1 to 6 was tested. The test method was as follows: 3 cube test molds were prepared in each group, a sealing material was applied to the test molds, and a release agent was brushed inside the molds. The test molds were filled with the white dry-mixed mortar at one time. After it was slightly dry, a top surface of the mortar above the test molds was scraped and smoothed. The test molds were placed in an environment of 20 ± 5 degrees Celsius and stood still for 24 ± 2 h. The test molds were numbered and demolded to obtain test samples. After demolding, the test samples were immediately placed in a laboratory at a temperature of 20 ± 2 degrees Celsius for curing for 28 days. After 28 days, the test samples were wiped clean, placed on a backing plate of a testing machine according to the standard, and loaded at a uniform speed. When the test sample was close to failure and rapidly deformed, a throttle of the testing machine was stopped until the test sample was damaged, a failure load was recorded, and results were calculated according to a formula. The consistency of the slurry was measured in accordance with JGJ 70-90 “Test method of performance on building mortar”. The impermeability of the test sample was measured in accordance with DL/T5126 “Test code on polymer-modified cement mortar”.

[0025] Test results are shown in Table 2.

[0026] Table 2 Performance test results of decorative surfaces obtained from mortars described in Examples 1 to 4 and Comparative Examples 1 to 6

Group	Compressive strength (MPa)	Impermeability (MPa)	Consistency (mm)	Appearance
Example 1	≥ 18	≥ 1.6	≥ 114	Smooth and flat
Example 2	≥ 15	≥ 1.5	≥ 120	Smooth and flat
Example 3	≥ 17	≥ 1.5	≥ 110	Smooth and flat
Example 4	≥ 16	≥ 1.5	≥ 118	Smooth and flat
Comparative Example 1	8.5-9.6	0.88-1	110-112	Smooth and flat
Comparative Example 2	13-15	≥ 1.2	108-110	Smooth and flat
Comparative Example 3	≥ 16	≥ 1.6	≥ 110	Cracked
Comparative Example 4	7-9.6	0.7-0.9	≤ 125	Partially peeled off, and cracked
Comparative Example 5	9.5-11	0.6-0.8	108-110	Cracked

Comparative Example 6	8-10.2	0.35-0.5	97-100	Having large pores
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[0027] It can be seen from Table 2 that compared with Comparative Examples 1 to 6, the white dry-mixed mortars described in Examples 1 to 4 all have better compressive strength and impermeability, and the wall surface is smooth and flat. The consistency of the slurry can meet the application requirements. The compressive strength and impermeability of Example 1 are the best.

[0028] Finally, it should be noted that the above examples are provided merely to describe the technical solutions of the present disclosure, rather than to limit the protection scope of the present disclosure. Although the present disclosure is described in detail with reference to preferred examples, a person of ordinary skill in the art should understand that modifications or equivalent replacements may be made to the technical solutions of the present disclosure without departing from the spirit and scope of the technical solutions of the present disclosure.

CLAIMS:

1. A white dry-mixed mortar, comprising the following components by weight percentage: 15-25% of calcite with a particle size of 0.6-1 mm, 20-30% of calcite with a particle size of 0.2-0.6 mm, 25-35% of calcite with a particle size ≤ 0.2 mm, and 20-30% of white cement with whiteness ≥ 88 .
2. The white dry-mixed mortar according to claim 1, comprising the following components by weight percentage: 20% of the calcite with a particle size of 0.6-1 mm, 25% of the calcite with a particle size of 0.2-0.6 mm, 30% of the calcite with a particle size ≤ 0.2 mm, and 25% of the white cement with whiteness ≥ 88 .
3. An application method of the white dry-mixed mortar according to claim 1 or 2, comprising: mixing the white dry-mixed mortar with water evenly to obtain a slurry, then plastering a wall with the slurry, naturally drying, and polishing.
4. The application method of the white dry-mixed mortar according to claim 3, wherein a weight ratio of the white dry-mixed mortar to the water is 1:(0.26-0.28).
5. The application method of the white dry-mixed mortar according to claim 3, wherein an indoor air humidity is 55-65% during the application.
6. The application method of the white dry-mixed mortar according to claim 3, wherein the drying lasts for a period greater than or equal to 18 h.