Study on the Factors Influencing the Scientificalness and Accuracy of Building Material Testing

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Abstract: At the present stage, in order to improve the quality of construction projects, it is necessary to reduce the adverse effects caused by various factors in the development of the construction industry, analyze the main factors that affect the scientificalness and accuracy of building material testing, explore various influencing factors, and take effective countermeasures and means to solve the problem. Based on this, this paper mainly makes a simple research and analysis on the factors affecting the scientificalness and accuracy of building material testing.

Material inspection is the key content in the construction of building engineering. The role and influence of many factors in the testing of building materials will reduce the accuracy and authenticity of the results. In order to improve the quality of material price testing, it is necessary to analyze the influencing factors of the testing results. By strengthening the detection and analysis of the performance of building materials, fully protecting the overall performance parameters of building materials, and improving the accuracy of test results, we can fundamentally improve the quality of the project. Under the concept of green construction, the project quality can be effectively improved by reasonably reducing project cost and energy consumption in a scientific way.

1 Overview of quality inspection of building materials

Building materials are the basic conditions to ensure the quality of buildings. In this regard, in the process of construction, it is necessary to do a good job in the inspection and analysis of building materials to ensure that the materials meet the requirements of the standard, and through testing and analysis, determine its stability and durability. But in the testing stage of building materials, it is necessary to strengthen the preliminary screening and classification of materials, so as to ensure the accuracy of building materials testing. In order to ensure the construction quality in practice, the analysis of the inspection of building materials should be strengthened in the construction to ensure the scientific and accurate testing results.

In the testing, the detection methods of different types of materials are different, in order to ensure the accuracy of building materials, strengthen the classification and screening of materials.

There are many building materials testing institutions in our country, but the testing results of building materials will be affected by a variety of factors, which will lead to biased results, which is not conducive to the sustainable development of the construction industry. The quality inspection of building materials is the most important content in building construction. Only when building materials meet the requirements of standards can their rational application be guaranteed. In the detection stage, the change of external factors will affect the scientificalness and accuracy of the results. In this regard, in order to improve the inspection quality of building materials, it is necessary to do a good job in engineering inspection and analysis, and start in an orderly manner according to the standard, so as to ensure the.

2 Factors affecting the scientificalness and accuracy of building material testing

In the testing of building materials, a variety of factors will affect the test results, among which natural factors, testing links, data processing and human factors are all important factors. if there are mistakes or problems in these links will directly reduce the scientific and accuracy of building materials testing.

2.1 Natural factors

Affected by natural factors, the temperature, temperature, light, rain and snow and other weather in building construction will affect the science and accuracy of building materials testing. Influenced by natural conditions, building materials will be affected by corrosion and erosion. On the other hand, there are some differences between the standard conditions of the laboratory and the natural environment, which will affect the accuracy. For example, some materials can not be exposed to long-term exposure and sunlight, which will lead to varying degrees of changes and effects on material properties. In some materials, there is an increasing trend in the rise of temperature, and the strength also shows a downward trend in the decrease of temperature. Whether the temperature is too high or too low will affect the results of the experiment.

2.2 Factors affecting the detection link

2.2.1 Influence of loading speed

The loading speed is an important factor affecting the strength. If the loading speed is faster in the material mechanical properties experiment at room temperature, the strength value will be higher than its own strength parameters, otherwise it will be small.

2.2.2 Lack of representativeness of the specimen

The test result of the specimen can not represent the quality of the material. This kind of problem is mainly due to the problems in the inspection link, the sampling personnel did not sample according to the requirements, the sampling process is lack of standardization, and so on. If the sampling sample is lack of representativeness, it will lead to the problem that the test error value is too large.

2.2.3 Sample preparation factors

Due to the influence of sample preparation factors, the sample is damaged and the sample does not meet the requirements. For example, in sampling, the creases on the edge of the coil 10cm should be avoided and treated by PET aluminized film, which is representative. On the other hand, the aluminized film surface is easy to crack and cut under the influence of external factors, which will affect the accuracy of the test results.

2.3 Errors and data processing

The detection error is mainly caused by the lack of standardization of the operators and the lack of accuracy of the equipment. Errors within the standard range of conventional conditions can be allowed. If the error value is too large, it will affect the parameters of the experimental results. In most states, its parameters are the average of multiple data. The accuracy of the average value is an important factor affecting the results.

2.4 Testing personnel

If the testers do not master the professional knowledge, do not understand their job responsibilities, and the lack of rigor in their work attitude will directly reduce the accuracy of the material, resulting in the lack of scientific material results.

At the same time, if the staff do not carry out standardized inspection according to the standard requirements and do not handle strictly based on the process requirements, it will lead to the deviation of the building material data, which will directly affect the accuracy of the building material data.

3. Countermeasures and means to ensure the scientificalness and accuracy of building material testing

In order to effectively improve the science and accuracy of building material testing, it is necessary to make clear the ways and means of testing according to the actual situation, and reasonably avoid all kinds of adverse effects through modern ways, so as to ensure the quality of the project. In this regard, more attention should be paid to the inspection of building materials in practice.

3.1 Exact testing methods for building materials

3.1.1 Reinforcement

At the present stage, steel inspection should be carried out systematically according to the requirements of the standard, which is mainly divided into the following stages in practice:

(1) Reinforcement treatment

After the steel bar is transported to the construction site, the staff should according to the requirements, according to the standard requirements of reinforced concrete hot-rolled ribbed bars. Strengthen the quality test of steel bar to ensure that the steel meets the requirements of the standard.

(2) Acceptance and sampling

Do a good job of reinforcement acceptance and sampling stage inspection, inspectors should apply the same specification analysis, analysis of furnace number, production date, batch and delivery status principles for steel sampling follow-up inspection and analysis, ready for analysis.

(3) Cold-drawn steel bar processing

Through batch-by-batch inspection and analysis, to ensure that the weight and grade of each batch of steel bar and other parameters meet the standard requirements of steel bar quality inspection. If it does not meet the requirements of the specification, it should be retested based on the standard. If an item does not meet the standard, it is determined that it does not meet the requirements. Steel bars that do not meet the requirements should be reported and dealt with in a timely manner.

3.1.2 Raw materials such as cement

(1) Bagged cement

The focus of the inspection of bagged cement is to ensure that its production time, label, manufacturer and entry date are the same, and the acceptance volume of each batch is 50 tons.

(2) Bulk cement

50 tons of bulk cement belongs to the best total inspection information. Focus on the period of validity, if it is higher than the period of validity, it is necessary to re-check. In the construction of the project, it is necessary to ensure that the testing time of each cement is carried out within the scope of the period of validity.

(3) Pebbles, sand and gravel

The total amount of each batch of testing is about 100m3, and the testing follows the requirements of the same origin, specification and entry time.

(4) Fly ash

In the detection of fly ash, the same grade should be tested and analyzed in the same batch, and the analysis of various parameters should be strengthened to ensure that it meets the requirements of the specification.

3.1.3 Concrete testing

(1) Information investigation

Make sure to analyze the specific information parameters of sand and gravel yard to ensure that the materials meet the requirements of engineering standards. The indoor test and analysis of material engineering quality is carried out according to the building engineering test, and the reasonable selection is made according to the results.

(2) Sampling testing

In the semi-finished component test, it is necessary to synthesize the experimental report and the product qualification certificate, do a good sampling test inspection, verify the reliability and accuracy of the analysis, and ensure the engineering quality.

3.2 Analysis of the influencing factors and control strategies of the testing results of building materials.

3.2.1 Detection mode

In the inspection of building materials, because of the different objectives, the methods used are also different. in the appearance quality inspection of building materials, it is necessary to systematically analyze the parameters of the materials to ensure that they meet the requirements of the standard. The semi-finished products and finished products should be tested and analyzed by means of ultrasonic and springback, which can carry out quality inspection and analysis on the basis of not affecting the material itself. In the inspection of the quality of building materials, professional instruments and equipment are used to check the building properties and composition content, which is high in both quality and efficiency.

Different detection methods should be applied according to different detection methods and types. The inspection method will directly affect the accuracy and effectiveness of the results of building materials. In order to ensure the quality of the building structure, it is necessary to select materials reasonably according to the types of building materials, synthesize the basic parameters and data of the price of building materials in practice, choose reasonably according to the requirements, and avoid the deviation of the results. In the sampling, the testers should synthesize the specifications and types of building materials, uniformly divide and analyze them, select the test sample parameters according to the weight parameters of the materials, carry out the inspection according to the national standard materials, and strengthen the link control. reduce the adverse effects caused by different testing methods, and fully ensure the quality of testing.

3.2.2 Testing instrument

In the inspection of building materials, the quality, type and operation of instruments and equipment are the result parameters that affect building materials. In some testing institutions, in order to reasonably control the cost of the instrument, fully protect the economic benefits. In the equipment, it is necessary to update and improve the instruments and equipment, and make rational use of all kinds of modern technical means.

With the continuous improvement of the degree of automation of testing instruments, attention should be paid to maintenance and management in practice to avoid affecting efficiency and

accuracy and affecting the testing quality of building materials.

The testing personnel should synthesize the testing requirements, select the instruments and equipment reasonably, and fully ensure the accuracy of the results. Carry out regular inspection and maintenance inspection of instruments and equipment to ensure their overall performance. At the same time, testing institutions should update the performance parameters of all kinds of equipment in time, strengthen management in a professional way, and fully ensure the quality of equipment, so as to effectively avoid the lack of accuracy of instruments and equipment and affect the accuracy of testing.

3.2.3 Introduction of advanced testing equipment

With the continuous development of computer technology, modern testing equipment and technical means have been gradually applied in laboratory testing. These devices have the characteristics of automation and intelligence, and their detection accuracy is high, which fully improves the efficiency of building materials.

Through the application of modern testing equipment, the use of intelligent detection and analysis, can fundamentally improve the scientific nature of testing, which is also the main trend of testing in the future.

3.2.4 Personnel operation

The professional ability of the staff is a more important component in the inspection of building materials, and the testers should strengthen the testing and analysis of materials according to the requirements of the code to reduce the adverse effects.

In this regard, it is necessary to strengthen the management of testing personnel, enhance the intensity of training, strengthen constraints and management in a scientific way, and improve the comprehensive ability of testing personnel through professional skills training.

In practice, building materials testing institutions should regularly organize expert lectures, go out to communicate and learn, constantly enhance the professionalism of the staff, and let the staff obtain more testing skills and operation methods, so as to improve the accuracy of material testing results.

3.2.5 External environment

The analysis of the external environment should be strengthened in the quality inspection of building materials. In the testing process, it is important to integrate many factors, such as the change of temperature and humidity, strengthen the control of external environmental factors, analyze the external environment, synthesize the properties and types of materials, and choose testing methods reasonably. Only by ensuring the quality of the testing environment can we improve the science and accuracy of the testing results.

3.3 Building a strict material testing management system

Strict system is an important means to improve the scientific nature of material testing. Defining the procedures and requirements of material testing and ensuring the quality of materials can provide reference and support for the work of material testing.

It is necessary to construct a sound information management system, strengthen post constraints, pay attention to equipment maintenance and inspection record analysis, and carry out restraint management through the post responsibility system to ensure a clear division of labor in material testing. Only in this way can we effectively reduce the adverse effects of various factors and reasonably prevent and control all kinds of problems and results in the inspection in time.

At the same time, it is necessary to formulate a sound equipment maintenance and maintenance

management system, and formulate a sound assessment system and means. It is necessary to do a good job in the regular management of the equipment, do a good job in regular proofreading and calibration, and ensure the stable development of the testing work.

3.4 Selecting the appropriate sampling method

Different materials have different sampling methods. In this regard, in practice, it should be carried out based on the actual situation, based on the characteristics of raw materials and engineering acceptance, and based on a scientific and reasonable standardized management mode, so as to ensure the accuracy of test results.

In practice, the testing parameters and testing methods should be reasonably selected by integrating different materials, and the testing methods should be selected reasonably according to the characteristics and properties of actual materials, so as to ensure the quality of the project.

4 Conclusion

The inspection of building materials is an important means to improve the quality of the project, which determines the comfort and safety of the construction project. We should pay more attention to the inspection of building materials, but at this stage, being affected by natural and man-made factors will directly reduce the science and accuracy of the test results, which will seriously affect the quality of the project. Strengthening the importance of building materials testing, improving the professional quality of staff, reasonable control of temperature and humidity, the application of modern instruments and equipment are important means to improve the accuracy of building materials testing and enhance scientificalness.

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