



Magnesium Flat Boards for use in Dry Construction

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Abstract

Due to increased use of cement floor boards in the dry construction market because of the ease and speed of deployment, the research had the objective of developing the first board based on magnesium oxide in Brazil, focused mainly on buildings such as Light Steel Frame (LSF) and Drywall.

Key words:

Dry Construction, Magnesium oxide, Magnesium cement

Introduction

The project designed by Prof. Carlos M. Gomes has as one of his goals the change of mentality of the construction market in Brazil, where there is still the use of traditional fiber cement reinforced boards with synthetic yarns. This research aims to analyze the availability of the use of MgO-based flat boards.

For this, we made the necessary tests for the mechanical and durability analysis of the boards to be classified according to the norm NBR 15498/2016.

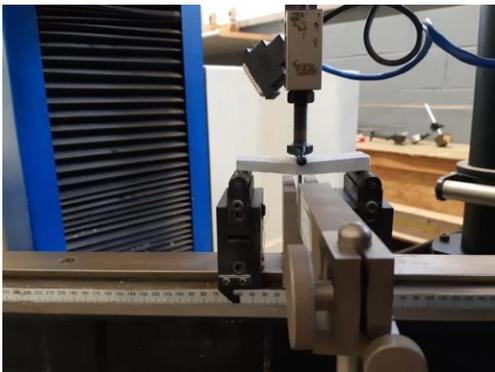
Results and Discussion

The performance of the tests was analyzed from the norm NBR 15498/2016. The flexural tensile strength test was performed with the specimens exposed to the environment for drying and exposed to accelerated aging, in other words, exposed to prolonged periods in immersion cycles and drying with hot water.

Picture 1. Laboratory process



Picture 2. Flexural Tensile test



Heterogeneous specimens were made for a better analysis, thus, there are variations in the contributions of each component that compose the magnesium board. In the boards of this research, MgO, Limestone, PVA Fiber, Cellulose, Salt (magnesium Chloride) and water were used.

Below are the results of the specimens in the respective batches and their traces.

Tabela 1. Resultados do ensaio.

Lote	MgO	Calcário	Fibra PVC	Celulose	Sal	Água	Tensão Média (Mpa)
1	1	5,67	0,13	3,51	2,34	8,41	3,6
2	1	3	0,08	2,11	1,4	5,05	6,7
3	1	5,67	0,13	3,51	4,68	8,41	4,2
4	1	3	0,08	2,11	2,81	5,05	7,0

Conclusions

After the tests, we found that the specimens containing a more significant amount of MgO in the total composition were able to reach, on average, 7 MPa of tension. Then, with this composition, the magnesium board would fit into Category 3 - Class A, that is, it could be placed in external areas where there is direct action of the sun, rain, heat and humidity.

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