Equitone fibre cement material for exterior wall

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Abstract. Wall cladding as one of the elements of building could use various type of materials, one of them is Equitone, which made from compressed fiber cement. This study was conducted through descriptive method to know how the application and the use of Equitone fibre cement for building construction ladder and exterior wall, also the advantages of its material. The result of this study show that this material has quite many advantages like efficiency, increasing the quality of work, the look, color, shaped, material itself and also easy to maintenance, fire retorted, and also water proof.

Keywords: efficiency, exterior wall, fiber cement panel, quality of work.

1. Introduction

Building designs are now more complex than they were ten or twenty years ago, and the regulatory requirements have become more demanding. As now more sustainable materials were demanding as the component of building.

Wall exterior cladding is one of the main point that every architects want to express their design, because everyone could see the beauty of the building once they look at the façade wall, so the façade material would be considered important, due to the standard of good looking, aesthetic, easy to maintenance, and good durability to other condition.

One of the materials that could be used is fiber cement. Fiber cement as the pre mixture material could perform as a secondary skin, and we could find it in the EQUITONE® facade material range.

Figure 1. The illustration of application Equitone® panel.
EQUITONE® is a high-density fiber cement facade material produced since the early 1900’s. Every EQUITONE® panel is unique, showing the raw, untreated texture of the fiber cement base material.

2. Methodology
The methodology is a technique to collect and analyse the data. This study use the case study method to take sample of landed house building in Jakarta - Indonesia that uses EQUITONE® material as building material for façade wall covering, also find out comparisons of using EQUITONE® material compared with conventional materials. The data collecting use observation method; to observe how to install the EQUITONE® material work in the projects, to find out the pros and cons the use of materials. The data collected from the literature and catalogue, will be analysed and discussed.

3. Result and Discussion
The EQUITONE® material comes in a maximum panel size of 1.25 x 3m (4´x 10´) and can be transformed in any size or shape in the workshop or on-site, so make sure the pattern of wall covering already clear, so we could minimize the waste. Furthermore, the material can be perforated or printed. No matter what design options you explore, the colored and through-colored nature of EQUITONE® assures crisp, monolithic details

3.1. Characteristics of Materials
The EQUITONE® materials have some characteristics that made them unique, such as:
- Fire retarded (noncombustible and no spread of flame)
- Resistant to extreme weather conditions and temperatures
- Resistant to vermin, insects, mould growth, fungi, etc
- Installed life durability to be at least 50 years
- Integral through color, no ongoing maintenance required
- Could be used as secondary façade that allows the wall inside to ‘breathe’because of the ventilated space between the frame support

EQUITONE® facade materials offer several advantages compared to conventional bricks (see table 1).

**Table 1. The Benefit using EQUITONE® facade materials compared to conventional materials.**

| Advantages                                    | Disadvantages                                      |
|-----------------------------------------------|----------------------------------------------------|
| Design flexibility                            | Relatively expensive                               |
| The outer skin of building ‘could’ breathe    | High labor cost (needs trained workers)            |
| Efficiency and durability                     | The area must be cleaned, dirt free                |
| Elimination of thermal bridges                | Need space to store the product                    |
| Reduction in the impact of direct solar radiation |                                        |
| Reduction of structural movements             |                                                    |
| Evacuation of moisture and resistant to mould and fungi |                                |
| Maintenance free                              |                                                    |
| Consider light weight structure system        |                                                    |
| Prevention of condensation inside the building|                                                    |
| Available in different natural textures       |                                                    |
The EQUITONE® Fiber Cement Materials made in 5 varieties, such as:
1. EQUITONE® [linea].
2. EQUITONE® [tectiva].
3. EQUITONE® [natura].
4. EQUITONE® [pictura].
5. EQUITONE® [materia].

The EQUITONE® material could be installed as secondary skin for building façade (which is recommend), which means had many advantages compared to conventional façade masonry system.

![Figure 2](image)

*Figure 2. The illustration for installation for Equitone® panel, for secondary skin facade. Source: Equitone® installation guide document.*

System attachments could be designed to be visible to highlight the modularity of facades, or they could be made be discreet and reinforce the material effect, being completely concealed using the Tergo® invisible attachments system (so could not be seen from outside).

Face fixing options include riveting and screwing on metal or wood supporting frames. Back fixing options area glued fixed with approved SIKKA-TAK® panel system on metal frames or timber frames.

![Figure 3](image)

*Figure 3. The illustration for installation for Equitone® panel, made from galvanized hollow steel. Source: Equitone® installation guide document.*
Figure 4. Secondary skin for façade Equitone® panel, made from galvanized steel hollow.
Source: Personal documents, 2019

The methods were describing as follows:
1. Prepare the wall before installation, like plaster finish, waterproof the wall or paint the wall.
2. Install the support frame for EQUITONE® material in terms of pattern and size, using hollow galvanized steel and L shaped galvanized steel accordingly to the pattern and size. The maximum size of each panel of Equitone® panel approximately 125x250cm.

Figure 5. The frame support for Equitone® panel, made from galvanized hollow steel.
Source: personal document, 2019.

3. Make sure no leakage at the wall area before installing the panel. We could apply the waterproofing layer at the wall area which will be covered by EQUITONE®, also make sure the wall area behind the panel already in finished condition.
4. Cut the Equitone® panel as it said in the drawing, make holes at the panel to attach the rivet sleeve.

![Image of Equitone® panel cutting process and rivet sleeve sample](image)

**Figure 6.** The cutting process and sample of rivet sleeve used for Equitone® panel. Source: personal document, 2019.

Make sure all the edges were clean and sharp, if necessary, we could use sander machine.

5. Install the Equitone® panel.

![Image of Equitone® panel installation](image)

**Figure 7.** The installation of Equitone® panel. Source: personal document, 2019.

6. Protect the panel after installation using plastic, Prevent the material for any contact to other things, such as steel, wood, water leakage, etc.
Figure 8. The installation of Equitone® panel, cleaning and protection after installation. Source: personal document, 2019.

Conclusion
The use of Equitone® panel for exterior wall is very recommended, because the panel and the frame support were ready to use and could be applied as secondary skin, without additional treatment. The Equitone® panel made from fiber cement materials, so itself already waterproof material, and can easily be cut in many shapes and sizes, accordingly to the design. The Equitone® panel ventilation as secondary skin panels, also allows air to freely circulate behind the panel, creating a well-ventilated and comfortable inner building, in which lower the temperature the building envelope.

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