Installation of Wood Plastic Composite Door Frame with McCoy Soudal Adhesive

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Abstract: This paper contains an innovative and time saving method of installation of door frame made by wood plastic composite material and McCoy Soudal adhesive. This also gives a brief about Wood plastic composite material and McCoy Soudal its advantages, application

Keywords: Wood plastic composite, door frame, innovation, McCoy Soudal, soudafoam PRO, Adhesive.

I. INTRODUCTION

Installation of door frame is one of the important activity and should not be delayed. The conventional method of installation of door frame includes taking sizes, cutting the wooden frame according to it and fixing it with screw according to the plum. This process is slow and makes the wall less solid and also as it contains wood so it has chances of swelling, fungi, termites etc. An alternative method for wood is a composite material called Wood Plastic Composite. It is a material made by combination of Thermoplastic polymers and wood plastic (wood flour) of various percentage according to the usage both the materials are blended above the melting temperature and then it is converted to desired shapes and sizes. It can also be available in various colors. It has many applications like railings, indoor furniture, Door and window frame, Fences etc. It is an Environmental Friendly product.

II. LITERATURE REVIEW

1. Manufacturing of Wood Plastic composite from Completely Recycled material by Taghi. Tabarsa1,a, Hossein Khanjanzadeh2,b and Hamidreza Pirayesh3,c In this WPC material was formed by waste from wood cutting mills i.e. wood flour and waste from textile industry i.e. granules of polypropylene. Wood flour was taken into various percentages i.e. 30, 35, 40 with equal proportion of polypropylene and with the help of coupling agent. Production was done by Batch method. After cutting and making of a specific size it’s Mechanical and Physical properties were studied. The result showed that with increase of wood flour up to 35 percent, water absorption and thickness swelling increases but further than it mechanical and physical properties decreases. Besides, increase of wood flour up to 40 percent increased the hardness of the specimens. Generally the mechanical properties of specimens containing recycled plastics were comparable with composites made from virgin plastics. This was considered as a possibility to expand the use of recycled plastics in the manufacture of WPCs. (Kazemi et al, 2005)

2. Innovation in window and door profile using Wood Plastic Composite “In this paper Window and door frames were fabricated from UV radiation resistant wood-plastic composites. Homopolymer polypropylene (40%) and radiata pine wood dust (60%) were the raw materials used for this research. The tests carried out to evaluate the material were Natural weathering (3 months) and UV exposure cycle (200h/60°C). These material were selected for their high performance. The tests for door frame were carried out for testing for shape and dimension, stiffness, straightness, flatness, squareness, impact, humidity content, and glued joint behavior.

III. DETAILS

McCoy Soudal (Soudafoam PRO) is a self-expanding ready to use Polyurethane foam which is an excellent adhesion on most substrates such as concrete, wood, Aluminum. It has a very good property of stability i.e. it does not shrink or expand after application. Its curing time is 60 min. It can be used in installation of Doors, windows, and also in filling gaps.
Components of Door

Fig No. 1: Components used in installation of Door.
Processes involved in construction

The methodology and processes we have studied is as mentioned below.

1. Assembling all the components
The components of frame are assembled and fixed i.e. the horizontal frame is inserted in the vertical frame with help of screw and glue and allow it to dry.
There is no need of cutting the frame as it is in ready sizes as per our requirement.

2. Cleaning
The place where the frame is to be fixed is cleaned properly and moisten surface with water for proper bonding.

3. Align the door frame
Once the frame is assembled it is taken to the required position and fixed with the help of spacer (wooden blocks) generally the space is 10-20 mm. The plum is checked for verticality.

4. Fixing of Door shutter
Door shutter is then fixed to the frame, Hinges are fitted.
Gaps are checked.
Lock and handle is attached.

5. Filling of Gaps
Once the door shutter is fixed again the plum is checked if it is correct then the gaps are filled with multi bond low expansion foam known as McCoy Soudal and it is allowed to dry for few hours. For this first take off the cap of the foam run and screw the gun onto the valve of the can and shake the gun with can for about 20 seconds. And repeat shaking regularly during application.

6. Curing
Keep the frame as it is during curing i.e. to disturbances.

7. Clean the Gun
After applying the foam clean the gun with the help of Gun foam cleaner properly. It should be clean before the foam gets hardened.

8. Fix the lipping Patti
After the foam is dried the lipping Patti is fixed. This gives a finished look to the entire door frame and foam. No need of plastering.

IV. ADVANTAGES
- **Light weight and Low maintenance** – As it is a hybrid material made from wood flour it is light weight compared to conventional wood and easy to maintain.
- **Weather resistant** – It is highly weather resistant and as it is available in various colors and textures, the colors does not fade.
- **Termite resistant** – It does not have any problem of Fungi and termite attack.
- **Time saving process** – As these frames are available in ready sizes so there is no problem of cutting the frame and shutter on site. Also it does not require screwing so a lot of time is saved.
- **Less wastage** – Because of the improved quality the wastage is no or very less as compared to the conventional method.
- **The installation is 3 times faster with the help of McCoy Soudal adhesive.**
- **The McCoy Soudal has a high thermal resistance properties.**
- **Soundproof:** Soudafoam pro has been tested and approved for soundproofing by lift Rosenheim.
- **Man power:** The manpower required is less than the conventional method. The complete process of fixing door frame along with door shutter can be done in approx. 40 mins.

V. CONCLUSION
WPC boards is achieving a good absorbency amongst plywood and natural wooden boards. Now, demand for exterior decking also is increasing. Thus India is using WPVC boards in versatile applications (in own style and methods). Leading manufacturers in the industry are focusing more on R&D pertaining to use of advanced polymers in order to improve durability. These composites are growing at the highest rate among the plastic additives. Innovative uses for wood-based composites are constantly accomplished. These hybrid materials provide sustainability, longevity, and cost savings. Also the Souda foam PRO is CFC-free propellant which is completely harmless to the ozone layer. It does not have any post expansion property. It is a time saving process and also the manpower required is less than conventional method.
REFERENCES

[1] Manufacturing of Wood Plastic composite from Completely Recycled material by Taghi Tabarsa1,a, Hossein Khanjanzadeh2,b and Hamidreza Pirayesh3,c.

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