OPEN ACCESS Freely available online

Advances in Automobile Engineering

ISSN: 2167-7670

Opinion Article

Ignition of Oriented Strand Board by Radiant Heat Fluxes

Rashid Khan*

Department of Mechanical Engineering, Universiti Teknologi Malaysia, Johor Bahru, Malaysia

ABOUT THE STUDY

Randomized Wood items such as composite panel materials are essential. Their manufacturing process includes the use of wood of lower quality classes to produce acceptable materials with improved physical and mechanical capabilities. This group of products includes oriented Strand Board (OSB), however these items are mostly used as input materials in the furniture and construction sectors. When compared to raw wood, the manufacturing of wood-based sheet materials uses wood of lower quality classes and chemically safe recyclates to produce materials with improved physical and mechanical qualities. Oriented Strand Boards (OSBs) are multilayer boards consisting of a certain shape, thickness, and adhesiveness of wood strands. Strands in the outer layers are arranged parallel to the board's length or width. Strands in the intermediate layer or layers can be arranged arbitrarily or perpendicular to strands in the outer layers.

Oriented Strand Board (OSB), also known as waferboard, Sterling board or Exterior board, and SmartPly, is a popular engineered wood product made up of strands (flakes) of wood that are often laminated in certain orientations. It may have a rough and varied surface, with individual strands (usually 2.5 by 15 cm) lying unevenly across one other. OSBs are inexpensive and robust planks that make good building materials.

OSB is made from thinner wood strands that can be better ordered with respect to the direction of the wood fibres when the layers are added in longitudinal and transverse directions in the production flow. Strands have the greatest length when measured in the direction of the fibres. Thinner debarked forest wood assortments, primarily soft deciduous woods but also coniferous woods, are utilized as raw materials in the manufacturing of OSB. The preparation of strands is given special attention. They are mostly manufactured by disc and drum chippers. The surface layer is made up of thinner and longer strands, while the middle layers are made up of thicker and slightly shorter strands. Fine particles and dust are meticulously separated. The strands are pressed using formaldehyde-based synthetic resins under high pressure and temperature. Conventional synthetic adhesives, both liquid and powder, including isocyanate-based adhesives, are the most often utilized. OSB is classified according to its intended use. OSB/1 refers to general-purpose boards (with a thickness of 9, 11, 15, or 18 mm) and boards for indoor furnishing (including furniture) in dry conditions; OSB/2 refers to load-bearing boards in dry conditions; OSB/3 refers to load-bearing boards in humid conditions; and OSB/4 refers to heavy-duty load-bearing boards in humid conditions.

According to safety data sheets, the physical and health dangers of OSB panel products are unclassified. The flammable composite material is OSB. OSB can come into touch with heat sources, and its structure will react to the action of heat and temperature rise. Because wood materials are thermal insulators and do not conduct heat, there is a progressive thermal deterioration process that might culminate in ignite and fire. In the event of thermal stress, the strength of OSB declines with increasing temperature and time of action, with a faster rate of change at higher temperatures. Flammability is defined as a sample's ability to ignite in the presence of an external thermal initiator and under specified test conditions. The capacity of a material to ignite is defined as flammability by the International Organization for Standardization (ISO) 3261. The ignition time of substances and materials is determined by the ignition temperature, thermal properties of materials, sample circumstances (size, humidity, orientation), and critical heat flux.

CONCLUSION

The phrase "ignition temperature" can be defined as the lowest temperature at which the air must be heated in order for the sample placed in the heated air environment to ignite, or the sample's surface temperature just before the ignition point. This understanding served as the foundation for our investigation. The results were obtained using tested equipment that did not have a small burner flame and solely radiated heat loading. The purpose of this study is to observe the significant effect of heat flux density (from 43 to 50 kW/m^2) and thickness (12 mm, 15 mm, 18 mm) of OSB on the ignition time and sample weight change. The change in heat flow had previously been tracked and recorded for the purpose of certifying equipment for heat release loading study. Simultaneously, the critical temperature of the OSB ignition point was determined experimentally based on the period of action of the radiant heat source and the strength of the heat flow.

Correspondence to: Rashid Khan, Department of Mechanical Engineering, Universiti Teknologi Malaysia, Johor Bahru, Malaysia, E-mail: khanras467365@hotmail.com

Received: 04-Nov-2022, Manuscript No. AAE-23-21128; **Editor assigned:** 08-Nov-2022, PreQC No. AAE-23-21128 (PQ); **Reviewed:** 21-Nov-2022, QC No. AAE-23-21128; **Revised:** 01-Dec-2022, Manuscript No. AAE-23-21128(R); **Published:** 12-Dec-2022, DOI: 10.35248/2167-1764.22.11.209

Citation: Khan R (2022) Ignition of Oriented Strand Board by Radiant Heat Fluxes. Adv Automob Eng.11:209.