

ASTM C1186 FIBER CEMENT BOARDS

Key Differences - Grade II and Grade IV Fiber Cement Panels

Overview

ASTM C1186 is the standard specification for flat non-asbestos fiber cement sheets. These boards are used for exterior wall and ceiling applications, providing durability and resistance to various environmental conditions. The specification categorizes fiber cement boards into different grades based on their physical properties, including flexural strength and density.

Flexural Strength

Flexural strength is a critical property of fiber cement boards, indicating their ability to resist deformation under load. It is measured in both wet and equilibrium conditions to ensure performance in various environmental states. The testing methods for determining these strengths are prescribed in ASTM C1185, which covers the test methods for sampling and testing non-asbestos fiber cement flat sheets.

Grade II and Grade IV Flexural Strength Comparison:

1 - Grade II:

- Wet Strength: Minimum of 1,015 psi
- Equilibrium Strength: Minimum of 1,450 psi

2 - Grade IV:

- Wet Strength: Minimum of 2,610 psi
- Equilibrium Strength: Minimum of 3,190 psi

The significant difference in flexural strength between Grade II and Grade IV indicates that Grade IV boards are designed to withstand higher loads and stress compared to Grade II boards. This makes Grade IV boards more suitable for applications where higher structural integrity and durability are required, particularly in environments subject to high moisture or varying humidity levels.

Density Classification

Density is another critical factor in determining the application suitability of fiber cement boards. The density of the boards affects their strength, durability, and resistance to impact and environmental conditions.

Grade II Fiber Cement Boards:

- Have a density between 1,150 kg/m³ (71.8 lb/ft³) and 1,500 kg/m³ (93.6 lb/ft³).

- Offer a balance between performance and ease of handling.
- Used in applications where moderate strength and durability are sufficient.

Grade IV Fiber Cement Boards:

- Typically have a density greater than 1,500 kg/m³ (93.6 lb/ft³).
- Provide higher strength and durability.
- Suitable for applications requiring high mechanical performance and resistance to harsh conditions.

Application and Selection Criteria

Grade II Fiber Cement Boards:

- Suitable for moderate performance requirements.
- Used in environments where lower flexural strength is acceptable.
- Typical applications include residential siding and less demanding exterior wall cladding.

Grade IV Fiber Cement Boards:

- Ideal for high-performance requirements.
- Used in environments with high stress, such as commercial buildings and areas prone to impact and heavy loads.
- Ensure longer lifespan and reduced maintenance due to higher strength and durability.

Conclusion

The technical difference in flexural strength between Grade II and Grade IV fiber cement boards is significant, with Grade IV offering more than double the wet and equilibrium strength of Grade II. This higher strength makes Grade IV boards preferable for demanding applications. Additionally, the density classification into high and medium density further helps in selecting the right board for specific requirements, ensuring optimal performance and durability in varied environmental conditions.

Questions? Need to know more? Call us at (888) 826-8453 or email info@claddingcorp.com.

888.826.8453

info@claddingcorp.com
www.claddingcorp.com