



Prime-Line, Inc.

Doors, Mouldings, & Millwork



PRIME-LITE VS. ULTRA-LITE

In the past 12 months, the domestic MDF millwork market has taken a significant turn with regard to fiberboard density. This change directly correlates with the introduction of the South American “Ultra-lite” product. When Ultra-lite was first introduced into the U.S., the domestic MDF manufacturers could and would not make any other product than the standard “medium” density fiberboard. Not very long thereafter, the domestic mills realized that the MDF moulding industry was rapidly turning to the ultra-lite product, leaving the domestic MDF moulding manufacturers in a precarious situation. Therefore, to stay competitive, they developed the “lite” density fiberboard (LDF).

Until late 2005, MDF products were made out of a board that had a 51# density which made machining and nailing the board very difficult. As you know, this issue is why many contractors switched from MDF back to other paint grade products. However,

as with most things, given the nature of the competition, the evolution of domestic MDF has been rapid. Just within the last 3-4 years, MDF has made significant improvements domestically. Our main supplier has recently installed a larger raw material refinery which has allowed them to get the fiber quality that is needed to make a 39# density board, thus the birth of domestic LDF. The imported Ultra-lite product promotes that it has a 31# density board which is about 20% lighter than the domestic version, but lighter is not always better. Here is why.

Highlighted are the four

Specification	Ultra-Lite	Prime-Lite
Density	31 lbs.	39 lbs.
Internal Bond	87 psi.	100 psi.
Face Screw Withdrawal	168 lbs.	225 lbs.
Edge Screw Withdrawal	135 lbs.	200 lbs.
ANSI Standard A208.2	Failed	Passed

specifications that are most important after installation and where the domestic product outperforms the competition. I did not highlight the density because the

“puckering” or “volcanoing” issue is basically non-existent with both products. As the table illustrates, our product will out perform the imports in regard to strength, durability, fastening, and stability. The biggest attribute that the domestic LDF has over the imported Ultra-lite is the screw holding power. As the table shows, LDF’s screw holding power is superior to ULDF because there are more wood fibers left in the LDF product. ULDF achieves its 31# density by taking out wood fiber and replacing it with resin, creating small gaps of air that will greatly diminish

screw and nail holding ability. In fact, most of the time, the contractor or home owner must go back and re-fasten the moulding after a year or two because the material moves

and loosens itself from the nail. Not to mention the fact that the air gaps make it very difficult to paint and finish without a lot of sanding.

specifications for Ultra-lite, whereas the Prime-lite specifications meet grade 120.

Finally, according to the American National Standard for MDF, ANSI A208.2, the Ultra-lite specifications do not meet any of the ANSI grade criteria (please see ANSI Standard for MDF). As you can see, the specifications that are listed for the grades of MDF in the chart are not met by the technical

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3.4 Formaldehyde

Formaldehyde emissions from MDF bonded with a resin system containing formaldehyde resin system, shall be tested in accordance with ASTM E 1333-96. The loading ratio for MDF shall be $0.260 \text{ m}^2/\text{m}^3$ ($0.08 \text{ ft}^2/\text{ft}^3$). Emissions shall not exceed the maximum limit of 0.30 ppm as specified in Tables 1 or 2.

4. Identification

4.1 Grade Designation

The MDF grades in this standard are identified by a three digit number. Table 1 grades are designated by 100 series numbers and Table 2 grades are designated by 200 series numbers. The grade number designates the property value level first based on MOR and secondarily on IB.

4.2 Moisture Resistant Designation

MDF with moisture resistant characteristics shall be identified by using a grade designation followed by a hyphen and a moisture resistance designation in Subsection 2.6. Using grade 140 for example: 140-MR10; 140-MR30; 140-MR50.

4.3 Product Identification

All MDF which is represented as conforming to this American National Standard shall be identified with at least the following information.

- ANSI Standard A208.2-2002
- Thickness
- Grade
- Other applicable designations
MR10 for products meeting the requirements of Subsection 3.3.4

MR30 for products meeting the requirements of Subsection 3.

MR50 for products meeting both requirements of Subsection 3.3.4 and Subsection 3.3.5

4.4 Identification Methods

The information required by Subsection 4.3 shall be provided either by:

- a shipping or package label with the conforming product(s), or
- an invoice or other commercial document, or
- stamping or labeling each conforming panel.

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MEDIUM DENSITY FIBERBOARD (MDF)
FOR INTERIOR APPLICATIONS

Table 1

Physical and Mechanical Property Requirements for MDF When Determined in Accordance with ASTM D 1037-96a Part A

Grades	Physical and Mechanical Properties											
	Modulus of Rupture (MOR)		Modulus of Elasticity (MOE)		Internal Bond (IB)		Screwholding				Thickness Swell (TS)	
											Panel Thickness	
	N/mm ²	(psi)	N/mm ²	(psi)	N/mm ²	(psi)	Face N	pounds	Edge N	pounds	≤15mm mm (inch)	>15mm percent
110	14.0	2030	1400	203100	0.30	44	780	175	670	151	1.5 (0.059)	10%
120	14.0	2030	1400	203100	0.50	73	875	197	775	174	1.5 (0.059)	10%
130	24.0	3481	2400	348100	0.60	87	1100	247	875	197	1.5 (0.059)	10%
140	24.0	3481	2400	348100	0.75	109	1325	298	1000	225	1.5 (0.059)	10%
150	31.0	4496	3100	449600	0.90	131	1400	315	1200	270	1.5 (0.059)	10%
160	31.0	4496	3100	449600	1.05	152	1555	350	1335	300	1.5 (0.059)	10%

Property Requirements
Common to all MDF

- 1) Grades shall also meet the requirements listed in Section 3 of this Standard. Panels designated as MR10 shall have a TS ≤ 50 % of the TS value specified in the Table. Panels designated as MR30 shall retain at least 50% of the MOR value after tested in accordance with ASTM D 1037-96a Accelerated Aging Test. \ Panels designated at MR50 shall have a TS ≤ 50% of the TS value specified in the Table and shall retain at least 50% of the MOR value after tested in accordance with ASTM D1037-96a Accelerated Aging Test.
- 2) MDF bonded with a resin system containing formaldehyde, other than an exclusively phenol-formaldehyde resin system, is subject to the formaldehyde emission limit.

Properties	Tolerance Limits
Panel Length or Width ≥ 0.61.m (2 feet)	± 2.0 mm (0.080 inch)
Panel Average form Specified Thickness	± 0.125 mm (0.005 inch)
Variance from Panel Average Thickness	± 0.125 mm (0.005 inch)
Linear Expansion (LE)	± 0.3 percent
Formaldehyde Emissions	± 0.30 ppm

- 3) Property values represent a five panel average.
- 4) Panels of thickness less than 9.5 mm (3/8 inch) shall not be tested for face screw-holding. Panels of thickness less than 16 mm (5/8 inch) shall not be tested for edge screw-holding.
- 5) Thickness tolerance values only apply to sanded panels.
- 6) LE shall be measure between 50% and 80% RH in accordance with ASTM D 1037-96a.
- 7) Tested in accordance with ASTM E 1333-96 at 0.26 m²/m³ (0.08 ft²/ft³) loading ratio.