

GENERAL SPECIFICATION FOR THERMALLY FUSED LAMINATE (TFL) CASEWORK/ MILLWORK

PART 1 GENERAL

1.01 GENERAL PROVISIONS

- A. Applicable provisions of General Conditions, Special Conditions and General Requirements shall apply to this section as if repeated in full herein. Reference other Sections and Divisions for work in connection with this section.

1.02 SCOPE OF WORK

- A. Section Includes:
1. Furnish and install melamine-impregnated decorative paper, thermally fused laminate (TFL) to particleboard (PB) or medium-density fiberboard (MDF) for use in **[casework][,]] [furniture] [and/or] [millwork]**.and accessories as shown and listed on drawings and specified herein. Includes all countertops, cutouts, splashes, supports, shelving, and filler panels necessary for a complete millwork installation.
- B. Related Requirements to be Performed by Others:
1. Division 06 Section: "Rough Carpentry" for blocking within walls to adequately support casework.
 2. Division 06 Section: "Finish Carpentry"/Millwork.
 3. Division 06 Section: "Prefinished paneling" for walls and column wraps.
 4. Division 07 Section: "Preformed Joint Seals" for caulking of casework and/or countertops to abutting walls.
 5. Division 08 Section: "Finish Hardware" for cabinet locks keyed or master keyed to building locks.
 6. Division 09 Section: "Resilient Base and Accessories" for resilient base applied to manufactured casework.
 7. Division 22 Section: "Plumbing" for furnishing, installation, and hook-up of sinks, fixtures, outlets, strainers, tailpieces, traps, vacuum breakers, and stops shall be performed by the plumbing contractor to state and local codes. In all cases, sink cutouts shall be by the casework contractor.
 8. Division 23 Section: "Heating, Ventilating, and Air-Conditioning" for furnishings, installation, and final connections of all ductwork to range hoods shall be by the HVAC contractor.
 9. Division 26 Section: "Electrical" for the electrical contractor to state and local codes shall perform electrical furnishing, installation, and final connections of wiring, conduit, and/or electrical items within casework.

1.03 REFERENCES

- A. Abbreviations and Acronyms:
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| ANSI | : American National Standards Institute |
| ASTM | : American Society for Testing Materials |
| AWI | : American Woodworking Institute |
| AWMAC | : Architectural Woodwork Manufacturers Association of Canada |
| CARB | : California Air Resources Board |

CBDca	: Canadian Green Building Council
CPA	: Composite Panel Association
EN	: European Norms
EPPS	: Environmentally Preferable Product Specification
FSC®	: Forest Stewardship Council
HUD	: US Department of Housing and Urban Development
ISO	: International Organization for Standardization
LEED	: Leadership in Energy and Environmental Design
LPDL	: Low Pressure Decorative Laminate
LPM	: Low pressure melamine
NAF	: No added formaldehyde
NEMA	: National Electrical Manufacturers Association
TFL	: Thermally Fused Laminate
TFM	: Thermally Fused Melamine
ULC	: Underwriters Laboratories of Canada (Safety and performance in standards on fire, life safety and security)
ULEF	: Ultra-low emitting formaldehyde
USGBC	: US Green Building Council

B. Reference Standards:

1. ANSI A208.1, American National Standard for Particleboard
2. ASTM E 1333-[96] Standard Test Method to determine the level of formaldehyde of wood products under specific conditions and using a large chamber
3. CPA 3-08, Environmentally Preferable Product Specification
4. European Standard EN 438-1, Decorative high-pressure laminates (HPL) sheets based on thermosetting resins.
5. HUD 24 CFR Part 3280.308
6. NEMA LD 3, High-Pressure Decorative Laminates
7. USGBC, LEED Green Building Rating System
8. Architectural Woodwork Standards (AWS) published by the Architectural Woodwork Institute (AWI), Architectural Woodwork Manufacturers Association of Canada and the Woodwork Institute. (Currently calls product LPDL- Low Pressure Decorative Laminate)

1.04 SUBMITTALS

A. Submit the following in accordance with Section **[INSERT SECTION NUMBER]**,

B. Submittal Procedures:

1. Product Data: Thermally Fused Melamine Particleboard
2. Samples for Initial Selection: Color chart for initial selection: Manufacturer's full range of TFL material, 2 by 3 inch (50 by 50 mm) minimum size
3. Samples for Verification: Selected color(s), 8" by 10" inches (203 by 254mm) on particleboard or medium density fiberboard substrate
4. Sample of complementary products: Edge banding, moulding, cabinet door, HPL, 3DL
5. Sustainable Design Submittals: Submit the following in compliance with Section **[INSERT SECTION NUMBER]**,
6. "Sustainable Design Requirements":
 - a. LEED Criteria Worksheet for each component material of the product or assembly used in the installation of Work of this Section.

- b. Product Certificates: For regional materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include distance to Project and cost for each regional material.
- c. Chain-of-Custody Certificates: For certified wood products. Include statement of costs.
- d. Chain-of-Custody Qualification Data: For manufacturer and vendor.
- e. Product Data: For composite wood products, indicating that product contains no urea formaldehyde.
- f. Laboratory Test Reports: For composite wood products, indicating compliance with requirements for low-emitting materials.
- g. Laboratory Test Reports: For installation adhesives, indicating compliance with requirements for low-emitting materials.

1.05 CLOSEOUT SUBMITTALS

- A. Refer to Section **[INSERT SECTION NUMBER]**, for installation and protection procedures.
- B. Products must be unloaded under shelter. If the unloading process is performed outdoor.
- C. Products must be stored under shelter as soon as possible. Avoid unloading when faced with inclement weather.
- D. Always inspect delivered goods upon reception and once unloaded. Verify if products were damaged, soiled or exposed to water.
- E. Never store the products outdoor. Avoid watering.
- F. Handle with care to avoid damages.
- G. Do not place panels directly on the floor.
- H. Avoid extreme temperature during the storage and at the time of use of panels,
- I. Allow time for panels to reach site temperature before use.

1.06 QUALITY ASSURANCE

- A. Single-Source Responsibility: Obtain Thermally Fused Laminate from a qualified Manufacturer - acceptable to the Architect. Manufacturer shall have successful experience in the production of melamine-impregnated decorative paper.
- B. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.
- C. Composite Wood Products: Products shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers.
- D. Quality Standard: Fabricate and install all architectural woodwork in accordance with the applicable requirements of AWS, Edition 2, 2014, unless more stringent requirements are specified or shown.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged pallets with identification labels intact.

- B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions in strict compliance with manufacturer's instructions and industry standards.
 - 1. If unloaded outdoors, move and store under shelter as soon as possible. Avoid unloading in inclement weather.
 - 2. Inspect delivered products to verify products are not damaged, soiled or have been exposed to water.
- C. Handling: Protect materials during handling and installation to prevent damage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis-of-Design:
- B. Prism TFL Pattern: **[INSERT PATTERN/COLOR NAME & NUMBER] [FINISH NAME] [Core Material] or See Finish Schedule on Drawing Sheet [INSERT SHEET NUMBER]**
 - a. Arauco Prism TFL – Supplied by
Hardwoods Specialty Products
Phone: 206-496-8598
 - b. Recommended Fabricators:
 - 1. **[Fabricator #1]**
 - 2. **[Fabricator #2]**
 - 3. **[Fabricator #3]**
- C. Substitution Limitations:
 - 1. Substitutions will be considered only when other manufacturers submit substitution requests in accordance with procurement substitution and/or substitution procedures, or provide a comparable product with the following support information detailed below:
 - 2. Written documentation stating specification compliance regarding construction, materials, and standard of quality and manufacturing techniques.
 - 3. Note all deviations to the drawings and/or specifications in writing.
 - 4. Provide the Architect with a full-scale base cabinet not less than ten days prior to bid date. The sample shall represent typical construction and materials for the product the casework manufacturer proposes, meeting the quality standards set forth by this specification. The sample may be impounded by the owner and retained until completion of the casework installation.
 - 5. The owner, or its designated representative, reserves the right to reject any proposal that in his opinion fails to meet the criteria established by this specification. Such a decision shall be final.
 - 6.

2.01 SURFACE MATERIALS

- A. Cabinet:
 - 1. Exposed finished ends, fronts, modesty panels and finished backs shall be Thermally Fused Laminate (TFL) two (2) sides. Laminate shall be homogenous, thermally fused to core face resulting in panel structure warranted against any delamination. TFL shall be tested under National Electrical Manufacturers Association (NEMA) LD3-2005 GP-28 standards. TFL lamination shall use high pressure 350-400 Pounds per Square Inch (PSI) with thermosetting temperature of 380-400 degrees F under precision-controlled press cycle with textured surface finishes.
 - 2. Panels with exterior TFL surfaces shall have TFL on interiors, unless noted otherwise.
- B. Interior: Semi-exposed surfaces shall be TFL.
- C. Drawers: Shall be finished entirely in TFL.
- D. Semi-Exposed Backs: Shall be prefinished [**Medium Density Fiberboard (MDF)**] [**High Density Fiberboard (HDF)**].
- E. Other millwork: See drawings for details and location.

2.02 CORE MATERIALS

- A. CARB Compliant Particleboard: Shall be high performance industrial grade M2 core. Particleboard shall be 45# - 48# density 3-ply type formation conforming to American National Standards Institute (ANSI) A208.1 and American Society for Testing and Materials (ASTM) D1037-91A standards and current applicable California Air Resources Board (CARB) standards.
- B. Moisture Resistant (MR) / No Added Formaldehyde (NAF) Particleboard: Shall be high performance industrial grade core. Particleboard shall be 45# - 48# density 3-ply type formation conforming to ANSI A208.1 and ASTM D1037-91A standards. Cores shall have MR and NAF resin formulation.
- C. Fire Resistant (FR) Particleboard: Duraflake UL approved Class A/Class 1 fire-rated particleboard panel. Panels are retardant throughout, stay classified after cutting. Successfully passing applicable Standard Tests including; ASTM E 84 Standard Test for Surface Burning Characteristics of Building Materials, ASTM C 236 Guarded Hot Box Test, UL 723 Test for Surface Burning Characteristics of Building Materials, and CAN/ULC - S102 Test for Surface Burning Characteristics of Building Materials.
- D. Ultra Low Emitting Formaldehyde (ULEF): Shall be VESTA Technology made with 100% recycled and/or recovered wood fiber and is an ECC (Eco-Certified Composite) sustainability certified product. Complies with ANSI A208.1 2016 section 5.2. Complies with formaldehyde emission requirement for particleboard in CPA-ECC-2011, ANSI A208.1 2016 and CCR 93120.2 (CARB Composite Wood ATCM Phase II).
- E. Medium Density Fiberboard (MDF): Core shall be minimum 48# density conforming to ANSI A208.2 MD-130 standards and current applicable CARB standards.
- F. High Density Fiberboard (HDF): Fibrex high density thin MDF.

2.03 EDGINGS

- A. Polyvinyl Chloride (PVC) edge banding shall color match the face of the TFL panel unless otherwise noted.
- B. PVC edge banding shall be equal in width to the TFL panel thickness.
- C. Edge banding shall be flat edge PVC extrusion. Automated hot melt adhesive application and trimming.
- D. PVC edge banding thickness shall be [.018] [.020] [1mm] [2mm] [3mm]

2.04 COMPONENTS AND CONSTRUCTION

- A. Door and Drawer Fronts:
 1. Door and Drawer Fronts: **[Shall be 3/4" thick, with face laminate as described in 2.01.A. Fronts shall be edged with (.020") flat edge PVC extrusion. Automated hot melt adhesive application and trimming.] or [Thermafoil on 5/8" MDF, style as specified]**
 2. Glazed Framed Doors: **[Shall be 3/4" thick, one (1) piece panel with cutout for insertion of tempered glass pane, held in place with extruded trim mounting.] or [Thermafoil on 5/8" MDF, style as specified]**
 3. Glass Doors: Sliding glass or hinged glass doors shall be tempered glass.
- B. Mounting Frames: Shall be **[3/4"] [5/8"]** thick structural members.
- C. Wall Cabinets: Components shall be **[3/4"] [5/8"]** thick members throughout. Wall cabinet tops and bottoms shall include back groove and minimum four (4) dowel pins per joint for insertion into cabinet ends. Wall cabinet ends shall be 3/4" thick with back groove and precision Computer Numerical Control (CNC) drill pattern for accurate location of fixed members, hardware and shelf supports. Wall cabinets shall have two (2) integral (dowel into end) mounting frames.
- D. Tall Cabinets: Components shall be **[3/4"] [5/8"]** thick members throughout. Tall cabinet tops and bottoms shall include back groove and up to eight (8) total dowels per end joint (based on cabinet depth). Tall cabinet ends shall be **[3/4"] [5/8"]** thick with back groove and precision CNC drill pattern for accurate location of fixed members, hardware and shelf supports. Tall cabinets shall have three (3) integral (dowel into end) mounting frames.
- E. Base Cabinets: Components shall be **[3/4"] [5/8"]** members throughout. Base unit bottoms shall incorporate back groove and up to eight (8) dowel pins per end joint (based on cabinet depth). Base units shall have wide subtop rail and back frame feature. A subtop rail (8" wide) in the flat horizontal plane at cabinet front shall provide stable squaring of the top area. A mounting frame (8" wide) in the vertical plane behind back shall provide stable side-to-side rack resistance. Construction shall provide lateral and vertical stability. A second mounting frame shall be doweled into ends at lower rear. Open rear top area allows for easy wall mounting and ease of installation of mechanical services. (Subtops without horizontal and vertical plane ridged frame members not acceptable.) Base cabinet ends shall be **[3/4"] [5/8"]** thick with back groove and precision CNC drill pattern for accurate location of fixed members, hardware and shelf supports.

- F. Toe Kicks: Base and Tall cabinets shall be an integral base design. Construction of end panels, cabinet bottoms and horizontal toe kick members shall be integrally joined together for greater structural strength. This design facilitates load transfer from upper loaded areas directly through cabinet end to floor, reducing lower joint stresses.
- G. Backs:
 - 1. Cabinet Back System: Shall be composed of **[1/4" prefinished MDF] [thin HDF]** back captured in side and horizontal grooves. Unit back shall be further integrated with attachment to 3/4" doweled-in mounting frames. Fixed backs shall be mechanically fastened into grooves and sealed with hot melt adhesive. Combination of back with 3/4" frame shall create a 1" integrated structural mounting system. (Compliant to AWI Premium Grade and SEFA Performance Testing)
 - 2. Removable Backs: Shall be in sink cabinets, set in bottom groove and attached to back frames with screws.
- H. Adjustable Shelves: Shelves 36" or less in length shall be 3/4" thick. Shelves over 36" in length shall be 1" thick.
- I. Drawers: Four (4) sided full box design with separate attached front shall be provided. Drawer members shall be 3/4" thick with dowel pin construction at all four (4) corners. Drawer bottoms shall be **[1/4" MDF] [thin HDF]** trapped in groove four (4) edges as well as mechanically fastened. Entire drawer box shall be TFL laminated.

2.05 ACCESSORIES/ FASTENERS

- A. Hardware:
 - 1. Hinges: **[Architect to specify]**
 - 2. Pulls: **[Architect to specify]**
 - 3. Drawer Slides: **[Architect to specify]**
 - 4. Shelving Hardware: **[Architect to specify]**
 - 5. Panel Mounting Hardware: **[Architect to specify]**

PART 3 EXECUTION

3.01 INSTALLATION

- A. The installer shall examine the job site and the conditions under which the work in this section is to be performed and notify the contractor in writing of any unsatisfactory conditions. Do not proceed with work under this section until unsatisfactory conditions have been corrected in accordance with AWI's Quality Standards Illustrated (current edition)
- B. Casework, countertops and related materials to be conditioned to average prevailing humidity condition in installation areas prior to start of work.
- C. Install casework and countertops with factory-trained supervision, authorized by manufacturer. Casework shall be installed plumb, level, true and straight with no distortions (shim as required). Casework shall be securely attached to building structure with anchorage devices of appropriate type, size and quantity to meet applicable codes, specifications and safety conditions. Where casework and countertops abut other finished work, scribe and trim to accurate fit, and caulk as required.
- D. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as needed.

- E. Repair, or remove and replace, defective work as directed upon completion of installation.
- F. Advise project site superintendent of problems and precautions for protection of casework and countertops from damage by other trades until acceptance of the work by the owner.
- G. Cover tops with a satisfactory corrugated material and casework with 4-mil polyethylene film for protection against soiling and deterioration during remainder of construction period.

END OF SECTION

The following document is provided to assist design professionals with product specifications, general information and language standards for paneling, casework, countertops, cabinetry, interior closets, residential and office furniture, shop and job site application of millwork finishes and similar architectural woodwork.

Appropriate language standards should be formatted and copied from this document into the specification section(s) desired of the project plans and specifications.

Article and paragraph numbers are used herein for information purposes only and are not relating to any similar articles nor document.