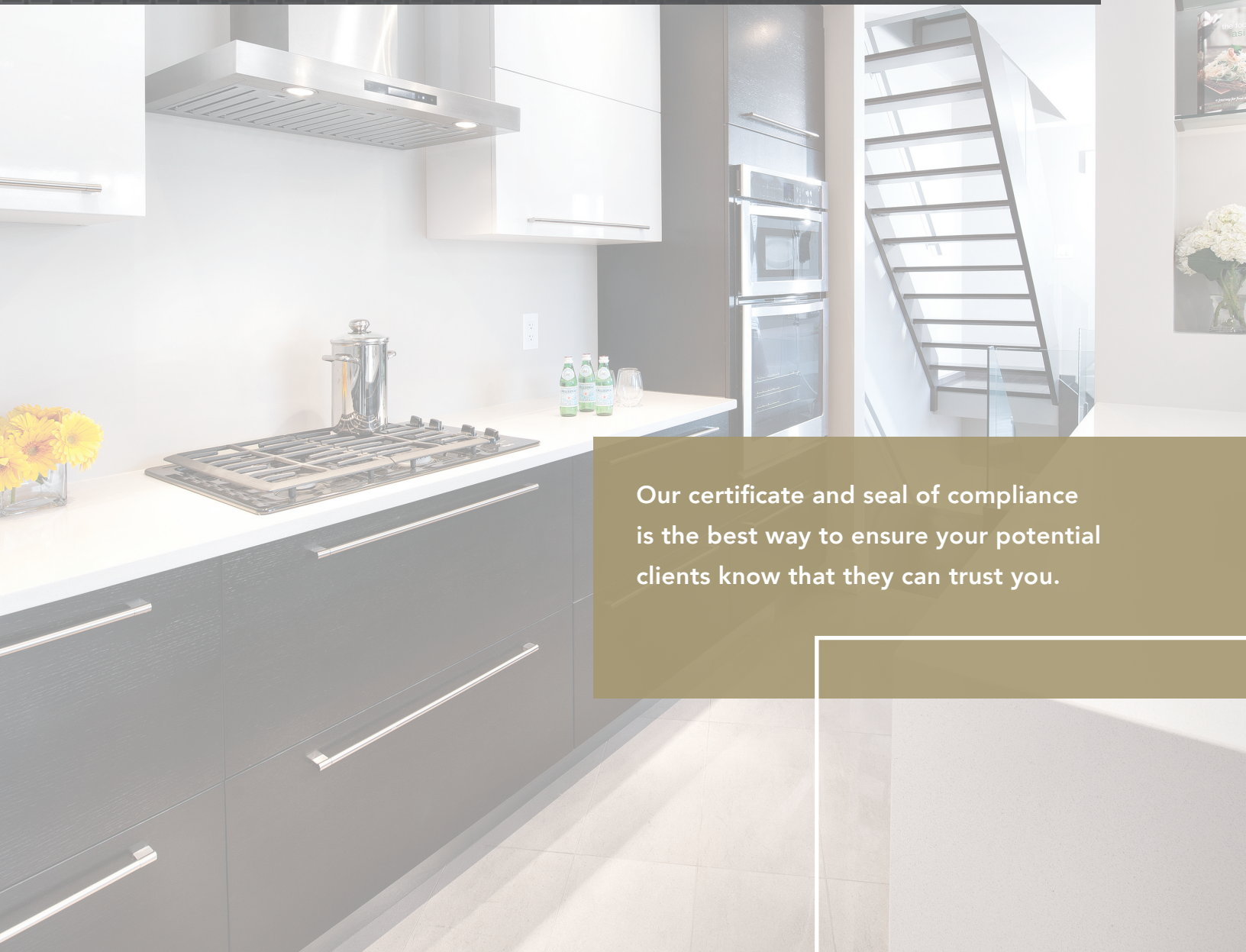




# CONSTRUCTION & MATERIAL TESTING STANDARDS (2017)

FOR KITCHEN CABINETS AND VANITIES



Our certificate and seal of compliance  
is the best way to ensure your potential  
clients know that they can trust you.



## CERTIFICATION MARK

Certification will be awarded upon completion and passing of all requirements outlined in the standard.

Once approval is granted, the manufacturer will be allowed to display the CKCA "Quality Assured" logo on the product, as well as eligible company media (e.g. brochures, website, and cabinets).



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# 1.0 SCOPE

## 1.1 GENERAL

- This standard applies to kitchen and bathroom cabinetry, and other related storage solutions; and is to be used to gauge the performance of the construction methods and materials used. Test methods outlined in this standard will simulate conditions when cabinets are installed as per manufacturer's specifications. Minimum requirements for type and usage of raw materials and fastener use are also outlined in this standard.
- The test methods described in this standard simulate the ambient conditions and normal use, wear and maintenance of cabinets when used in normal application.
- This standard is not intended to be used to measure or certify safety requirements for kitchen cabinets and vanities.

## 2.0 TERMS & DEFINITIONS

### 2.1 GENERAL TERMS

#### **Base Cabinet**

Any cabinet type designed to install directly on the floor. Some form of a top will be applied in the field, such as laminate, wood, granite or other solid surface.

#### **Wall Cabinet**

Cabinet boxes that are mounted to the wall.

#### **Tall Cabinet**

Floor standing, tall cabinet often referred to as broom closet, pantry cabinet, utility cabinet storage cabinet or other.

#### **Vanity Cabinet**

Base cabinet typically used in bathroom applications.

#### **Dowel**

A wooden, plastic or metal pin fitting into holes drilled in abutting pieces to align and secure the pieces and prevent motion or slipping, and may be used with or without glue.

#### **Equilibrium Moisture Content (EMC)**

The moisture content of wood below the fiber saturation point is a function of both relative humidity and temperature of surrounding air. The equilibrium moisture content is the moisture content at which the wood is neither gaining nor losing moisture; this however, is a dynamic equilibrium and changes with relative humidity and temperature.

#### **Finish**

The surface coating that is applied to a wood or wood product surface cabinet surface. The finish is typically made up of several layers of different materials such as a stain, sealer and top coat. The finish is a key element in maintaining and protecting the beauty and durability of the surface.

### 2.2 FINISHING DEFINITIONS

#### **Blushing**

Film defect which appears as a milky opalescence as the film dries; can be a temporary or permanent condition. It is generally caused by rapid evaporation, moisture or incompatibility.

#### **Bubbles (Blistering)**

Film defect, temporary or permanent, in which bubbles of air or solvent vapour, or both, are present in the applied film.

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**Checking**

Fine cracks which do not penetrate the topcoat and are distributed over the surface, giving the semblance of a small pattern cracking: specifically, a breakdown in which the cracks penetrate at least one coat and which may be expected to result ultimately in complete failure.

**Cracks**

Generally the spitting of a dry paint or varnish film, usually as a result of aging. The following terms are used to denote the nature and extent of this defect.

**Crazing**

Resembles checking, but the cracks are deeper and broader.

**Crocodiling or Alligatoring**

A drastic type of crazing, producing a pattern resembling the hide of a crocodile.

**Fatty Edges**

Accumulation of paint in the form of a ridge at the edge of a painted surface.

**Fisheyes / Contamination**

A paint defect which manifests itself by the crawling of wet paint into a recognized pattern resembling small dimples or fish eyes; small globular mass which has not blended completely into the surrounding material and is particularly evident in a transparent or translucent material.

**Stains or wood stains** change the colour and enrich the natural grain patterns of the wood.

**Natural Finish** refers to clear surface coating protecting stained or unstained wood surfaces.

**Pigmented finishes** refer to opaque, non-transparent surface coatings.

**Special effects** are additional processes applied. Glazing, toning, pickling, liming, bleaching and distressing are just some of the many special effects offered by some manufacturers.

**Gloss** levels define the sheen of the surface either described typically (high gloss, gloss, semi-gloss, low sheen, flat) or is a corresponding % number.

**Open pore finish / close pore finish** is defined by the finishing process. Many hardwoods have visible pores. It is a matter of personal preference if they are filled or not. This is not a quality measure.

**Hair-cracking**

Fine cracks which do not penetrate the topcoat; they occur erratically and at random.

**Lap Marks**

Region where a stain extends over an adjacent section. The object of the painter is usually to affect a joint between the two coats without showing the lap.

**Orange Peel**

A paint surface appearance resembling an orange skin texture.

**Overspray**

That solids portion of a coating sprayed from a spray applicator which fails to adhere to the part being sprayed.

*(2.2 continued on next page)*

*(2.2 continued from previous page)*

**Overspray**

That solids portion of a coating sprayed from a spray applicator which fails to adhere to the part being sprayed.

**Runs**

Narrow downward movement of a paint or varnish film, may be caused by the collection of excess quantities of paint at irregularities on the surface; the excess material continuing to flow after the surrounding area has set.

**Saw Marks**

Non natural surface defects caused by improper machining.

**Shadowing / Halo Effect**

Insufficient stain application along panel edges and corners, due to wrong spray gun angle or pressure adjustments.

## 2.3 CONSTRUCTION TERMS

**Framed Construction**

A cabinet box that has a face frame. It resembles a flat, empty picture frame attached to the front. Doors are secured to this frame.

**Frameless Construction**

A cabinetry style in which doors are attached directly to the sides of the cabinet box with hidden hinges. This technique tends to favor a more contemporary look, and it is a hallmark of European-style cabinets.

**Gable**

Typically the side panel of the cabinet, or add on end panel to a cabinet.

**Moulding**

An ornamental strip of material used at joints, crown molding, bases, door and window trim, and the like, and most commonly made of wood, plastic, or metal.

**Rail**

The horizontal pieces of frames, such as face frames and door frames.

**Stile**

The vertical pieces of frames, such as face frames and door frames.

**Toe Space (Toe Kick)**

The bottom piece of a base cabinet that is recessed several inches from the front surface of the cabinet to allow room for a person's feet when standing in front of the cabinet. There are different design details like integrated toe kick, leg levelers, or separate base frame possible.



## 3.0 GENERAL REQUIREMENTS & APPEARANCE

### 3.1 GENERAL CABINET CONSTRUCTION & MATERIAL REQUIREMENTS

#### 3.1.1 Minimum Requirements: Shelving and Drawers

Shelving components for cabinets that are less than 914 mm (36") wide must have a minimum thickness of 16 mm (5/8").

Shelving components for cabinets that are 914 mm (36") wide and greater must have an additional shelf support (e.g. center mullion) or have a minimum thickness of 25.4 mm (1").

When using melamine board or solid wood drawer box construction, drawer sides and backs shall be a minimum thickness of 12 mm (1/2") and drawer bottoms shall be a minimum thickness of 6mm (1/4").

When using a steel or pre-engineered drawer system, drawer bottom and back thickness need to follow the hardware manufacturer design specifications.

#### 3.1.2 Minimum Material Requirements: Frameless Cabinetry

The following are proposed minimum requirements for material thickness in frameless construction.

COMPONENT	MIN. THICKNESS
Tops	16 mm (5/8")
Bottoms	16 mm (5/8")
Sides	16 mm (5/8")
Shelves	16 mm (5/8")
Shelves with centre support	16 mm (5/8")
Backs with hanging rails (or with European Hanging System)	3 mm (1/8")
Backs without hanging rails	13 mm (1/2")
Top Spreader Cabinet Rails <i>Figure 1- min width 76 mm (3")</i>	16 mm (5/8")

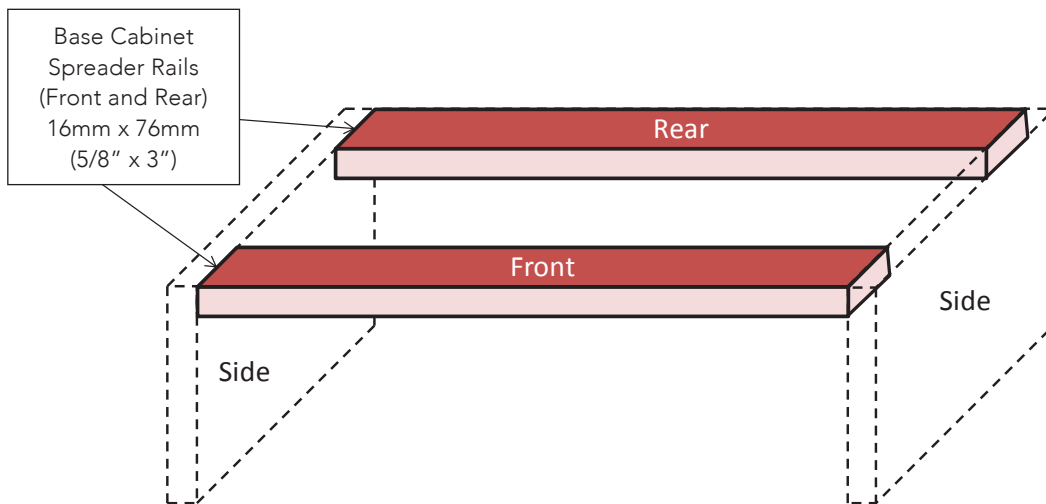


### 3.1.3 Minimum Material Requirements: Face Framed Cabinetry

The following are minimum requirements for material thickness for face frame construction.

COMPONENT	MIN. THICKNESS
Face Frame	19 mm (3/4")
Tops	13 mm (1/2")
Bottoms	13 mm (1/2")
Sides	13 mm (1/2")
Shelves	16 mm (5/8")
Shelves with Centre Support	13 mm (1/2")
Backs with Hanging Rails (or with European Hanging System)	3 mm (1/8")
Backs without Hanging Rails	13 mm (1/2")
Top Spreader Cabinet Rails ( <i>Figure1 - min width 76 mm (3")</i> )	16 mm (5/8")

**Figure 3.1.3:** Section View of Cabinet Illustrating Base Cabinet Spreader Rails



### 3.1.4 Construction Methods

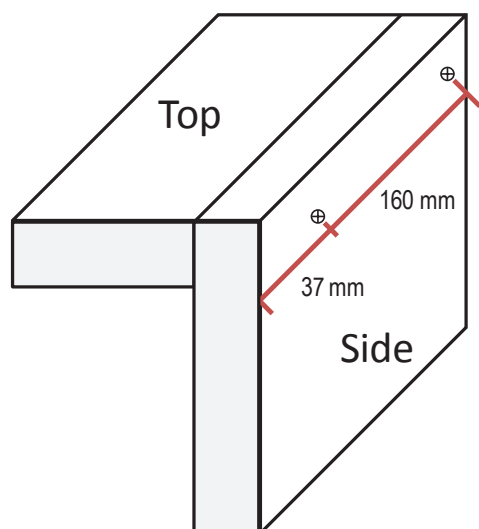
The CKCA recognizes that there are a variety of joinery methods used in frameless and framed cabinet construction that can provide rigid assembly. The joinery method used for cabinet construction is at the discretion of the manufacturer provided it meets or exceeds the minimum performance requirements of certification testing.

The construction methods include, but are not limited to dowel, blind dado, nailing strip, lamella, K-D connectors, pocket screws and staples.

The description below is one example of a fastening system for frameless construction (Figure 3.1.4) using mechanical fastener or wood screw in specified locations that will provide the strength needed to meet minimum requirements.

In the case of Dowel or K-D Connectors the first fastener should be spaced at a maximum of 37 mm (1 7/16") from each edge or end. Subsequent fasteners should be spaced a maximum of 160 mm (6 5/16") on centre. Fasteners in hanging rails will replace the requirement of the first fastener at back edge of cabinet.

**Figure 3.1.4: Top Right Corner Section View**



For face framed cabinetry, box construction joinery shall be similar to frameless construction. Face frames shall be assembled in a manner to provide rigid construction. Examples of appropriate frame assembly methods include, but are not limited to, mortise and tenon, dowel or biscuit joined and securely glued. Frames shall be mortised and tenoned or mechanically fastened to cabinet carcass.

In both (face) frame and frameless construction, cabinet backs are to be inserted into the top, sides and bottom.

### 3.1.5 Component Requirements

The following chart describes the components that are required for various cabinet types according to this standard.

TYPE OF CABINET	TOP	SIDES	BACK	BOTTOM
Wall	•	•	•	•
Base		•	•	•
Vanity		•	•	•
Utility	•	•	•	•

*Note: All Base cabinets for a sink application may be produced with partial or no back to allow for the plumbing connections.*

### 3.1.6 Toe Space

The standard allows the base cabinet to be constructed with an integrated base, leveler legs or a separate base frame. Any cabinet designed to install directly on the floor requires a toe kick space with the minimum dimensions of 51 mm (2") deep and 76 mm (3") high.

### 3.1.7 Tall Cabinets

All tall cabinets shall contain tops, sides, backs, and bottoms. Free standing tall cabinets must have a fixed shelf within a maximum of 1727 mm (68") from the floor to provide enough support to resist warping and movement of cabinet sides. The sides shall not deflect more than 3 mm (1/8") along the full height of the component.

## 3.2 CABINET CONSTRUCTION AND RAW MATERIAL

### 3.2.1 Hinges (Spacing, Placement)

The number of hinges and the placement of the hinges depends on many factors, like load bearing capacity of the hinge, and the weight and size of door. The manufacturer needs to follow the hardware supplier's technical specification and recommendations.

*(3.2.1 continued on next page)*

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As a general recommendation the standard suggests additional hinges according to the table below.

DOOR HEIGHT	WEIGHT RANGE	REQUIRED NUMBER OF HINGES
0 – 914 mm (0 – 36")	4 – 6 Kg	2
915 mm – 1600 mm (36 1/16" – 63")	6 – 12 Kg	3
1601 mm – 2200 mm (63 1/32" – 86")	12 – 17 Kg	4
2200 mm or 2700 mm (86" – 108")	17 – 22 Kg	5

### 3.2.2 External Appliances

Where third party appliances are built in or installed adjacent to cabinetry; the appliance manufacturers installation specifications apply, and provincial and local electrical and building code must be followed.

### 3.2.3 Raw Material Requirements

Doors – Maximum Warp - Doors less than 812 mm (32") in height shall have a maximum deflection of 2.5 mm (3/32"). Doors greater than 812 mm (32") in height shall have a maximum deflection of 5 mm (3/16").

5 piece wood doors 1270 mm (50") or greater in height should have a mid-rail.

Doors shall also be installed and aligned so that they are square with the cabinet and can operate freely without excessive looseness or binding. Installed doors shall have a device sufficient to hold the door closed.

## 3.3 GENERAL APPEARANCE & EXPOSED CONSTRUCTION

### 3.3.1 Finish Appearance

All Exterior exposed surfaces and edges except the edges of end panels and the edges of back panels shall be free of saw marks and other imperfections, and shall be filled and sanded, edgebanded or otherwise finished.

Finish shall be clean and free of scratches and residue. Touch up colours and/or burn in repairs shall be matched with the surrounding areas of the finished surfaces (including filled nail and staple holes). The finish shall be free of any printing that may be caused by the packing material.

The overall appearance of the exposed surfaces should be smooth and appealing. Improper application of the various finishing coats resulting in any of the below shall not be acceptable (unless specified by the manufacturer ie rustic finish, distressed, etc).

- overspray
- orange peel
- fatty edges
- runs
- blushing
- saw marks
- rag or lap marks in the stain
- bubbles or blistering
- cracks or checking
- fisheyes/contamination in the coating



### 3.3.2 Exposed Construction

- 1) All exposed construction shall be fitted in a workmanlike manner.
- 2) All exterior exposed parts of cabinets (except toe kicks and parts normally covered after installation) shall apply the following: Where holes, nails, staples and other mechanical fasteners are used on exterior visible surfaces, the resulting holes shall be filled or repaired to complement the exterior visible surface.
- 3) All exposed surface, either interior or exterior, including door and drawer edges, shall be free of imperfections and sharp edges.
- 4) All interior exposed surfaces shall be free of saw marks and poor workmanship and shall be covered with a laminate material or have a minimum of one coat of clear or pigmented finish.
- 5) All framed and frameless cabinetry shall have maximum gap allowances for all exterior and interior joints of cabinets and doors. Any and all joints on the front face of the cabinet or door must not have gaps greater than 0.25 mm (1/128") in width. All other interior and exterior exposed joints shall not be greater than 0.4 mm (1/64"). Maximum allowable length of any gap is 152mm (6").

### Exceptions

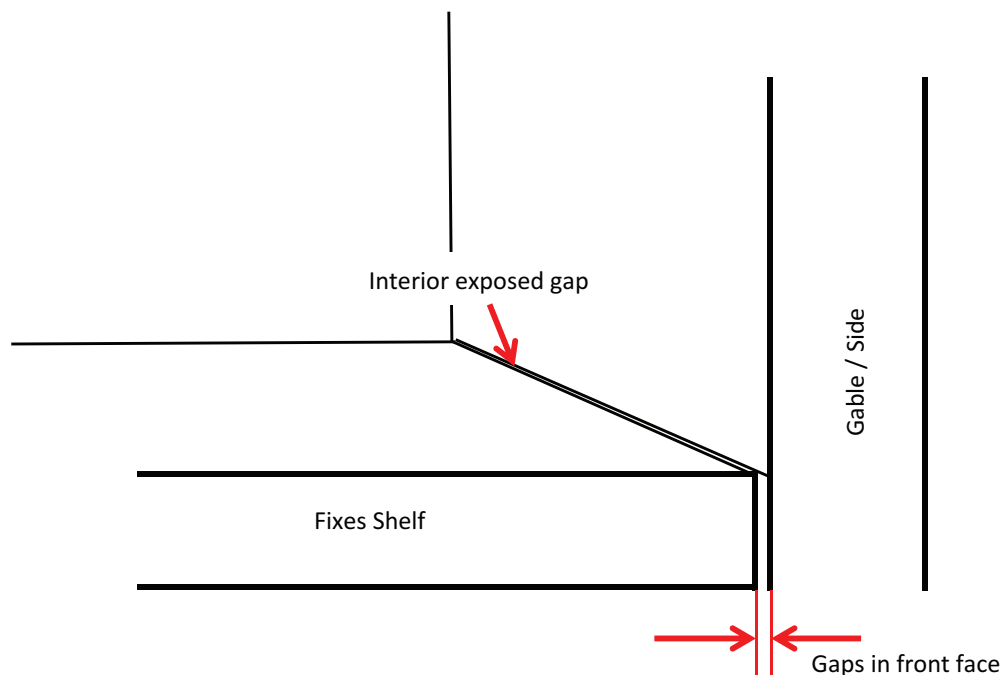
#### Number 1

Sides do not have to be finished on individual units, but exposed sides have to be factory finished or covered with factory finished panels in the field.

#### Number 2

Undersides of wall mounted cabinets bottoms are considered to be interior exposed surfaces and shall comply with the provisions of 4 above.

**Figure 3.3.2**



## 4.0 GENERAL TEST CONDITIONS

### 4.1 CONDITIONS

- All tests will be conducted on cabinets installed according to manufacturer's installation manual.  
.....
- All tests shall be run at room temperature of 20°C to 27°C (68°F to 80°F) and at a relative humidity of 35 per cent to 70 per cent unless otherwise specified.  
.....
- Test samples of finished products shall be date stamped and tested a minimum of 3 weeks after manufacturing date to allow for proper setting and conditioning.  
.....
- All test samples shall be packaged sufficiently to avoid transport damage and to maintain structural and finish integrity.  
.....
- All test results are to be reported in (SI) metric units.

## 5.0 STRUCTURAL TESTS

Structural tests are administered to evaluate and assure the structural integrity of the cabinet as well as its installation. The tests below are designed to evaluate the capability of the cabinet to withstand service loadings and remain operative and functional.

### 5.1 STATIC LOAD FOR SHELVES & CABINET BOTTOMS

*Note – the testing agency will mount the wall hung cabinets according to the installation instructions supplied by the manufacturer.*

#### Purpose

To evaluate the ability of the shelves and bottoms to withstand loading without excessive deflection or structural damage.

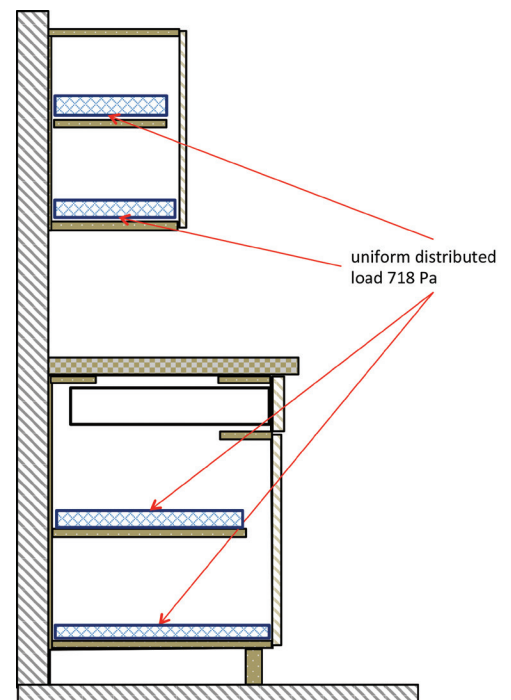
#### Test Procedures

- 1) Mount cabinets in accordance with the manufacturer's instructions.
- 2) Ensure cabinets are leveled prior to testing.
- 3) Measure and record the height of the shelf, or cabinet bottom using the test platform as a reference.
- 4) Load all shelves and cabinet bottoms with an evenly distributed load of 718 Pa (15 lbs/ft<sup>2</sup>). Arrange loads to avoid bridging effect. (Refer to Figure 5.1).
- 5) Allow load to remain in place for 7 days.
- 6) Upon completion of the dwell time, re-measure the height of the shelves and bottoms.
- 7) Record the difference in height as deflection.

#### Required Performance / Acceptance Level

- The loaded shelves and bottom shall exhibit no loss of functionality, or suffer disabling damage. There shall be no visible sign of joint separation, or failure in any part of the cabinets or its mounting system.
- The shelves and bottoms shall not deflect more than 1.6 mm (1/16") per 305 mm (lineal foot) between supports. The maximum deflection shall not exceed 6.4 mm (1/4") between any two supports.

Figure 5.1



## 5.2 STATIC LOADING FOR WALL SUPPORTED CABINETS

### Purpose

To ensure the wall-cabinet mounting interface can withstand reasonable or foreseeable loads typical of heavy use, and to ensure that wall cabinets will stay on the wall with additional loading beyond shelf and bottom loading. This test applies to mounted cabinets greater than 24" in height.

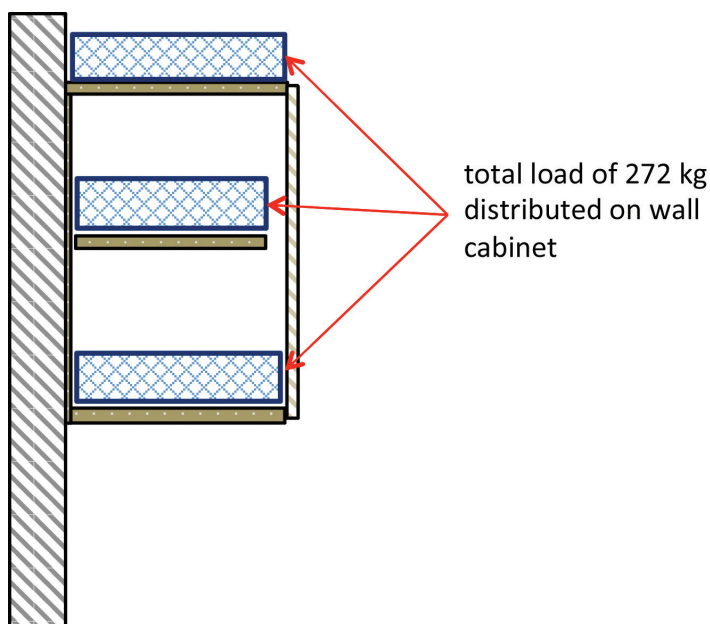
### Test Procedures

- 1) Mount the 24 inches or higher cabinet onto a residential style wall in accordance with the manufacturer's instructions and supplied parts. Note the top of the cabinet will be adjacent to the loading device.
- 2) Evenly distribute a total load of 272 kg (600 lbs) across all shelves within the cabinet. Load should be applied slowly, taking 4 minutes to reach the desired load of 272 kg (600lbs). Allow load to remain for 60 minutes (Refer to Figure 5.2).
- 3) Remove load and evaluate.

### Required Performance / Acceptance Level

- The cabinet shall accept the net loading of 272 kg (600 lbs) without any visible signs of failure in the cabinet or in the mounting system.

Figure 5.2





### 5.3 CABINET JOINT INTEGRITY

#### Purpose

To evaluate the structural integrity and strength of cabinet joints. The test simulates the stresses expected when joining modular cabinets in the kitchens, and to ensure reliable front joints that will not open up after the kitchen is put into service.

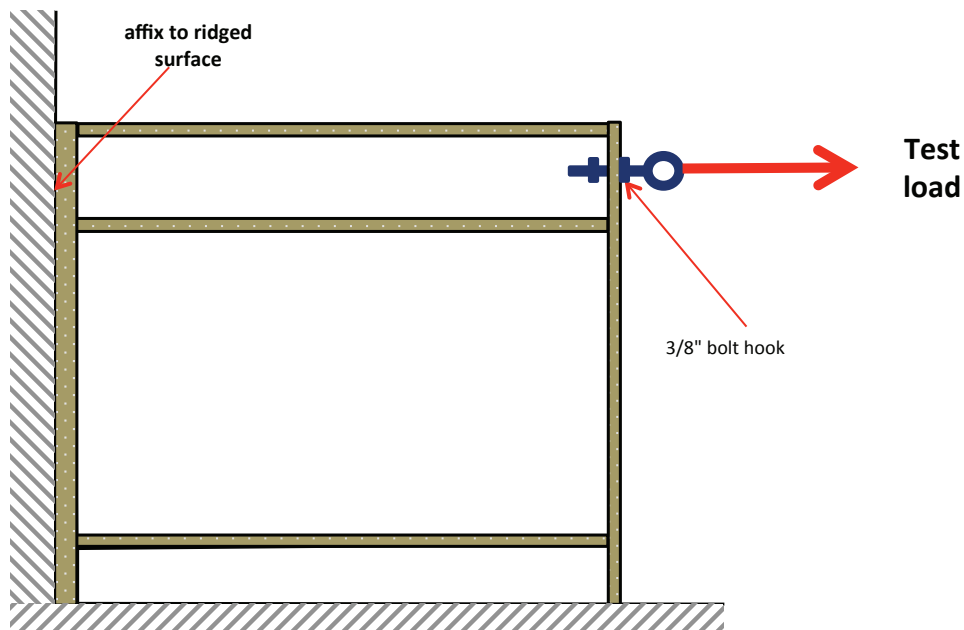
#### Test Procedures

- 1) Remove drawers and any hardware that may interfere with the testing.
- 2) Mount cabinet onto a test platform.
- 3) Secure one side of the cabinet to a hard rigid fixture with sufficient strength to withstand the opposing test forces (Refer to Figure 5.3).
- 4) Drill a hole in the cabinet side 76 mm (3") from top and 76 mm (3") from side, not larger than 3/8" diameter.
- 5) Place a 3/8" diameter bolt-hook through the cabinet.
- 6) Attach a loading device to the bolt-hook. Apply a horizontally outward force of 113.4 kg (250 lbf). The load should be applied such that 113.4 kg (250 lbf) is reached within 5 minutes but not less than 3 minutes.

#### Required Performance / Acceptance Level

- The joint shall exhibit no signs of failure or disabling damage. No increased joint opening shall be visible on the face of the cabinet once the full load is reached. A failure is defined as an increase in joint opening as a result of the test.

**Figure 5.3**



## 5.4 DOOR/HINGE LOAD TEST

### Purpose

To evaluate the structural integrity of door hinges and assemblies. (Refer to Figure 5.4)

#### Recommended Test Door Sample Sizes:

Width - 400 mm to 450 mm (16" to 18")

Height - 750 mm to 800 mm (30" to 32")

### Test Procedures

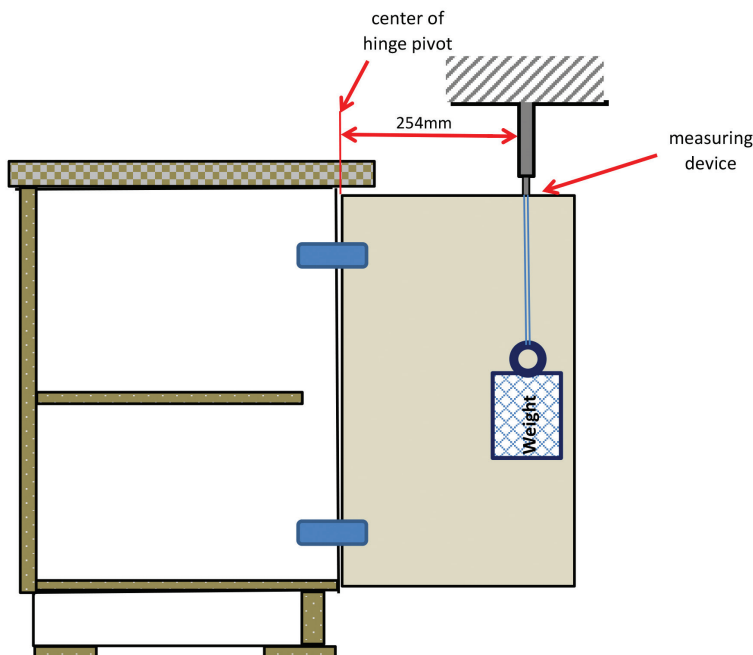
- Do not use door from a prior strength test.

- 1) The cabinet shall be mounted in accordance with the manufacturer's instructions and leveled.
- 2) Two load levels will be utilized for this test depending on the door size.
- 3) For doors with a height of 610 mm (24") or less, a load of 15.9 kg (45 lbf) shall be suspended such that the weight is equally distributed on either side of the door (Refer to Figure 5.4).
- 4) For doors greater than 610 mm (24") in height, a load of 29.5 kg (65 lbf) shall be suspended such that the weight is equally distributed on either side of the door.
- 5) Once loaded, the door shall be cycled slowly 10 times from 90° of its fully closed position to 10° of its fully open position, but not to exceed 90° total.
- 6) Allow weight to remain on the door for 10 minutes. Remove weights, wait for 10 minutes and then assess results.

### Required Performance / Acceptance Level

- The door shall exhibit no loss of functionality or disabling damage.
- Hardware mounting should not become loose (Cabinet-to-hinge, Hinge-to-door connection).
- The maximum allowed sag at measuring point is 1.7mm (1/16").

Figure 5.4



## 5.5 DRAWER: CLOSING IMPACT

### Purpose

To test the ability of the drawer-front to withstand the drawer-closing impact normally expected in household usage.

### Test Procedures

- 1) Mount drawer on test stand as depicted in Figure 5.5.
- 2) Tighten clamps as in sketch.
- 3) Place drop bars on clap.

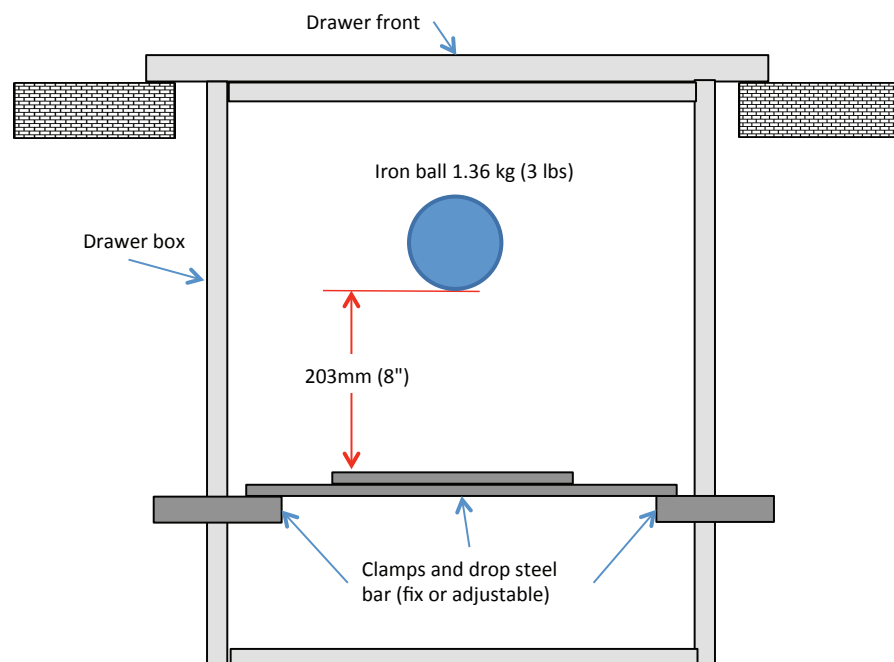
The drop bars must be of  $\frac{1}{2}$ " thick and minimum 3" wide steel bar. The length can be cut to fit the drawer box inside width, or consist of bolted together pieces, adjustable to the drawer width.

- 4) Drop a 1.36 kg (3 lbs) heavy iron ball from a height of 203mm (8") above the drop bar. Repeat for a total of 10 drops.

### Required Performance / Acceptance Level

- No looseness or structural damage to the drawer box and front assembly that impairs the operation of the drawer shall be allowed.

Figure 5.5



## 5.6 DOOR FASTENING & HINGE OPERATION TEST

### Purpose

To test the ability of the door, door holding devices and door hinges and their means of attachment to operate during normal use. This test also applies to lift systems (same cycle testing as doors) but these should be horizontally hinged doors.

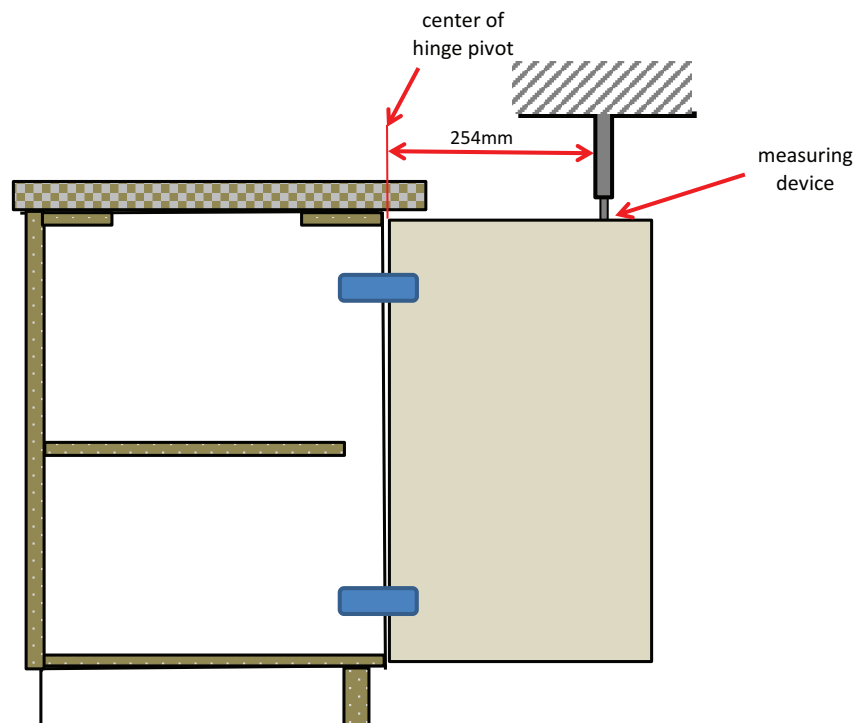
### Test Procedures

- 1) Mount wall cabinet according to manufacturer's instructions. The door holding device (spring catch, magnetic catch, self closing hinges or other) shall be a part of this test.
- 2) Before testing, record the shape of the door with adjustable square or other device and record the door elevation (open 90 degrees+ 0 degrees –5 degrees) at point M (Refer to Figure 5.6).
- 3) Attach cycling mechanism to door at normal operating position so that no additional loads are placed on hinges. Once cycle shall consist of operation through 90 degrees+ 0 degrees –5 degrees swing with full engagement and disengagement of holding device. Operate door through 35,000 cycles at a speed of 20+2 cycles per minute.

### Required Performance / Acceptance Level

- The door shall be operable and the door holding device shall be adequate to hold the door in a closed position.
- The door shape shall be the same as before the test, as recorded in 2 above.
- The maximum allowed sag at measuring point is 1.7mm (1/16").
- Hinges shall show no visible sign of damage.
- Connections between cabinet and hinge to door and hinge shall show no signs of looseness.

**Figure 5.6**





## 5.7 DRAWER OPERATION

### Purpose

To test ability of drawer and drawer mechanism to operate with loading during normal usage.

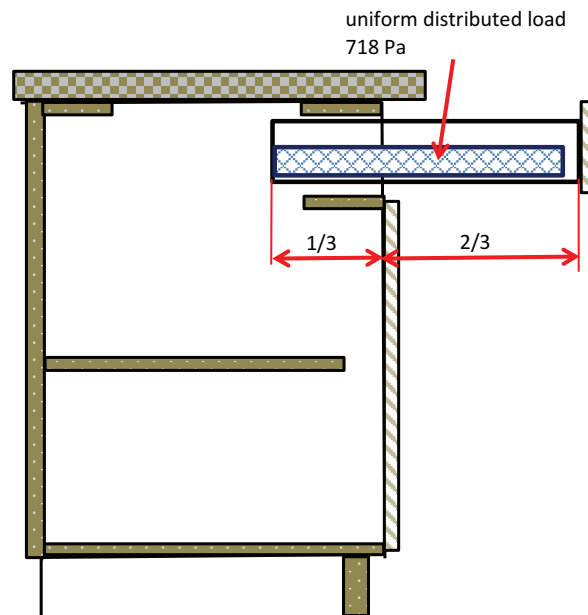
### Test Procedures

- 1) Mount base cabinet according to manufacturer's instructions – do not use drawer used in drawer closing impact test (next test).
- 2) Tighten all screws. Load drawer uniformly at 718 Pa (15 pounds per square foot) as shown in drawing.
- 3) Operate drawer through 35,000 cycles. One cycle shall consist of opening drawer two thirds of its extension length and then returning it to its closed position.
- 4) Attach cycling mechanism so that no additional loads are placed on drawer. Operate at a speed of 20±2 cycles per minute.

### Required Performance / Acceptance Level

- Drawer shall remain operable at completion of test.
- There shall be no failure in any part of the drawer assembly or operating system.
- Drawer bottom shall not have deflected to a position that interferes with drawer operation.

Figure 5.7



## 6.0 COATINGS & CHEMICAL

These tests create, in accelerated form, the cumulative effects of years of normal kitchen conditions and use of pre-finished cabinets. Cabinet finishes are inspected to ensure that stringent standards of appearance are also met. Except where specified otherwise, a set of 2 cabinet doors will be used for evaluation in the finishing tests. The doors used in any given test should represent a normal production run. Doors should not have screw holes, or all screw holes will be covered. All tests will be performed on new surfaces after a minimum of 10 days to allow for aging of the finish.

### 6.1 COATINGS TESTING

#### 6.1.1 Cross Hatch/Adhesion

##### Purpose

To measure the coating's adherence to its substrate and to itself or primer.

##### Test Procedures

- 1) Select an area free of blemishes and any minor surface imperfections, place the sample on a firm base and under an illuminated magnifier.
- 2) Make parallel cuts using a "Cross Cut Tester with 6 Cutting edges" (spaced 2 mm apart) using sufficient pressure to reach the substrate. All cuts should be done in one steady motion and be approximately  $\frac{3}{4}$ " inch long. When making successive single cuts, use a cutting guide (steel ruler) to ensure straight cuts with the guide on the uncut area.
- 3) Brush the film lightly with a soft brush or tissue. Make additional number of cuts at 90 degrees to and centred on the original cuts. Brush the area lightly and inspect the incisions for reflection of light from the substrate.
- 4) Using 3M #250, Scotch Smooth Backed SDS' cut a piece (1" wide pressure sensitive tape) that is 2 inches longer than the length of the incision area. Place the centre of the tape over the grid, smooth by finger and rub the tape firmly with the eraser end of a pencil. Within 90 seconds remove the tape at an angle of 180 degrees.
- 5) Rate the adhesion in accordance with the following:
  - 1 Edges of the cuts are completely smooth
  - 2 Small flakes of the coating are visible at the edges and cuts intersection (0 to 5 %)
  - 3 Coating is flaking around the edges and at the cuts intersection (5 to 15 %)
  - 4 Coating is flaking around the edges and at the cuts intersection (15 to 35 %)
  - 5 Coating is flaking around the edges and at the cuts intersection (35 to 65 %)
  - 6 Flaking and detachment is worse than 65 % of the area

### Required Performance / Acceptance Level

- The sample must not exhibit flaking around edges and detachment higher than 35% of the area, nor can exhibit at cuts intersection over 35% Level 0 to 3 is the acceptable range.

### 6.1.2 Cold and Hot Check

#### Purpose

To measure the coating's ability to withstand extremes of temperature over prolonged periods without failure.

#### Test Procedures

Use cabinet door not used in previous test. Door must be stabilized at room temperature and humidity.

The below procedures will be repeated for a total of five cycles.

- 1) Condition the samples for at least 24 hours at  $23 \pm 3^{\circ}\text{C}$  ( $73.4 \pm 5.4^{\circ}\text{F}$ ), ambient Relative Humidity.
- 2) Expose to  $-21 \pm 3^{\circ}\text{C}$  ( $-5.8 \pm 5.4^{\circ}\text{F}$ ), ambient Relative Humidity for 15 hours.
- 3) Expose to  $+23 \pm 3^{\circ}\text{C}$  ( $73.4 \pm 5.4^{\circ}\text{F}$ ), 50%±10% Relative Humidity for 9 hours.
- 4) Expose to  $+49 \pm 5^{\circ}\text{C}$  ( $120 \pm 9^{\circ}\text{F}$ ), ambient Relative Humidity for 15 hours.
- 5) Expose to  $-21 \pm 3^{\circ}\text{C}$  ( $-5.8 \pm 5.4^{\circ}\text{F}$ ), ambient Relative Humidity for 9 hours.
- 6) Expose to  $+23 \pm 3^{\circ}\text{C}$  ( $73.4 \pm 5.4^{\circ}\text{F}$ ), 50%±10% Relative Humidity for 15 hours.
- 7) Expose to  $+49 \pm 5^{\circ}\text{C}$  ( $120 \pm 9^{\circ}\text{F}$ ), ambient Relative Humidity for 9 hours.

### Required Performance / Acceptance Level

The finish shall show no discolouration, and no evidence of blistering, cold checking, or other film failure when examined under the lab conditions.

## 6.2 CHEMICAL RESISTANCE

#### Purpose

To measure the coatings ability to withstand the effect of daily household chemicals and substances.

#### Test Procedures

The test shall be performed on these exterior exposed surfaces: door, front frame, drawer front and end panel.

With cabinet door, front frame, drawer front and end panel tilted at an angle of 70-80 degrees to the horizontal, place 3 cc's of each of the following test materials on each of the four surfaces to be tested:

- Orange, Lemon and Grape Juices, Vinegar and Tomato Ketchup
- Coffee (prepared for drinking at a temperature of  $46^{\circ}\text{C}$  (with 1 teaspoon of coffee per 1 cup of water)
- Olive oil, detergent solution all for 24 hours
- Mustard for a period of 1 hour

Permit the substances to stand for the stated time periods, then sponge wash the surfaces with clear water and dry with a clean cloth.

*(6.2 continued on next page)*

(6.2 continued from previous page)

### Required Performance / Acceptance Level

- There shall be no discoloration, stain or whitening that will not disperse with ordinary polishing when examined under the procedures of 6.4.
  - In the event of failure during initial examination during testing, the tested parts shall be permitted to stand for 14 days and then shall be reexamined for the same performance requirements.
- a) Place 3 ml of each of the following substances on the surface of a cabinet door that is tilted at an angle of 70 to 80°C to the horizontal: Vinegar, orange and grape juices, ketchup and coffee, alcohol, detergent solution and mustard and lemon juice at 46°C (115°F).
  - b) Allow these substances to remain on the surface for a period of 24 h at normal room temperature and humidity.
- The door finish shall exhibit no excessive discoloration, or stain or whitening that cannot be dispersed with ordinary polishing, and there shall be no indication of film rupture or shrinkage.

## 6.3 DETERGENT & WATER RESISTANCE

### Purpose

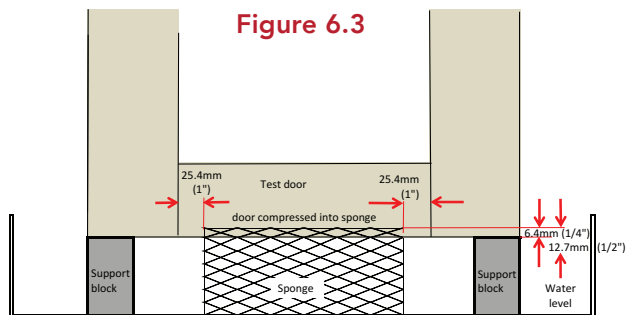
To test the edges of the door for proper application of the finish substrate.

### Test Procedures

- 1) See drawing for suggested test equipment.  
 Use # 8 cellulose sponge or equivalent.  
 Use full length of sponge except: For frame door cut sponge length to two inches shorter than the shoulder length of the door rail.
- 2) Detergent solution shall be on half percent by weight of an unconcentrated dishwashing detergent, and water.
- 3) Level trough and fill with detergent solution to one half inch below top level of sponge. Place test door on sponge and allow to stand for 24 hours.

### Required Performance / Acceptance Level

- 1) There shall be no delamination or swelling.
  - 2) The finish shall show no discolouration and no evidence of blistering, checking, whitening, or other film failure when examined under the procedures of section 6.4 (observation).
- In the event of failure during initial examination during testing, the tested parts shall be permitted to stand for 14 days and then shall be reexamined for the same performance requirements.



## 6.4 OBSERVATION PROCEDURES

The following procedures shall be used to determine compliance when examining samples tested in sections 6.2 & 6.3.

Examine the test specimen by placing it in a vertical position. Lighting shall be in the form of an overhead white fluorescent light with bulb(s) parallel to the floor and having an intensity of 75-100 foot candles (807 to 1076 lux) on the surface.

View at an eye to specimen distance of approximately 30-36 inches (772 to 914.4cm) and at an angle of approximately 45 degrees. Direct sunlight or other angle light sources, which will accentuate or minimize the effect shall be avoided.

# 7.0 INSTALLATION & MAINTENANCE

## 7.1 INSTALLATION

All cabinet units shall be installed in accordance with the manufacturer's installation instructions.

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## 7.2 MANUFACTURER'S WARRANTY

CKCA Manufactures that are to be certified must include a competitive, comprehensive warranty on their products. The warranty must include a provision for workmanship and defects in materials. The warranty should detail inclusions and exclusions, as well as the process for warranty claims. The manufacturer may limit the warranty for claims caused by misuse, neglect, abuse, accident, improper installation, or usual and customary wear.

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## 7.3 MAINTENANCE INSTRUCTIONS

Maintenance instructions should be included with the cabinets when the cabinets are shipped.

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## 7.4 GUIDELINES

The optimal conditions for kitchen cabinet and vanities for in-use application is at a relative humidity between 45% and 65% at 16°C - 32°C (60°F to 90°F), and EMC (equilibrium moisture content) conditions between 8% and 12%.

Casework shall not be subject to abnormal heat, extreme dryness, humid conditions, sudden changes in temperature, or direct sunlight.

It is recommended that the HVAC system at the location of installation be on and functioning, and the kitchen cabinets and vanities shall be acclimated to these conditions for 72 hours prior to installation.

If these guidelines are not followed severe damage can result in the cabinets, doors and millwork. The manufacturer of the work shall not be held responsible for any damage that might develop by not adhering to these guidelines. The manufacturer may exclude damage due to the above reasons in their warranty.

## 8.0 DISCLAIMER & REFERENCES

It is highly recommended that all components and raw materials used by manufacturers in kitchen and vanity products are environmentally friendly to encourage sustainable and environmentally friendly housing. It is also recommended that manufacturers adopt a philosophy of reducing waste and consumption and disposing of waste intelligently and in an environmentally sound fashion.

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### 8.1 DISCLAIMER

This document is intended for the sole review and use by active members of the Canadian Kitchen Cabinet Association only. Any review, dissemination, copying, printing or other use of this document other than for the purposes as described by the CKCA Certification Testing program is strictly prohibited without the written consent of the Canadian Kitchen Cabinet Association.

This publication is the intellectual property of the Canadian Kitchen Cabinet Association.

The purpose of this standard is to establish a set of construction and performance testing standards for Canadian kitchen cabinetry and vanity products in Canada.

This document was developed in the best interests of international harmonization with other testing standards.

Use and application of this standard is voluntary and it is the responsibility of the user to judge and understand its suitability for their particular use.

Some tests required in this standard may be inherently hazardous. The CKCA will not assume nor accept any responsibility for any injury or damage that may occur during or as a result of tests, wherever performed by any party who voluntarily conducts tests according to the requirements of this standard. The performance of certified cabinetry is the sole responsibility of the manufacturer, and no liability on the part of CKCA will be assumed.

This standard is subject to periodic review, amendment and update at the discretion of the CKCA.

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### 8.2 REFERENCES

The following documents were referenced during the initial development and application of this standard:

CAN3-A278-M82, Kitchen Cabinet and Bathroom Vanities, Canadian Standards Association, June 1982 – Withdrawn  
EN 14749:2005 – Domestic and kitchen storage units and worktops – Safety requirements and test methods, 2005  
KCMA/ANSI A161.1-2012 – Performance and Construction Standard for Kitchen Cabinet and Vanity Cabinets, 2006  
ANSI/BHMA A156.9-2003 – American National Standard for Cabinet Hardware, 2003  
SEFA 8 – 1999 – Laboratory Furniture, Casework, Shelving and Tables, Recommended Practices  
CAN-P2E – Criteria and Procedures for the preparation and Approval of National Standards of Canada, SCC, 1992  
Manual of Millwork - Woodwork Institute of California, 1998  
Coatings Encyclopedic Dictionary (FSCT, 1995, ed. Stanley LeSota)

# CKCA CERTIFICATION TECHNICAL COMMITTEE

JUNE 2017

Cabinets bearing the CKCA seal of compliance have been rigorously tested against standards developed by CKCA and periodically revised by the technical committee. CKCA reserves the right to make changes to this program at any time, under the direction of CKCA.

The CKCA technical committee is comprised of member industry representatives who developed and revised these standards. Every effort was made to consider the needs of our industry to ensure the standard serves as a helpful tool for manufacturers to attain a level of quality, remain competitive and prosper.

Cabinets bearing the CKCA seal of compliance have been rigorously tested against standards developed by CKCA and periodically revised by the technical committee. CKCA reserves the right to make changes to this program at any time, under the direction of CKCA.

**PERFORMANCE. QUALITY. TRUST. DURABILITY.**

**Certify your cabinets now and gain a competitive edge.  
Let CKCA certification be the difference!**



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