

SEFA 8 - Mobile Casework

Scope

The scope of this document is intended to provide manufacturers, specifiers, and users tools for evaluating the safety, durability, and structural integrity of laboratory grade furniture and complementary items. This document is inclusive of casework (base cabinets, wall mounted cabinets, counter mounted cabinets, mobile base cabinets, tall cabinets) tables, and shelving systems. Casework, tables, and shelving manufactured for laboratory use should be subjected to the tests and procedures outlined below.

3.0 Definitions

Laboratory Cart – A platform or multiple platforms with 4 wheels or casters designed and used to transport chemicals and/or instruments in laboratory and education settings. *(Currently not tested by SEFA)*

Mobile Tall Cabinet – A free standing storage cabinet mounted on casters and capable of being readily moved or relocated. Mobile storage tall cabinets are designed for movement within a room or space for reconfiguration and flexibility and not to be used for transporting chemicals or instruments. *(Currently not tested by SEFA)*

Mobile Base Cabinet – A free standing storage cabinet mounted on casters specifically designed to be housed below an adjustable height bench/table and for movement within the room or space for optimal reconfiguration and flexibility and not to be used for transporting chemicals or instruments.

Interlocking Hardware – a device that limits drawer and/or pull-out shelf movement to only one at a time.

Caster – a small wheel on a swivel, set under a piece of furniture, a machine, etc., to facilitate moving it.

Counterbalance: A device or weight incorporated into the cabinet body to prevent overturning when movable elements are extended.

Movable element – an element that can be moved to protrude past the cabinet body, including but not limited to doors, drawers and pull-out shelves.

3.1 Description of Testing Apparatus

Threshold – A ½" High x 4" Wide x 36" Long rectangular block with a ½" High x 1" Deep Bevel along each length. Material selected shall be substantial and not move or deform during the test, such as hardwood or poly.

<https://www.zoro.com/national-guard-saddle-threshold-48inl-fluted-4inw-424dkb-48/i/G1614457/?variantSelection=finish&scrollPos=216.48001098632812>

Manufacturers who choose to test their cabinet without Interlocking Hardware must test and pass the Static Stability Test with all movable elements positioned in their least stable condition.

Load the mobile base cabinet top drawer by using 50 pounds (22.68 Kg) of solid steel bars or shot bags evenly distributed within the fully extended top drawer. After five minutes, unload the cabinet.

11.2.3 Acceptance Level

The cabinet shall not tip or overturn at any point. Operation of movable elements shall be normal under condition of test load. There shall be no signs of permanent deformation to front rail, cabinet joinery, doors, or drawers.

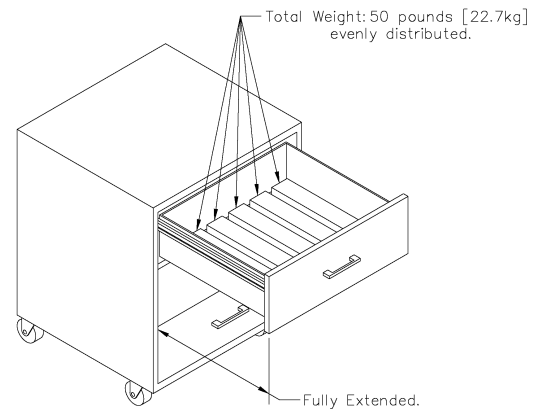


Figure 2. Static Stability Test Configuration

11.3 Static Load Test

11.3.1 Purpose of Test

The cabinet load test will challenge the structural integrity and load bearing capability of the mobile base cabinet construction. This test will demonstrate the ability of the cabinet to support and operate under heavy applied loads.

11.3.2 Test Procedure

All moveable elements shall be in their closed position for this test.

Verify that the cabinet is level and supported only by the casters.

Load the cabinet top by using 250 pounds (113.4 Kg) of solid steel bars or shot bags evenly distributed.

Each drawer shall be loaded with 50 pounds (22.68 Kg) of solid steel bars or shot bags evenly distributed within each closed drawer.

11.3.3 Acceptance Level

Operation of movable elements shall be normal under condition of test load. There shall be no signs of permanent deformation to front rail, cabinet joinery, or movable elements.

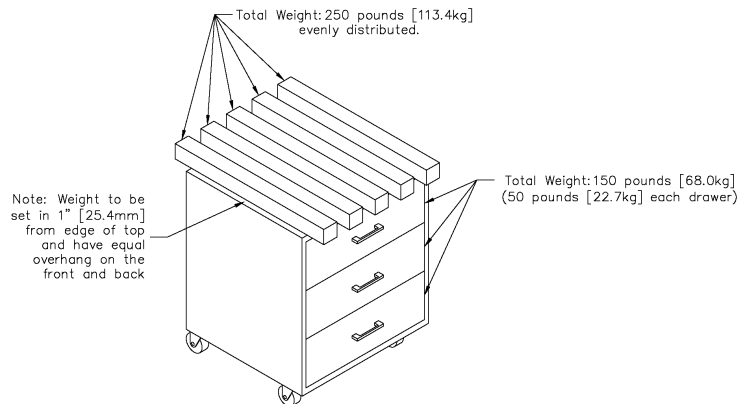


Figure 3. Static Load Test Configuration

11.4 Rolling Stability Test

11.4.1 Purpose of Test

This test will demonstrate the durability of the caster, caster attachment and the cabinet's ability to withstand travel over a threshold.

11.4.2 Test Procedure

Prior to conducting the test, a static load of 50 pounds (22.68kg) (using 5 ten 10-pound (4.54kg) sandbags per Section No. 3.1) shall be evenly distributed in each drawer. Secure a threshold (per Section No. 3.1) to the floor or blocked off from a wall far enough for the cabinet to completely travel over. Starting at the threshold, place a line of masking tape on the floor, every 0.8 meters, perpendicular to the threshold, a minimum of 8m of total length, if possible. The tape can also be placed every 0.4 meters with a pace of 120 beats per minute to achieve 0.8m/second. Using a metronome or smartphone app to make one click/beat every second (or alternatively 120 beats per minute) ensures the cabinet is traveling at 0.8m/second. Push the cabinet at its top, so that it is traveling over the masking tape at the same point every beat. The side of the cabinet shall be parallel to the direction of travel and moveable elements shall face the person pushing the cabinet. Continue to push the cabinet over the threshold at this pace.

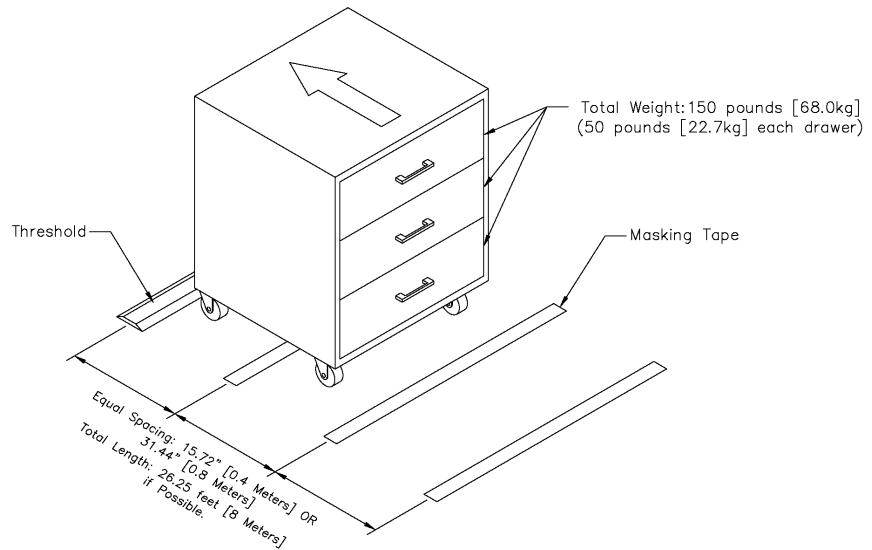


Figure 4. Rolling Stability Test Configuration

11.4.3 Acceptance Level

The cabinet shall travel up and over the threshold without permanent damage or overturn.