Safety Fact Sheet – Wall-Mounted Shelving

This fact sheet is intended to provide general guidance regarding the proper selection, installation and use of wall-mounted shelving systems for office and laboratory applications.

Understanding the basic design of wall-mounted shelving systems is a good way to ensure proper installation and safe use. Faulty installation, combined with improper use (ie. overloading) can be dangerous if the shelves are being used to store chemicals, or heavy equipment. Falling items can cause injury, spills (even fires) and damage to sensitive equipment.

What makes up a wall-mounted shelving system?
The components of a typical wall-mounted shelving system include standards, shelf brackets, shelves, anchors and fasteners.

- **Standards** are long narrow metal strips equipped with slots. They are secured to walls using screws and anchors (plastic or metal splines inserted into the wall.)
- **Shelf brackets** are attached to the standards and are height-adjustable by selecting the appropriate slots.
- **Shelves** sit on top of the brackets, and may or may not be secured. Shelves used for to storing chemicals should be secured to the brackets and equipped with end caps to prevent containers from moving laterally and falling off.
- **Anchors and fasteners** are used to secure the system to the wall. Each has a design capacity and should be purchased as part of the overall system.

Installation

When selecting a wall-mounted shelf system, it is best to purchase all components from one manufacturer, do not mix and match. EHS advises that a skilled tradesperson (carpenter) or a suitable contractor perform the installation. Contact the Department of Facilities at [http://web.mit.edu/facilities/services/repairs/repairs.html](http://web.mit.edu/facilities/services/repairs/repairs.html) for more information regarding the selection and installation of wall-mounted shelving systems.

Types and capacities of wall-mounted shelving

Most wall-mounted shelving systems falls into (3) general categories;

- General display
- Closet/storage
- Book shelving

Before using existing wall mounted shelving, you should be aware of what type of system (and the corresponding capacities for each) are present in your work area or laboratory. This will help ensure safe use.

The general categories are repeated below, with the corresponding capacities.

- **General display** (light duty)- 15 PSF (pounds per square foot)
- **Closet or Storage**- 25 PSF
- **Book shelving**- 40 PSF

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Common reasons for wall-mounted shelving failure

So as you can see, when using shelf systems, it is important not to exceed the recommended capacity limit for each type.

Typical reasons for failure (pulling off of the wall, bowed shelves) include improper installation and/or overloading. See below.

- Exceeding system component capacity (overloading is the most common reason)
- Lack of structure or blocking inside walls (improper installation)
- Reliance of interior finishes for strength (e.g. drywall) (improper installation)
- Use of wrong type of anchor (improper installation)
- Shelving bowed downward (too much weight, not enough brackets, improper installation.)

Tips for storage - knowing how much things weigh

Knowing the weights of items to be stored on wall-hung shelving is a good way to prevent failure and to ensure safe storage. Once you know the weights, and you have determined the shelving type/category and capacities do the math! Typical weights of common items are listed below;

- Textbook: 4-6 pounds
- 2-inch spiral notebook (full): 3-5 pounds
- Computer/ CPU: 10-12 pounds
- Desk Printer: 3-5 pounds
- Office printer: 20-30 pounds
- 1 gallon bottle of acetone: 6-8 pounds

Additional tips for safe storage

- Avoid storing heavy objects- use freestanding shelf systems for items that exceed the system capacity.
- Always store the heaviest items on lower shelves.
- Think about the weight of objects-use a scale and weigh objects if you are not sure.
- Store liquid chemicals and/or extremely hazardous materials in approved storage cabinets.
- It is good practice to have shelves attached to the brackets.

Additional information on wall-mounted shelving systems

http://www.thisoldhouse.com/toh/how-to/intro/0,,550857,00.html

http://www.staples.com/office-supplies/c21_Wall-Floor-Shelving-Furniture_10088_Business_Supplies_10705_2_10051

http://www.carrcorporation.com/shelving_syst.html