SAFETY AND HEALTH STANDARDS
STACKING / STORAGE PRACTICES

Effective Date: 12/11	Standard: 15.9	Document Number: **KUCSH0064**	Rev: 04

15.9.1 **INTRODUCTION**

15.9.1.1 This standard addresses eliminating potential hazards from materials handling stacking / storage practices.

15.9.2 **REQUIREMENTS**

15.9.2.1 All stacking / storage areas are to be kept in an orderly and accessible condition at all times.

- Shelving will be secured in such a manner as to prevent tipping or falling during loading, unloading, or vibration.

15.9.2.2 Walkways and aisles shall be provided and kept free of obstructions.

- Aisles should be positioned in such a way that obstacles (e.g., open doors, open windows and protrusions from working areas) do not interfere with traffic flow.
- Material will not be placed on shelves so that it protrudes into aisles or creates a falling hazard.
- Supplies shall not be stacked / stored in a condition which creates a tripping hazard.
- Aisles, loading, and unloading areas shall be clearly marked by a 4" safety yellow border.
- Walkways for pedestrians shall be wide enough to accommodate two-way flow. The width of walkways may vary according to the physical layout; however, these should never be less than 30 inches wide.
- Regularly used walkways and travel ways will be sanded, salted, or cleared of snow and ice as soon as practicable.
- Material or equipment shall not be stacked within six feet of any railroad track or to obscure the views of personnel operating or directing rail-mounted vehicles.
- Items must be stored away from fences to maintain plant security and to protect fencing when moving material.
- No materials shall be stacked in such a way as to obstruct firefighting equipment, lighting, electrical panels, or ventilation. See NFPA 13 and 231C to ensure adequate ceiling height under sprinkler systems.

15.9.2.3 Materials shall be stacked on stable and level areas capable of supporting the weight of the items being stacked.

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- Unsupported material shall not be stacked above six feet unless properly designed supports are used.
- The total height of any unsupported stack should not exceed three times the narrowest base dimension.
- Tiers of stacked materials shall be stepped back half the depth of a single article every fifth tier (on both sides) unless positive support is supplied, or tiers shall be stacked so that items are locked together (interlocked). Care must be taken to ensure that corners are securely bonded.

15.9.2.4 When the height of a storage rack exceeds four times the rack depth, it shall be attached to the building and bolted to the floor and racks bolted to each other.

- When small storage bins are placed on racks, the rack must have an outer lip to keep bins from falling.
- Heavy items shall be stored at the lowest possible rack level.

15.9.2.5 Stacking and reclamation of materials from stacks shall be carried out only by people task trained in the correct procedures.

- Climbing on racks or stacked materials for any reason is prohibited.
- Assess the hazards associated with bins and / or other stacked items falling onto pedestrians. Only authorized personnel who are carrying out essential tasks are allowed in the area when stacking materials at heights.
- The need for special equipment to prevent the injuries associated with lifting heavy loads manually must be considered. (i.e. pallet jacks, forklifts, dolly etc.)
- Pallets used for stacking shall be in good condition. Those doing the stacking are responsible for ensuring pallet quality.
- Adjacent stacks shall not lean against each other for support. For this reason, space should be left between stacks. Stacks shall be inspected prior to unloading and any unsafe condition shall be corrected.

15.9.2.6 Storage of items shall meet acceptable housekeeping requirements. Storage must provide safe, easy access for people and equipment.

- Storage of hazardous materials or flammable products must be accomplished in approved containers and cabinets and

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must be properly labeled. (Example: **"DANGER - ACID - CORROSIVE"** (See Safety and Health Standard 10.1)

- Chemical substances, including concentrated acids and alkalies, shall be stored to prevent inadvertent contact with incompatible substances.
- Flammable storage cabinets shall not be used to store combustible materials. (Flammable materials include paints and solvents etc. and combustible materials include rags, gloves etc.)
- Gas cylinders must be secured in an upright position with valves protected by covers. Storage facilities for gas cylinders must comply with applicable safety standards. (See Safety and Health Standard 16.15)

15.9.2.7 Circular items, such as pipe, shall be stored in suitably designed racks or must be properly chocked.

15.9.2.8 Electrical rooms shall not be used as storage areas. (See Safety and Health Standard 15.1)

15.9.3 **RESPONSIBILITIES**

15.9.3.1 The Superintendent is responsible for the stacking and storage practices within his / her area.

REFERENCES:

NFPA Section 13 and 231C.
KUC Safety and Health Standard 10.1 Hazard Communication
KUC Safety and Health Standard 15.1 Electrical Rooms
KUC Safety and Health Standard 16.15 Compressed Gas

REVISION HISTORY:

MOC#	Description of Change	Prepared By	Date
18072	Scheduled Review and update. Add add aisle way requirement from deleted 15.8 Standard, format, and add documentum number.	KUC Safety and Health Standards Committee	12/11

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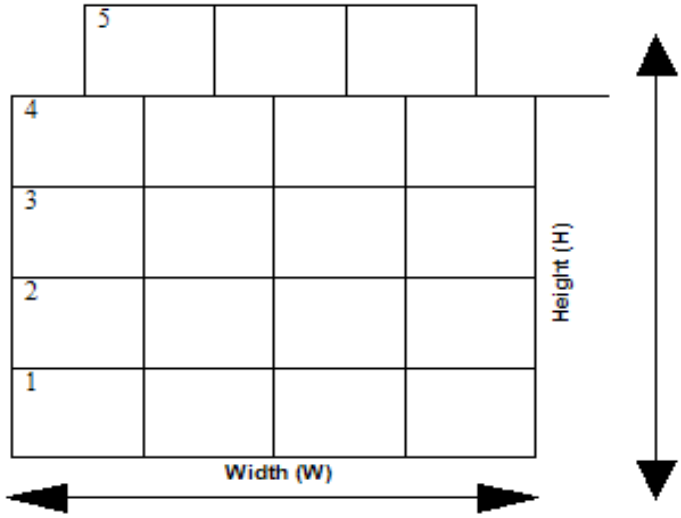
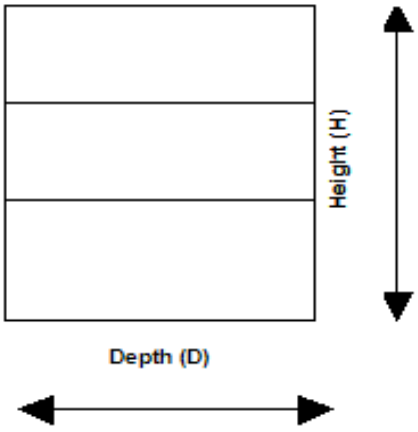
Exhibit 15.9.1

UNSUPPORTED STACKS



- Height must not exceed six feet (H < 6')
- Height must not exceed three times the width (H < 3W)

UNSUPPORTED RACKS



- Height must not exceed 4 times the depth (H < 4D)

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