



SAFE HANDLING AND STORAGE

INTRODUCTION

This fabrication bulletin addresses the safe handling and storage of DuPont™ Zodiaq® quartz surfaces.

OVERVIEW

Proper handling and storage of DuPont™ Zodiaq® quartz surface products and accessories will help avoid injuries and ensure that these products are in good condition when time comes to start fabrication. Every business handling Zodiaq® quartz surfaces must have the appropriate material handling equipment to ensure the safe movement of slabs and work-in-progress product. Following are a description of the material handling processes and best practices recommended for safe handling. Additional guidance may be found in OSHA Safety and Health Information Bulletin SHIB 08-12-2008, *Hazards of Transporting, Unloading, Storing and Handling Granite, Marble and Stone Slabs*.

It is the responsibility of each business to determine the proper material handling equipment for their facility.

A. GENERAL SAFETY

- Inspect all equipment prior to use to ensure the safe operation of equipment.
- Have three operators to ensure optimal safe handling of slabs: one operator operating the forklift and two operators on the floor managing the slab movement.
- Wear proper personal protective equipment at all times: leather gloves, sturdy shoes, safety glasses, and a hard hat when lifting the material overhead.
- Slabs are very heavy and awkward to handle. When moving a slab, avoid lifting the slab higher than necessary.
- Be aware of the “fall shadow”, defined as the area on both sides of the slab where the slab could land and topple if it were to fall. Operators should never position themselves directly under, in front of, or between slabs. Always stand in a position away from where the slab could potentially fall.
- Keep hands away from moving slabs to avoid crushing injuries.

B. MATERIAL HANDLING

Every business that handles Zodiaq® slabs will need a forklift to off-load A-frames from delivery trucks, move A-frames of slabs in and out of inventory, and to load A-frames for delivery to fabricators or installers. Most businesses will equip forklifts with a slab boom and lifter (clamp) for moving individual slabs.

Zodiaq® quartz surfacing is a heavy material weighing 10 lb./sq. ft. (49 kg/m²) for 2 cm and 15 lb./sq. ft. (74 kg/m²) for 3 cm product.

A fully loaded A-frame can weigh up to 6,500 lbs. (2,950 kg). Forklifts should have a minimum capacity rating of 8,000 lbs. (3,650 kg). Note that A-frame placement on the forks relative to the Load Center may reduce fork lift capacity.

C. MOVING SLABS ON A-FRAMES

A-frames are intended to be moved only when slabs are secured to the A-frame. Secure the slabs to the A-frame with banding or ratcheting tie down straps placed around the entire A-frame. The intent is to duplicate the original banding as it comes from the factory.

Moving an A-frame using clamps to secure the cross members is an unsafe practice as the A-frame is not designed for this use.

When manipulating slabs, check to make sure the A-frame is flat, resting on level ground, and is not leaning in any way. The worker should be aware of the fall shadow where the slab could potentially fall and stand in an upright position to the side of the A-frame when cutting the banding from the A-frame.

When removing slabs from the A-frame, inserting a mechanical stop device (e.g. rigid safety pole similar to poles used for index racks) is recommended as a preventative measure to prevent a slab from falling towards the worker. Safety poles should be positioned **before** any banding is cut.



Figure C-1: Safety pole

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Dragging A-frames across a floor can cause damage and is an unsafe practice. The only exception would be when the A-frame is equipped with runners added to the A-frame to enable loading and unloading of box trailers. For A-frames that have been unloaded from box trailers, make sure the runner is intact at the time of unloading. The A-frame runner should be used only to facilitate loading and unloading from box trailers. The runners should be removed before any normal warehouse movement of A-frames.

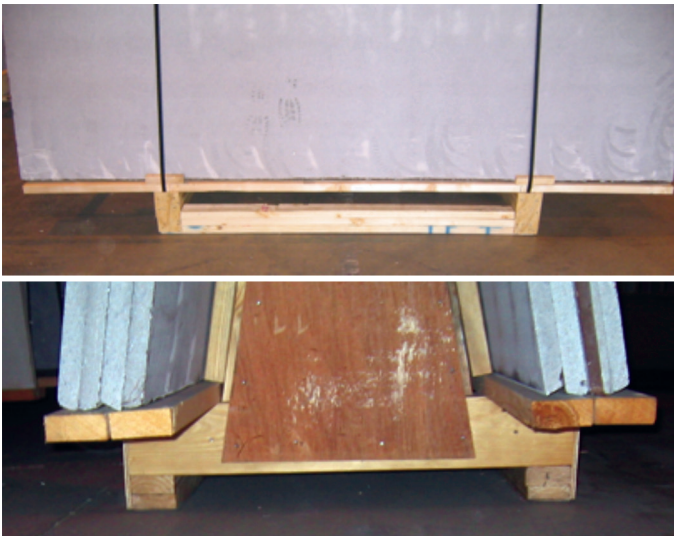


Figure C-2: A-frame shown with runners for box truck movements.

D. SLAB STORAGE

Cost-effective ways to store Zodiac® slabs are on an A-frame (temporary storage), or in vertical storage racks (long term storage). A-frames used for storage are generally constructed of wood, while vertical storage racks are generally constructed of steel. Steel posts are often covered at the point of contact with carpet, rubber pads, or wood to prevent scratching, gouging, or scoring of a slab. Vertical storage racks should be capacity rated and designed for stone slab storage.

Slabs should not be stored on A-frames without banding or strapping the slabs to the A-frame. Never attempt to move an unbanded A-frame. The A-frame should be protected from the weather and any impact that may tip a slab or the entire A-frame. The number of slabs on either side of the A-frame should be balanced to make the A-frame more stable.

A-frames are designed for slab delivery and temporary storage. A-frames are not designed for long-term storage of slabs.

If slabs are to be stored on A-frames for an extended period, the A-frame should be periodically inspected to insure integrity. A-frames should not be stored outside or in a wet environment for an extended period because they are not made of treated wood.

Any time Zodiac® quartz surfacing is stored outside, it needs to be covered. Slabs should be stored with the unpolished side exposed.

Protect Zodiac® slabs from prolonged exposure to direct sunlight as fully or partially exposed slabs can experience color fading. In northern climates where rain, ice, and snow fall during the winter months, ice can build up under the wood braces of the A-frame. The combination of accumulated ice and the metal forks on a forklift require special handling. Care should be taken to defrost the ice. The forklift should be outfitted with rubber sheaths to prevent the A-frames from slipping during transport. In addition, individual slabs which are icy or wet should be warmed and dried prior to hoisting to avoid slippage while transporting.

E. MOVING SLABS AND/OR WORK-IN-PROCESS WITHIN THE FABRICATION SHOP

There are a number of effective products for moving material through a shop. Please consult the appropriate vendor for the right equipment for your shop. Verify that the equipment has a suitable capacity rating for the intended use. The following is not an exhaustive list:

- Forklift equipped with a boom and slab lifter (clamp)
- Overhead crane equipped with a vacuum lift or slab lifter (clamp)
- Carts/tables/dollies:
 - Slab cart/buggy (hydraulic and battery operated versions are available)
 - Tilting hydraulic transport tables
 - Workshop cart with wheels
 - Fabrication carts (A-frame mode that pivots to horizontal mode is available)
 - Hand trucks (multi-position versions available)
 - Slab dolly
- Jib crane equipped with a vacuum lift or slab lifter (clamp)
- Conveyors

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F. TRANSPORTING FINISHED MATERIAL TO THE JOBSITE

Follow the general safety recommendations on the previous pages. Moving finished material from the fab shop to the jobsite requires some careful planning. Care needs to be taken so that the finished material is not damaged in transit. Exercise care if manual lifting becomes necessary. Always wear the appropriate personal protective equipment. Always lift the material using proper lifting techniques. Secure the material to an A-frame or similar device located inside the vehicle (clamps and/or tie down straps should be used). Place individual pieces face-to-face and back-to-back to avoid damaging the material. Do not overload the transport device. Secure the device and the material to avoid any shifting that may occur during transit.

Upon arrival and before unloading the material, walk the planned entry route to assess and determine where access restrictions may pose a problem with delivery of the material. Clear the intended route of any obstructions. Take extreme care when off-loading the material from the vehicle to the ground. Use transport carts where possible versus hand carrying. Always lift the material using proper lifting techniques and wear proper personal protective equipment.

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