

# CORIAN® ENDURA™ STORAGE AND HANDLING

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## Introduction

This fabrication bulletin addresses basic guidelines for Corian® Endura™ high performance porcelain storage and handling.

## Overview

Proper handling and storage of Corian® Endura™ high performance porcelain products and accessories will help avoid injuries and ensure that these products are in good condition when time comes to start fabrication. During storage slabs or work in progress must be properly supported and protected from impact. Slabs should be transported in a vertical orientation and care must be taken not to cause impact.

Every business handling Corian® Endura™ high performance porcelain 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*.

## A. General Safety

- Review the Corian® Endura Safety Data Sheets (SDS)
- 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.

See the Corian® Endura Safety Data Sheets (SDS) for additional details.

Porcelain slabs are heavy and cut edges can be sharp. 12 mm slabs have a fiberglass backing. Proper personal safety equipment should be worn (safety shoes, safety glasses, cut resistant gloves, cut resistant sleeves when handling large slabs and hard hat when slabs are elevated). All handling systems and forklifts must be suitable for the size and weight of the slabs and A-frames.

## B. Material Handling

Every business that handles Corian® Endura™ 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.

Inspect the A-frame on receipt before removing from the truck and prior to each movement to ensure no damage has occurred to the A-frame.

Corian® Endura™ surfacing is a heavy material weighing 6.1 lb./sq. ft. (30 kg/m<sup>2</sup>) for 12 mm product and 10.2 lb./sq. ft. (50 kg/m<sup>2</sup>) for 20 mm. Individual slabs can weigh up to 348 lbs. (158 kg) for 12 mm and 579 lbs. (263 kg) for 20 mm.

A fully loaded A-frame can weigh up to 7,800 lbs. (3545 kg). Forklifts should have a minimum capacity rating of 8,000 lbs. (3,640 kg). Note that A-frame placement on the forks relative to the Load Center may reduce fork lift capacity. Validate usage with forklift manufacturer.

## 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 post similar to posts used for index racks) is recommended as a preventative measure to prevent a slab from falling towards the worker. Safety posts should be positioned before any banding is cut. A safety support (fabricated from two 2"x4"s slightly wider than the A-frame) placed on both ends of the A-frame will provide toe protection should a slab slide off the A-frame when cutting the bands. These are shown in Figure C 1 below.

**Figure C-1: Safety Devices (safety posts and safety support)**



**Figure C-2: Safety support for toe protection**



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 and during storage.

## D. Slab Storage

Cost-effective ways to store Corian® Endura™ 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. Avoid setting directly on metal or cement when using racks. When storing on A-frames a continuous rigid base is recommended. A rubber, wood or polymer base will help prevent edge damage. Vertical storage racks should be capacity rated and designed for stone slab storage. Storage should be located away from shop traffic to avoid potential damage from impact.

Slabs should not be stored on A-frames without banding or strapping the slabs to the A-frame. Slabs should always be restrained when not accessing for movement.

For full A-frames, slabs may be higher than the A-frame as the multiple slabs cumulatively reinforce each other when banded. For single or fabricated slabs the A-frame should be taller than the slab so that straps wrap around the A-frame, not the top of the slab. This is particularly important for single fabricated slabs that have cutouts. Wrapping the strap directly around the top of a slab will create downward compression on the slab. The straps should wrap through the wooden feet of the A-frame, not passed around the horizontal portions of the A-frame, they are not stiff enough. A wooden block serves to prevent the slabs from moving when the straps are cut.

**Figure D-1: Strap Placement**



The straps should be polyester ¾" x 0.040", classification AAR Green with 1900 lbf. breaking point capacity. Follow strapping manufacturer's guidelines for tensioning straps.

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.

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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 Corian® Endura™ high performance porcelain is stored outside, it needs to be covered. Slabs should be stored with the unpolished side exposed.

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.

When storing partial slabs do not put a larger slab over smaller slabs. Cut edges are sharp and prone to chipping with impact. Protect cut edges during storage and handling.

### E. Moving Slabs and/or Work-in-Process within the Fabrication Shop

Before cutting the straps on the A-frame, inspect the A-frame for damage and that the slabs have not shifted on the A-frame. Safety post should be in place to prevent slab from falling. Stay out of the fall shadow of the slab.

There are multiple 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

White rubber on clamps is advised. Black rubber may leave a residue on the slabs.

Keep slabs vertical when transporting within shop. Any major blows and bumps can cause the slab to chip or break. Do not walk underneath slabs during transport.

Protect work in progress from impact, particularly edges. Sharp edges are prone to chipping and should be protected. Tops with cutouts may require reinforcement with “sink savers” to prevent flexing during transport.

### F. Reference

OSHA SHIB 08-12-*Hazards of Transporting, Unloading, Storing and Handling Granite, Marble and Stone Slabs*, U. S. Department of Labor, Occupational Safety and Health Administration, 2008

<https://www.osha.gov/dts/shib/shib081208.html>

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