



TURTLE PLASTICS®
Safety & Stabilization Product Solutions



**Fundamental Principles of Equipment Cribbing & Blocking
&
Best Practices Utilizing Turtle Plastics Dura Crib Products**

2025

ABOUT US

- Turtle Plastics is an Ohio based, 40-year-old, privately owned company that designs and manufactures life saving, environmental, health, and safety stabilization products made in the USA from 100% recycled plastic.
- We manufacture four product brands; Dura Crib™, Dura Stat™, Dura Blend Lumber™, and Turtle Tile™.
- This presentation addresses the use of the Dura Crib brand of products.



Before Starting...

- Understand basic cribbing & blocking terms.
- Follow three fundamental principals.



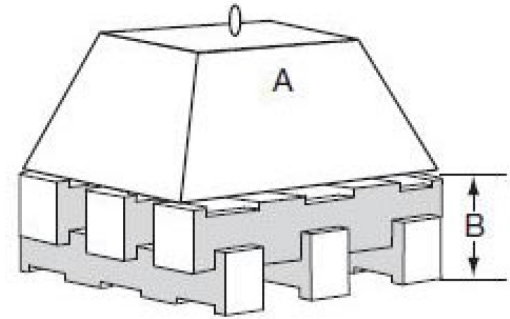
BASIC TERMS

WE MUST KNOW THE LOAD RATINGS OF EACH BLOCK THAT IS USED TO CREATE A CRIB STACK AS COMPARED TO THE LOAD/WEIGHT REQUIREMENT OF EACH MACHINE OR EQUIPMENT IN ORDER TO UNDERSTAND CRIBBING FEASIBILITY.

- ❖ **BLOCKING** - Also referred to as “cribbing,” is a stabilization method which has traditionally been wood or another material used to create a configuration (usually a platform) to help support machinery and equipment. For this presentation we refer to cribbing as the Turtle Plastics Dura Crib brand of products, that include blocks, chocks and pads.
- ❖ **WORKING LOAD** - Also known as "design load" or "safe load", is generally a fraction of the ultimate strength of the block.
- ❖ **CENTER OF GRAVITY** - The center of gravity (CoG) is a theoretical point of an object, which engineers use for convenience in calculations, as the single point where all of that object’s weight is concentrated.

BASIC TERMS

- **BOX CRIB** - Commonly constructed using a “3 point” crisscross of cribbing blocks positioned at 90-degree angles. The arrangement may be square or rectangular. Whenever possible, crib blocks should be built in a square or rectangular shape to maximize load capacity, stability, and safety. When properly built, cribs transfer the load perpendicular to the cribbing blocks, resulting in an even compressing of the crib.
- **POINT SOURCE LOADING** - When energy of an object bearing down onto the crib stack is uneven or isn’t positioned in a manner where weight is distributed evenly across the box crib. Point source loading can cause the crib block or crib stack to fail irrespective if the block is made from wood or engineered material. Another example of point source loading is placing the block under a single point of contact where there is a sharp object such as a screw or bolt which then pierces the cribbing block causing the block to fail.





UNDERSTAND POINT SOURCE LOADING AND IMPACT ON CRIBBING APPLICATIONS

Examples of Point Source Loading

- ❖ When an object is placed onto or under a crib block or crib stack and positioned in a manner where the weight of the object is not distributed evenly across the block/stack resulting in a single point of energy bearing down.
- ❖ Not placing crib blocks to the center of gravity of the equipment.
- ❖ Placing too much weight of the equipment onto one block/stack.
- ❖ Placing the block or stack under or over a single point of contact where there is a sharp object such as a screw or bolt which then pierces the cribbing block/stack causing the block/stack to fail.
- ❖ When different cribbing blocks with differing working loads are used to create the box crib. The load strength of the box crib goes to the lowest working load crib block. Therefore, if the weight of the load being lifted exceeds the lowest block working load, then the force of the load will gravitate to the lowest load bearing block causing the crib stack to fail.



Point source loading can cause the crib block or crib stack to fail irrespective if the block is made from wood or engineered material.



FUNDAMENTAL PRINCIPLE #1 OF PROPER CRIBBING AND BLOCKING



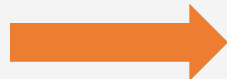
Know when the equipment is the **"IDEAL CANDIDATE"** for blocking and cribbing maneuvers.



*Read and understand the equipment manufacturer's operator's manual.



*Understand your organization's guidelines/policies for repair and maintenance of the equipment.



Understand block manufacturer's guidelines on product suitability.

THE IDEAL CANDIDATE

**MOST UTILITY
TRUCKS &
EQUIPMENT**

**MOST MATERIAL
HANDLING
EQUIPMENT**

**MOST
CONSTRUCTION
EQUIPMENT**

**SOME RAILROAD
EQUIPMENT**



FUNDAMENTAL PRINCIPLE #2 OF PROPER CRIBBING AND BLOCKING



Know when the equipment is the **“IDEAL SITUATION”** for blocking and cribbing maneuvers.



- ❖ The “Ground up Principal”
- ❖ Identify ideal ground conditions. Establish there is firm and solid ground conditions to support the blocking.
Will the crib be level on this ground condition *before and after* the blocking maneuver?
- ❖ Short term cribbing application (less than 30 days).

THE IDEAL SITUATION

**EVEN GROUND
SURFACE WHETHER
INDOOR OR OUTDOOR**

**DRY GROUND
CONDITIONS**

**EQUIPMENT WEIGHT
< BLOCK LOAD LIMIT**

**SHORT TERM
CRIBBING
APPLICATION**



FUNDAMENTAL PRINCIPLE #3 OF PROPER CRIBBING AND BLOCKING



Follow **“LOCK OUT/TAG OUT” (LOTO)**

recommendations for
the equipment before
starting any
cribbing/blocking
maneuver.



- ❖ Prepare for shutdown.
- ❖ Notify all affected employees of the activities and equipment involved.
- ❖ Shut down the equipment.
- ❖ Isolate the equipment from the hazardous energy source.
- ❖ Dissipate residual energy.
- ❖ Apply applicable lockout or tagout devices.
- ❖ Verify that the equipment is properly isolated.



DURA CRIB PRODUCTS OSHA COMPLIANT FOR “LOCK OUT/TAG OUT”

“When used correctly, Dura Crib brand of products can create a compliant and safer work environment by providing technicians who repair equipment with a proper ‘lock out tag out’ of stored energy. This type of hazardous energy is created when hoisted or jacked equipment is not given a secured platform. Wood cribbing does not interlock, is not tested, and is subject to unseen degradation via environmental factors or absorption of fluids. All these factors create an unsafe and unpredictable work surface that cannot contain stored energy. Under 29 CFR 1910.147 LOTO, for stored energy not being controlled and ‘locked-out’ can also be used as the basis of a citation.”

Angelique Bracer, COHC, SHS

WHY WOOD IS NOT IDEAL FOR LOCK OUT/TAG OUT

- ❖ Doesn't interlock to reliably contain hazardous energy.
- ❖ Inconsistent load rating based on species.
- ❖ Inconsistent load rating based on environmental factors.
- ❖ Splinters, rots, degrades with age.
- ❖ Can contain creosote or other hazardous fluids.
- ❖ Can not be decontaminated without compromising integrity of block.



WHAT CAN GO WRONG...

A tire contractor was seriously injured when the front-end loader he was repairing fell on him. The front-end loader had been lifted and placed on wood cribbing to repair a flat tire. The contractor was underneath the loader to adjust one of the lifting jacks when the wood cribbing shifted, causing the loader to fall. The tire contractor was struck, and his hard hat became wedged between the cribbing and loader frame.



Photo from the Mine Safety and Health Administration – April 2018.

DURA CRIB PRODUCT ADVANTAGES OVER WOOD

- ❖ Engineered with a reliable and repeatable formula for consistent performance.
- ❖ Interlocking facades to create an OSHA compliant “lock out/tag out” mechanism.
- ❖ Lab tested for working load limit.
- ❖ Safely decontaminate products with an agent on the EPA List-N.
- ❖ Do not splinter or rot.
- ❖ Warrantied.
- ❖ Sustainably made in the USA with 100% recycled plastic.
- ❖ Material is Berry Amendment, Prop 65 and Reach Compliant.



RESOURCES OF TECHNIQUES FOR PROPER CRIBBING AND BLOCKING

Government

01

US Army Corps of Engineers
Field Operations Guide – July
2016 – Edition 8.1

Field Guide for Building
Stabilization and Shoring
Techniques – Department of
Homeland Security

<https://www.dhs.gov/science-and-technology/bips-08-field-guide-building-stabilization-and-shoring-techniques>.

Non-Profit

02

Tire Industry
Association

Fire Training Instructors
Industrial Training
International

For Profit

03

Convergence Training by
Vector Solutions

Coggnio, or other online
educational associations

CRIBBING GUIDELINES

The US Army Corp of Engineers States to never crib higher than 2-3 times the base width of crib base.

**FORMULA = i.e., Super Crib®
= 6"x7"x24" nominal**

**3 CRIB BLOCK BASE with
platform base= 20"**

**CRIB STACK HEIGHT = 60"
Max – Recommend no higher
than 48" when possible.**

**Blocking shall be of
sufficient thickness, width,
and length to prevent
shifting, toppling, or
excessive settlement of the
load.**

**Blocking shall be of
sufficient strength to
prevent crushing, bending
failure or shear failure, and
to adequately transmit the
load's weight to the
supporting surface.**

**Use a ground pad and top
cribbing stack pad to help
dissipate load and reduce
the risk of "point source
loading."**

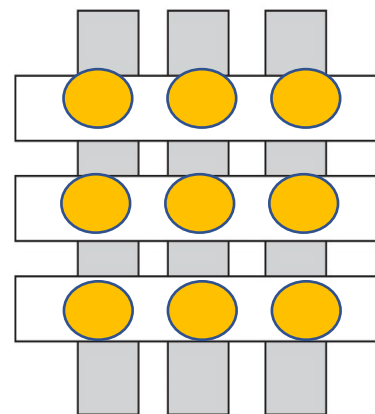
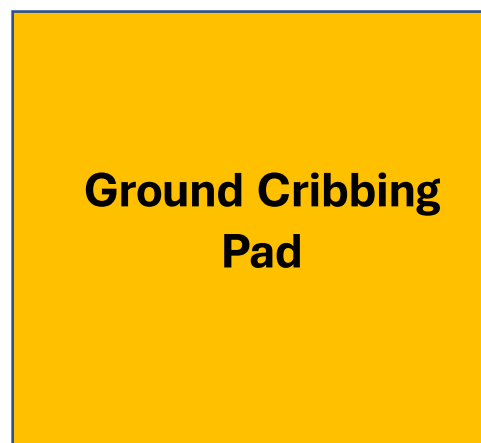
US ARMY CORPS OF ENGINEERS GUIDELINES STACKING CONFIGURATION USING DURA CRIB BLOCKS

The 3x3 also known as a “9-point” box crib stack.

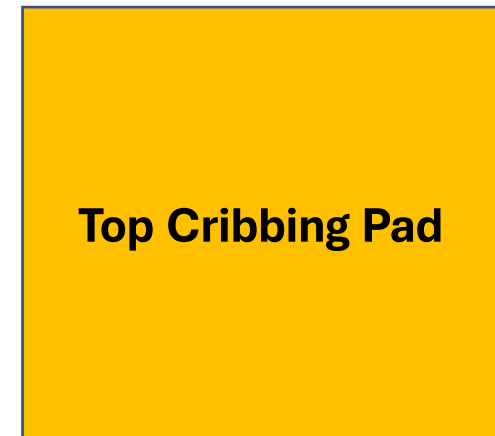
Consists of 3 Dura Crib blocks laid as a base or preferred technique is to lay 3 blocks onto a bottom plate of solid material.

Lay 3 additional Dura Crib blocks perpendicular to base blocks forming 9 points of contact onto the stack (at the intersection of base blocks to top blocks).

Use a ground pad and top cribbing stack pad to help dissipate the load and reduce the risk of “point source loading”.



3 X 3



KEY POINTS

Understand load requirement per each piece of equipment from user's manual.

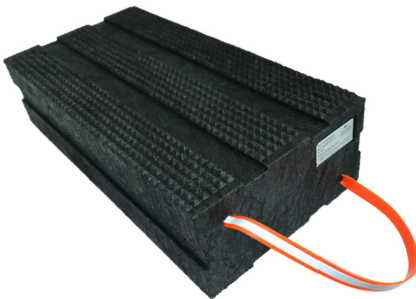
Understand height needed for the lift.

Understand surface area required for uniform placement of the equipment onto the block.

Understand ground conditions to the lift and equipment to determine if a crib pad is required. Do you require a bottom crib pad, top crib pad or both?

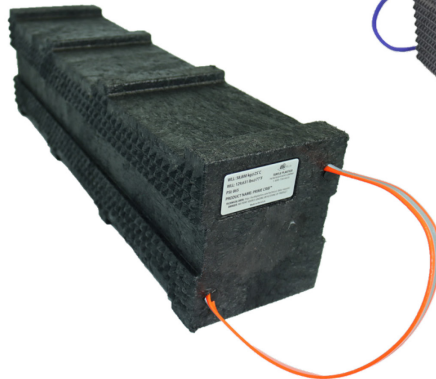
The Slab®

- ❖ Dimensions: 6" x 12" x 24"
- ❖ Working Load: 110,000kg / 242,508lbs.



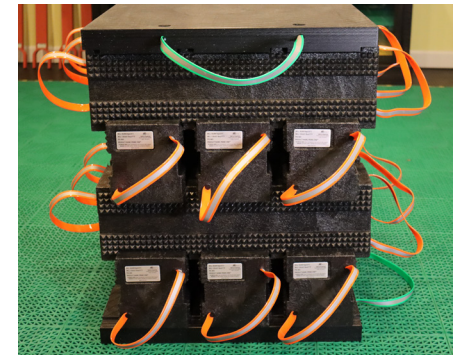
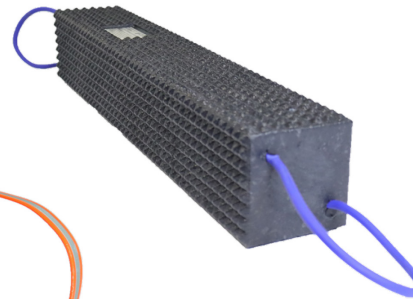
Prime Crib®

- ❖ Dimensions: 6" x 7" x 24"
- ❖ Working Load: 58,800kg / 129,631lbs.



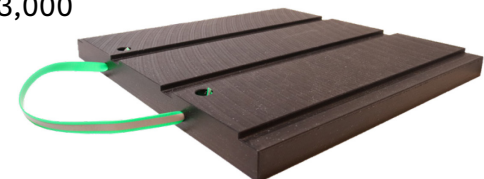
Super Black Diamond Crib®

- ❖ Dimensions: 4" x 4" x 24"
- ❖ Working Load: 40,823kg / 90,000lbs.





Prime Crib Stack Pad

- ❖ Dimensions: 2" x 24" x 24"
- ❖ PSI: 3,000





**ALWAYS use the interlocking façade of Dura Crib block when crib stacking.
NEVER use the smooth profile Dura Blend Lumber block to create a crib stack.
NEVER use a Dura Crib block on its vertical side (short side).**

KNOW PRODUCT WARNINGS ASSOCIATED WITH LIFTING OPERATIONS USING DURA CRIB PRODUCTS.

 WARNING	
	CRUSH HAZARD. <ul style="list-style-type: none">*Exceeding product weight limit can cause load to fall resulting in SERIOUS INJURY, DEATH or property damage.*Do not overload.*Do not place load unevenly onto block.*Do not place load onto a single point on block.*Do not exceed weight limits or temperature specifications for the product.*Comply with all weight and temperature specifications.
	

 WARNING	
	TIPPING HAZARD. <ul style="list-style-type: none">*Load movement can cause load to tip over resulting in SERIOUS INJURY, DEATH or property damage.*Do not overload.*Do not leave equipment unattended during an active cribbing application.

CAUTION	
	TIPPING HAZARD. <ul style="list-style-type: none">*Unbalanced load can cause property damage.*Distribute weight evenly onto the Dura Crib block or crib block stack.*Do not use Dura Crib blocks or pads vertically.

NOTICE	
	Pad is not a substitute for safety precautions for cribbing blocks.
	Avoid injury and property damage by following instructions and reading and understanding warnings for the products with which cribbing pad is used.

GENERAL BEST PRACTICES

- Box cribs are a temporary, short-term means of creating safety redundancy to jacks and stands in lifting operations.
- If cribbing products are the primary stabilization mechanism, ensure that whatever is on the crib stack is not left unattended or for prolonged periods of time.
- Ensure that blocking material is competent, substantial, and adequate to support and stabilize the load.
- Understand that temperature can affect working load (always reducing it).
- Establish and discuss safe work procedures.
- Ensure ground is level and solid.
- Examine work areas and identify and control all hazards before starting any work.
- Read and become familiar with equipment manuals.
- Post the working load guide in an area where blocks are being used.
- Always inspect cribbing prior and during use.
- Whenever possible, do not place yourself in a position that will expose you to hazards during the lift or performing the maneuver.
- Monitor personnel routinely to determine that safe work procedures are followed.
- Maintain good communication between co-workers.
- Ensure that your operators have the appropriate training.

SAFETY & PROPERTY DAMAGE AVOIDANCE USING DURA CRIB PRODUCTS.

- ❖ Do not overload Turtle Plastics' cribbing products.
- ❖ Do not cut, drill, or bolt into products.
- ❖ Ensure the Manufacturer's Working Load Limit identification tag is affixed to the product at all times. Request a complimentary tag from Turtle Plastics or your distributor if needed.
- ❖ When applicable, check that the product lanyard is intact before lifting the block by the lanyard.
- ❖ Use the correct personal protective equipment when conducting lifting or stabilizing maneuvers.
- ❖ Whenever possible, avoid intermixing cribbing materials. Due to the differences in material compression and coefficient of friction, extreme care must be exercised when intermixing wooden or other types of plastic or metal cribbing with Dura Crib products.
- ❖ Use caution on uneven surfaces.
- ❖ Do not replace damaged component parts with component parts other than those made by Turtle Plastics.
- ❖ Do not leave Dura Crib products unattended during active load or lifting operations.
- ❖ Do not leave Dura Crib products in an actively loaded stacked configuration for longer than 30 days. Always check to ensure blocks are sustaining load.
- ❖ Do not clean products with any product other than a cleaning solution from EPA List N for plastic.

Let's work
together
so
everyone
stays safe.





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