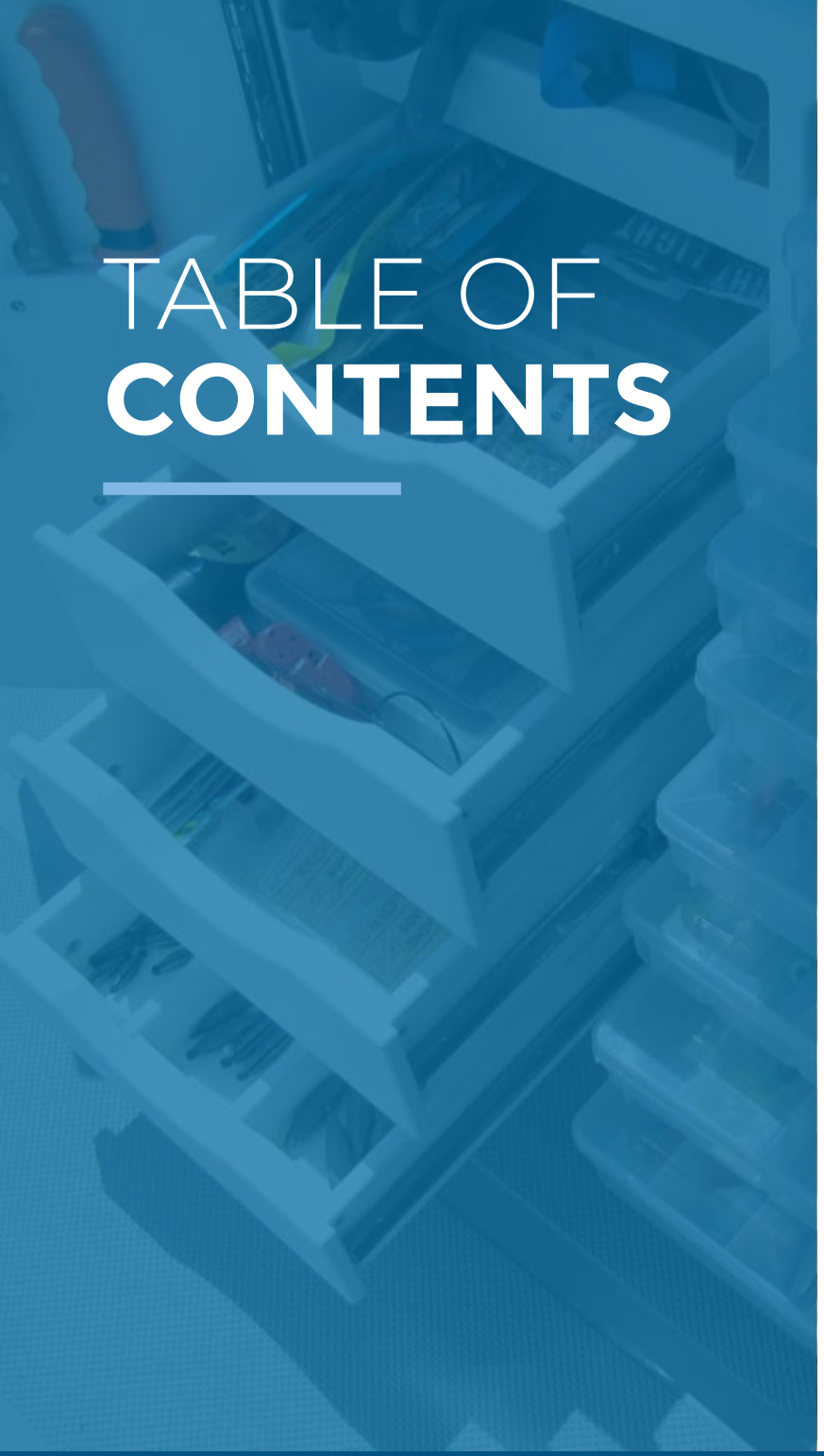
Boat Outfitters

THE ULTIMATE GUIDE **TO WORKING WITH KING STARBOARD**



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WHAT IS
KING STARBOARD?

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King StarBoard, developed specifically for the marine environment, is a high-density polyethylene (plastic) material, perfect for fabricating boat parts and accessories.

It has been environmentally stabilized to withstand the harshest marine conditions. This means that StarBoard does not rot, swell, splinter or split when exposed to humidity or water. It is resistant to saltwater, UV rays, chemicals, and corrosion.

Works like wood, lasts a lifetime! StarBoard is easy to cut and assemble with standard woodworking tools, and requires little or no finishing.

StarBoard is easy to clean and never needs refinishing. Since its introduction, it has been the preferred boat building material for marine parts previously made from teak wood.

King Plastic Corporation

PHYSICAL **CHARACTERISTICS**

StarBoard Sheet Sizes

StarBoard is fabricated by being extruded and cut into sheets measuring 54" x 96" with the exception of sheets 1 ½" thick measuring 48" x 96". The edges of the material are smooth and both the top and bottom surfaces have a durable-matte texture.

StarBoard Sheet Thickness & Weight Chart

Thickness (in inches)	¼"	⅜"	½"	¾"	1"	1 ½"
Weight (per sq foot)	1.25 lbs	1.875 lbs	2.5 lbs	3.75 lbs	5 lbs	7.5 lbs

*Custom thickness available upon request (minimum purchase required)

PHYSICAL **CHARACTERISTICS**

Expansion & Contraction

King StarBoard **expands** when it gets hot and **contracts** when it gets cold.

- The rate at which it expands and contracts is 1/32" per linear foot - for a 40° temperature change

Example: A piece of StarBoard measuring 48" long cut in a 60° warehouse will expand to 48.125" in 100° weather.

While it is important to know that StarBoard does react to temperature changes, for the majority of applications this is not a major concern.

Additional consideration should be given when:

- Working on a large product
- Installing a project that fits tightly in a confined space (i.e. a countertop between two walls)
- Cutting/installing a project in a temperature considerably lower than where it will typically be used
- In an environment with drastic temperature changes

Example: If you were installing a large door inside of a metal frame, it would be important to allow that door enough space to expand and contract inside the frame in accordance with temperature change.

COMMON **COLORS**

Available in seven standard colors to match or accent the most common gelcoat colors. (shown below)

Important Note: Color accuracy can vary considerably on computer monitors and printers. Use the above images as a general guide of relative color differences. When color match is absolutely critical, please consider purchasing a sample chain.

Note: Other colors may be available upon request

COMMON MARINE **APPLICATIONS**

StarBoard is excellent for almost any application where it can be properly supported. It is not load-bearing and may bend under its own weight without a stiffener.

Applications:

- Countertops
- Cutting Boards
- Tables
- Storage Units/Cabinets
- Grab Rails and Handles
- Hatches and Doors
- Cup Holders
- Steps and Dock Boxes
- Tool holders
- Frames and Trim
- Swim Platforms
- Repurposing old plastic or teak parts

OTHER COMMON **APPLICATIONS**

- Bathroom Stalls/ Partitions
- Signage
- Lockers
- Shelving
- Wall Panels
- Decorative Ceiling Panels
- Outdoor Furniture
- Concession Stands
- Healthcare Case Goods
- Indoor and Outdoor Cabinets
- Kick Plates
- Outdoor Kitchens
- Playgrounds
- Tabletops and Counters

The applications with King StarBoard are ENDLESS!

CUTTING
KING STARBOARD

CUTTING
KING STARBOARD

Use standard woodworking tools to cut! StarBoard cuts faster and more easily than plywood or teak because it shears instead of tearing and shredding.

Long Straight Cuts

Circular Saw

Table Saw

Use a sharp carbide blade with a high tooth count (min: 60-teeth for 10", 40-teeth for 7.5")

Small Detail Cuts

Jig Saw

Band Saw

Use a multi-purpose blade with a high tooth count (min: 24 TPI)

Template Cutting

Hand Router

Use a carbide flush trimming router bit with a top bearing

Less work up front, more finishing/sanding work to clean up the edge

More work up front creating template, less work on backend as the router will provide the cleanest cut

CUTTING STARBOARD
BEST PRACTICES

Supplementary Tools

Straightedge

Clamps

China or Water Based Marker

Painters Tape

Properly Support The Material

King StarBoard will bend if not properly supported, especially in a hot environment. We recommend a support at least every 12" for ½" material. Never store the material leaning against a wall as it could bend/bow.

Use Water Based Markers or Pens (Never Pencils)

Pencil marks can permanently stain the StarBoard while marker/pen marks can typically be removed with simple household cleaners.

Don't Go Too Slow

Aim for a feed rate of 12-16 feet per minute for ½" material (slightly slower for thicker material). If you go too slow you risk the blade overheating causing the material to melt back on itself.

Consider Having it Custom Cut

If you are at all concerned about your ability to manufacture, please keep in mind that at Boat Outfitters we custom cut to any size and shape required. Give us a call at 866.633.7961 for a quote!

LONG
STRAIGHT CUTS

HOW TO:

- Measure your area accurately prior to cutting "measure twice, cut once"
- Use a straightedge to draw your cut line across the material to help maintain a straight, square cut
- Support the material so it does not flex when cutting to achieve an accurate cut
- Blade depth adjustments can be made to achieve a through cut or for simply adding a groove in the material
- Leave extra material when cutting if a finished edge is required to allow for routing or sanding

Circular Saw

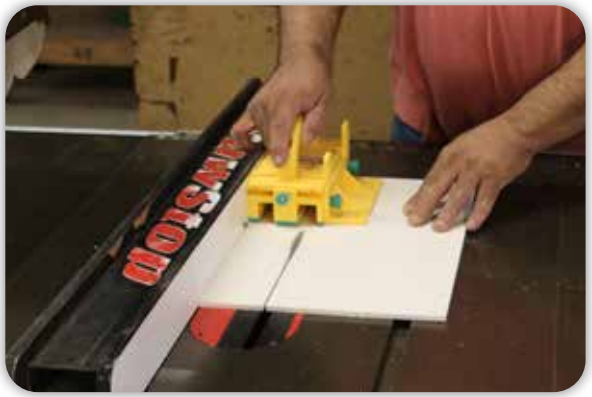
PROS: Added portability due to not being permanently affixed

CONS: More difficult to achieve consistent cuts

Table Saw

PROS: Added stability allows for more consistent cuts, faster

CONS: Less portability



SMALL
DETAILED CUTS

HOW TO:

- Ensure all blades are sharp to avoid a reduced feed rate which can cause melting of the material
- To avoid veering of your line or breaking your saw blade, add relief cuts to allow for easier transitions
- Protect the surface of the material from the table base and guides to avoid marring of the material (masking tape can be used)
- Use clamps to avoid shifting of the material while cutting
- Drill or cut access holes as a starting point to enter the material when necessary
- Usage of a jig or fence is recommended for consistency of cuts where possible

Jig Saw

PROS: Added portability due to not being permanently affixed, and able to make internal cuts to surface

CONS: More difficult to achieve consistent cuts

Band Saw

PROS: Added stability allows for more consistent cuts

CONS: Less portability, not able to make internal cuts

A jigsaw or bandsaw work best when cutting irregular shapes

TEMPLATE **CUTTING**

HOW TO:

- Create an exact replica template of the part (cut, trim, sand to fit)
- Once confirmed, clamp the template to oversized StarBoard and trim around template using a ½" shank double fluted flush trim router bit
- Top or bottom bearing bits acceptable
- Ensure your cut depth extends ¼" below the StarBoard for a clean consistent cut

Hand Router

Flush Trim Router Bit

PROS: Cleanest Finished Edge

CONS: More upfront work due to building a template

SANDING
& ROUTING

SANDING & EDGE FINISHING FOR **KING STARBOARD**

Sanding or routing the edges of StarBoard is not always needed as a clean cut will produce a clean edge. However, if you need to smooth out a jagged cut or desire a certain edge, these standard woodworking tools can help you achieve that.

SANDING

Orbital Sander/Sandpaper Wheel

Use 100-150 grit sandpaper wheel or orbital sander

Hand-sanding the edge is also an option

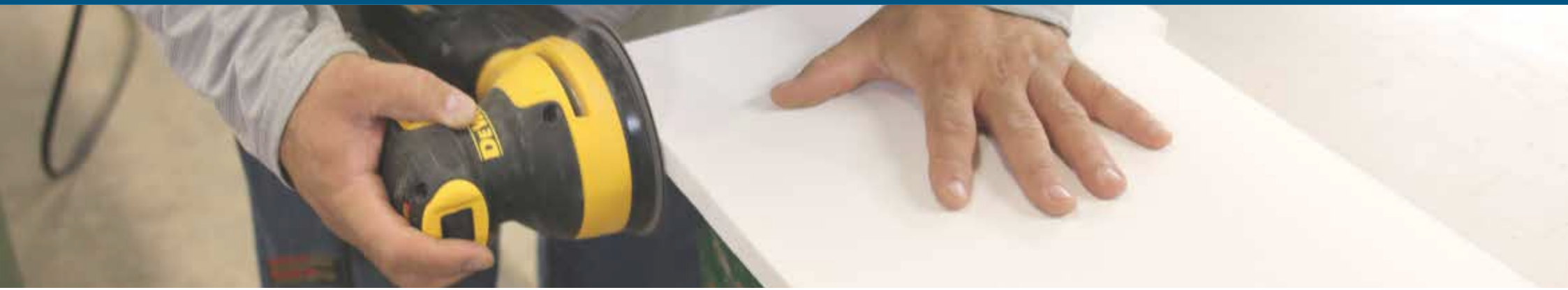
Regardless on style of sanding, be sure to use very fine sandpaper to avoid creating small, hard-to-clean scratches

ROUTING

Hand Router

Use a carbide roundover router bit with bottom bearing

Bit size will be determined on thickness of material and desired edge finish



SANDING
STARBOARD

Sanding the Edges (Cleaning Up a Rough Cut)

The edge of StarBoard can be sanded with an orbital sander or hand sander to help smooth out a jagged edge.

KEEP IN MIND:

- Sanding can produce small grooves and stroke marks (smaller grit helps limit these)
- It is recommended that if you choose to sand the edge that you then sand all the edges to give your project a uniform look

SANDING THE EDGE:

Sanding the Surface (Removing a Scratch)

We DO NOT recommend sanding the surface of StarBoard!

KEEP IN MIND:

- Surface of StarBoard comes with a uniform matte finish on both sides
- Sanding anywhere on the surface of StarBoard will cause it to lose its uniform matte finish
- Result: Sanding the surface will result in a non-uniform textured surface and marring of the finish

SANDING THE SURFACE:

EDGE ROUNDOVERS ON **STARBOARD**

Finishing the edges of StarBoard with a router is easy and can be achieved by using a standard roundover bit

KEEP IN MIND:

- To leave a nice clean edge, StarBoard material needs to be thicke than your router bit. This allows the bearing to have good contact with the StarBoard when routing.
    - For example: routing ¼" sheet of StarBoard would require a 3/16" or smaller router bit
- A carbide roundover bit is recommended
    - Bit size is determined upon sheet thickness and desirec edge

KING STARBOARD
ASSEMBLY

KING STARBOARD
ASSEMBLY

King StarBoard is easy to assemble using standard woodworking tools. You should use mechanical fasteners (screws, bolts, or threaded inserts) to secure it together.

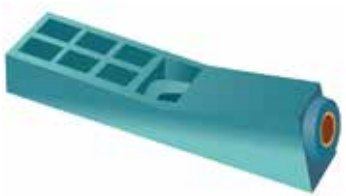
KEEP IN MIND:

Gluing King StarBoard is NOT recommended!

REQUIRED TOOLS

Hand Drill and Bits

SUPPLEMENTARY TOOLS



Pocket Hole Jig

Rubber Mallet

Threaded Inserts

Starboard Plugs

Basic StarBoard Assembly Tips

- Use a water based marker/pen to mark StarBoard
    - Pencil marks do not wipe off and can gouge material
- Always drill pilot holes for better screw retention
- When screwing into the edge (i.e. "end grain"), your material must be at least ⅜" thick

Pilot Hole to Screw Size Chart

Screw Size	Pilot Hole	Thru Hole
#4	5/64"	1/8"
#6	7/64"	5/32"
#8	1/8"	3/16"
#10	1/8"	7/32"
#12	9/64"	15/64"
#14	5/32"	17/64"

Advanced StarBoard Assembly Techniques

HIDING FASTENERS:

- Pocket hole jigs angle screws and help to hide them from view
- You can hide counter-bored screws by hammering StarBoard plugs into the holes using a rubber mallet

WELDING:

- You can weld King StarBoard using a plastic hot air welder. Welding StarBoard fuses together two surfaces and creates a waterproof seam
    - Welding StarBoard can be challenging insomuch that you are unable to sand down the welds (like welding metal) to create a smooth finished seam

SCREW RETENTION:

- Threaded inserts can be used to ensure screw retention and avoid stripping material in locations where a fastener may be frequently added and removed

ADDITIONAL ASSEMBLY:

- Dado or Rabbet cuts can be added at joints for additional strength and ease of assembly/alignment
- A hand router with a Dado or Rabbet bit can be used to cut a notch before attaching pieces together

SAFETY MEASURES
BEST PRACTICES

Supplementary Tools

Safety Glasses

Ear Protection

Dust Mask

Wear Safety Equipment

It is important that the proper safety equipment is worn when using tools to cut and assemble King StarBoard.

Making sure you wear the proper safety equipment and checking that your safety equipment is undamaged significantly lowers your likelihood of getting injured.

No one wants to get hurt, so by checking that you have the proper equipment to protect you, you can better keep yourself safe!

Refer To Manufacturer's Instructions

Please refer to the manufacturer's instructions/safety manual for each piece of equipment to review all the safety precautions for each tool.

The manufacturer's instructions provide you with the knowledge on how to properly protect yourself from injury with these tools.

KING STARBOARD
PHYSICAL PROPERTIES SPEC SHEET

Properties	Units	ASTM	Nominal Values
Density	g/cc	D1505	0.955
Tensile Strength @ Yeild	psi	D638	>4,100
Tensile Modulus	psi	D638	255,000
Elongation @ Break	%	D638	>600
Elongation @ Yield	%	D638	9.8
Flexural Modulus	psi	D790	185,000
Flexural Stress @ 5% Strain	psi	D790	3,810
Compressive Properties 10% Strain	psi	D695	4,950
Durometer	Shore D	D2240	68
Tensile Impact	ft.lbs./in.^{2}	D1822	115
Izod Impact Resistance	ft.lbs/in.^{2}	D256	1.1
Brittleness Temp.	°C (°F)	D746	<-76°C (<-105°F)
Vicat Softening Temp	°C (°F)	D1525	123°C (253°F)
Heat Deflection Temp. 66 psi	°C (°F)	D648	75°C (167°F)
Screw and Nail Withdrawal	lbs	D1761	657 & 63
Flammability	Rating	UL94	HB

FOR MORE INFORMATION OR
ADDITIONAL QUESTION

CONTACT US