

**Building the Ice Opti**  
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I built two Ice Optis for a 10 and 13 year old daughters. Building any project is working toward a goal by solving a series of problems. The Ice Opti is a moderately simple wood project. It requires a limited set of tools, some skills at fitting and gluing, and considerable skills at scrounging and improvising, as some of the hardware is, to my knowledge, just not available commercially anywhere. [I am working with a supplier so the odd parts might soon become available...see part two next issue or post a query on the IDNIYRA bulletin board.] A fair dose of perseverance is required. If this is your first boat project, more time will be spent head-scratching than building. If you are confident and fairly efficient, this is a 30-50 hour project. Then comes the two real problems: (1) getting (and keeping) your young sailor interested; and (2) sacrificing your own sailing time to accomplish (1). I cannot assist with that, but this article is intended to walk through the major steps in building a sailable Opti DN. Many details are omitted for brevity. This also enhances your problem solving skills.

Materials list:

<b>Hardware</b>	<b>Wood and Rig</b>	<b>Stuff</b>
Steering chock and bearing (Sarns or similar)	1" x 6-3/4" x 8' planed to 9/16" thick. Qty. 3 or 4 ea. 2 side boards, internal structure (Light is good)	~2 quarts (L) of epoxy
Tiller post and bearing (Sarns or similar)	1/8" (3mm) plywood for skins and seat (approx 1/2 sheet)	1/8 x 3/4" x 24" aluminum bar stock for plank hardware, block attachment
Steering rod (3' version of Sarns, custom)	3/4 x 6-3/4 x 5' for stern structure and internals	Ratchet block (1.5 - 2 inch)
Mast step ball (Sarns or similar)	Misc. scrap for tiller handle, or tiller	Turning block (1.5 - 2 inch) three required
Front chain plate (Sarns or custom)	Ash strips 1/4" x 80" (enough for 14" when laid side by side) for plank skins	Line or strapping for hooking block to boom. Line for attaching sail
Plank attachment hardware (Sarns or custom as described)	1/4" x 7" x 80" (pine, spruce or fir) for plank core	Work table, hot glue gun, clamps, saber or band saw, drill, table saw, hand plane
Tiller connection hardware (Sarns or custom)	Optimist mast, boom, sprit and sprit hardware.	Misc. bolts and screws for attaching hardware
Two runner chocks (Sarns or similar)	Mast base (custom)	1/8" wire rope (cable) stainless or galvanized for mast stays
Two side chain plates (Sarns or custom)	Opti Sail with button (heavier cloth, corner reinforcement and flatter cut recommended)	Three shackles or shroud adjusters
3/8 Dia mounting bracket (hound)		Three short runners

Engineering thought. If your mindset is on the strength of a DN, think smaller. The power in the Opti sail is much less, there is much less mast rake, there is no need or desire to pull very hard on the sheet, the plank is short and the skipper is light. Nothing will load up more than the forces required to upset the boat. This means that the loads on the boat are very small in comparison to the DN. No bob stay is necessary. Less structure is needed to support the mast base. The plank can be very flexible and whippy. But the steering system should be bullet-proof and without slop. Light weight is desirable, but not a mandate. Adequate buoyancy is required and necessary for safety, and it comes from building a tight hull. The minimum Opti weight (12 kg or 26.5 lb for the hull, 5 kg or 11 lb for the plank, both include hardware) is easily achievable, though not likely to be critical. The maximum length is 3 m and maximum width is 2 m; build to the maximum. If you cannot translate that to archaic English units, asked the Opti pilot.

When I say “glue” I mean “epoxy.” I use Gougeon’s West ® System and use fillers as described in the West Technical documentation. Read that book! It provides wonderful guidance. If you only want to buy one speed of hardener, use the slow stuff. You’ll need the extra time on some of the more complicated parts. I use two thin coats of brushed on epoxy to seal all the inside surfaces of the wood as I go along. This may not be necessary, but it is cheap insurance against rot and moisture, as the wood choices I made are not very rot resistant.

## THE SHORT STORY

1. Find a flat surface for a bench. Hot-glue down the bottom skin including some excess for trimming later. Lay out the boat on the skin.
2. Build the stem (bow) pieces. Build the two internal bulkheads and mast support pieces.
3. Shape the straight side boards.
4. Glue all the little listings, the skinny sticks that outline the fuselage, below the inner bottom and separate the inner and outer bottoms. Glue some bigger pieces the same thickness in way of the plank. Glue the tail base to the bottom. All this is between the inner and outer skins.
5. Glue the inner bottom skin to the top of the listings. Trim it.
6. Glue the stem to the bottom. Glue a stringer between the stem and the bulkheads and glue it to the bottom.
7. Glue the bulkheads and mast support pieces to the bottom and to each other. Add some listings in the corners to increase the glue area where the wood joints are. Don’t forget the block where the tiller post bearing will go.
8. Glue the rest of the stem.
9. Glue the side boards to the bulkheads, listings and stem, adding some listings in the corners of the bulkheads where they meet the side boards. Add a 1/8 plywood bulkhead 1/3 forward of the mast bulkhead.
10. Add a stringer from the front bulkhead to the stem.
11. Drill the holes for the steering chock bearing and for the tiller bearing; just drill right through the table.
12. Glue on the front deck.
13. With thinner side boards, a knee is desirable. Add it and gussets.

14. Shape the top portion of the tail piece and shape the seat. Glue them in place.
15. Add braces (if desired). Trim the excess from the top and bottom skins.
16. Build the plank. (See part ii)
17. Paint.
18. Mount hardware.
19. Add the hound to the Opti rig. Add the mast base piece. Tie on blocks at the tack and on the boom over the stern block.
20. Put up the mast, put on the runners, take pictures.