Tips for Burn Free Table Saw Cuts

Stop your wood from going up in smoke.
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Watching a choice piece of stock go up in smoke at the table saw shouts that something's amiss. It's at this point that you put on your Sherlock Holmes cap and investigate. Is it a dull blade, a crooked fence, bad stock, or some other less obvious culprit lying deeper within the machine itself? Use these checks to find and fix problems, so the next time your sawn edges or ends will look more like white bread than burnt toast.

BRUSH YOUR TEETH

Before you ship the blade off to the sharpening shop, inspect it for a buildup of pitch and resin. You may discover that you have still-sharp teeth hiding under a layer of baked-on residue. Resin Remover, shown in Photo A, is a nontoxic concentrate that you dilute with water and apply by immersing the blade. Save and re-use the cleaning solution until it loses its effectiveness. After you've cleaned, water-rinsed, and air-dried the blade, give it a shot of Dri-Cote aerosol, to displace any residual moisture that could cause rust. (See the Convenience-Plus Buying Guide for both products.) scrub stubborn deposits using a brush with plastic or brass bristles. A shallow plastic pan designed for automotive oil changes makes a great blade bathtub.

CHECK FOR DAMAGE OR DULLNESS

To safely send a blade for sharpening, ship it in its original packaging sandwiched between two pieces of plywood.

If a blade cleaning doesn't solve your burning woes, suspect a dull blade. Telling signs include a blade that cuts poorly, requires more stock feed pressure, and a louder than normal running noise. It's difficult to judge cutting effectiveness by simply a visual inspection of the teeth, but the cut can make the decision crystal clear. Burning on both sides of the cut is a dead giveaway that it's time to switch in a new blade and send the one you're using to the sharpening shop. Wrap your blade as shown in Photo B to protect your carbide investment.

SWITCH TO A DIFFERENT BLADE

First, make sure that you're using the right tooth-count and style for the task at hand (Turn to page 50 for bladeselection advice.) If not, make a switch. If you're using a benchtop or contractor-style saw, consider using a thin-kerf blade. Here's why: slower feed rates create friction, friction creates burning. Thin-kerf blades keep the smaller-horsepower saws from bogging down, enabling you to feed stock quickly. (The thinkerf benefit is less beneficial with saws having more horsepower, but since these blades make a narrower kerf, they can be useful if you want to conserve material.)

TAKE STOCK OF YOUR STOCK

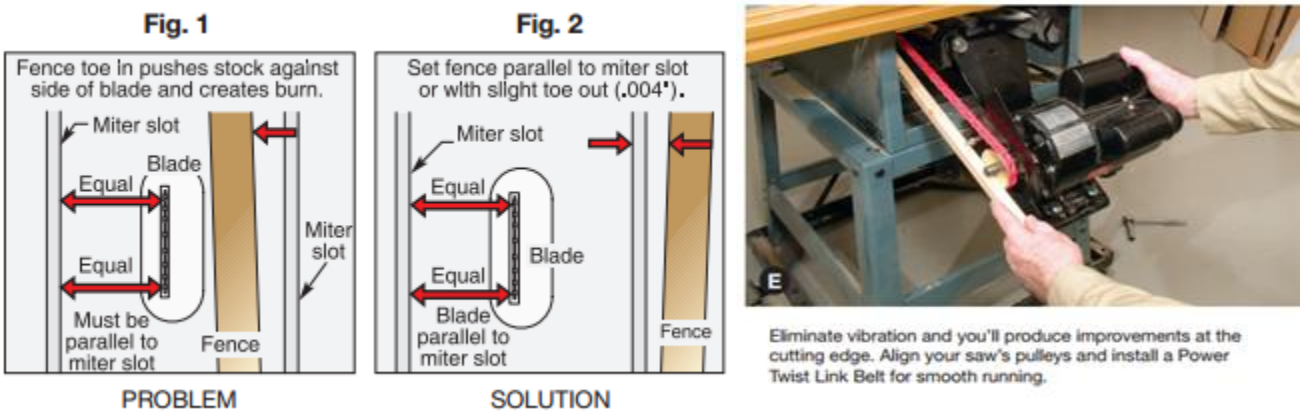
If the edge of the board following the rip fence isn't straight, the board may angle into the side of the blade, causing burning and even kickback. (If the face is cupped, it can rock and bind while you're feeding it, causing binding and burning.) To prevent this, square and flatten stock before sawing. Cutting a long board into shorter pieces can minimize some defects, but your best bet is to straighten edges and flatten faces on your jointer before ripsawing. (For more info, refer to "Squaring Up Rough Lumber," on page 64.) Even when properly dimensioned, internal stresses can cause a board to bend in and bind against the blade. Your first defense against this "reaction wood" is to use a splitter (see the Buying Guide). In extreme pinching cases, you may need to fit a wood wedge or shim into the kerf. As soon as you feel the pinch, turn off the saw and insert a wedge into the kerf behind the splitter, then back up the board slightly, turn on the saw, and finish your cut. Some woods, such as cherry, maple and some exotics are just prone to burning. In these cases, your best bet may be to rip your stock 1 /32" wider than you need and then clean up the edge with a sharp hand plane or at your jointer.

MICRO-MANAGE YOUR TABLETOP

Check the blade's distance from the miter-gauge slot at two positions to make certain that it's parallel.

Making sure that the blade is perfectly parallel with the miter-gauge slot is an essential step when setting up a new saw. This step doesn't usually need revisiting with most stationary saws, but if you slide your saw around your shop, or toss it on your truck, it may need a tune-up. A fast and easy way to set the top is with a dial indicator (see the Buying Guide). To do this, screw the indicator's body to a block that fits snugly in the miter-gauge slot, as shown in Photo C. Position the tip of the indicator at a reference point on the blade near the front of the saw. Mark the location with a fine-tip marker, and turn the indicator's body to zero the display. Rotate the blade toward the rear of the saw, and slide the indicator to repeat the reading. A reading of zero means the blade and slot are parallel. If you get a different reading, refer to your saw's manual for instructions on aligning the tabletop. (With a contractor's saw, you'll need to shift the entire trunnion assembly that's fastened to the underside of the top. A cabinet saw's trunnions are bolted to the cabinet itself; in this case, you only need to loosen the bolts and adjust the top.)

FIX A MISALIGNED FENCE



Eliminate vibration and you'll produce improvements at the cutting edge. Align your saw's pulleys and install a Power Twist Link Belt for smooth running.

A skewed rip fence can cause burning, chipping on the top surface of your workpiece, and even kickback. Identify this problem by reading the burn. If it occurs on the cut edge near the fence it means that the outfeed portion of the rip fence is "toed in" toward the plane of the blade, as shown in Figure 1. This crowds the wood against the rear of the blade and produces a burn. (A misaligned splitter or riving knife can have the same effect.) Use the same miter-gauge slot as you used to set the top, but this time set the indicator's tip against the fence. Many woodworkers prefer to "toe out" the outfeed portion of the fence by a few thousandths of an inch as shown (exaggerated) in Figure 2. This adjustment should be no more than the thickness of a dollar bill (about .004"). Too much toe out will cause burn marks on the other side of your cut.

ADJUST YOUR FEED RATE

Featherboards and stock-pushing accessories promote safe woodworking procedures and also reduce edge burns.

As a rule, feed stock as quickly as your saw can comfortably handle. It's difficult to give precise recommendations on feed rate because there are so many variables, including blade style and sharpness, motor power and drive belt efficiency, not to mention stock thickness and density. Pay attention to the feed resistance, and listen to sound of your saw. Slow down as soon as you detect any bogging. Waxing your tabletop and fence can help. Reducing unnecessary friction will make it easier for you to maintain a uniform feed rate. A smooth top will also give you a better feel for how well the wood is sliding past the blade. Even when everything else is perfect, the blade can still heat up and distort just enough to bind and burn in a few spots. Patchy burns typically occur in the middle of a long cut where you paused to get a fresh grip. Practice will make you a smoother sawyer, but for now, clean up black spots with a plane, jointer, or sandpaper.

USE BURN-BANISHING ACCESSORIES

Keeping stock tight to the rip fence can be tough, especially when ripping long boards. A featherboard makes it easy to maintain consistent side pressure. Position the featherboard ahead of the blade, as shown in Photo D, so it doesn't pinch the wood against the side of the blade. Pushsticks and pushblocks can help promote smoother cutting by improving your grip. (See the Buying Guide for a set including all three products.) In some instances, you may choose to allow the blade to nip a pusher in order to achieve a smooth cut.

GET MORE FROM YOUR MOTOR

Minor drive-train problems can cause vibration, but in severe cases, they can also lead to bogging down and burning. Attack these problems by aligning the pulley and motor arbor with a straightedge (Photo E), and upgrading to a Power Twist Link Belt (see the Buying Guide for both products). This belt doesn't develop a memory of its resting position so you'll enjoy smoother running and improved power transmission.

FLATTEN YOUR FENCE

Convenience-PLUS BUYING GUIDE

	ITEM	WOODCRAFT #	PRICE
☐ 1.	Woodcraft Resin Remover, pt.	85H80	$11.99
☐ 2.	Dri-Cote, Aerosol, 10.75 oz.	124626	$17.99
☐ 3.	Micro Jig splitter (standard)	145612	$14.99
☐ 4.	Micro Jig splitter (thin kerf)	146178	$21.99
☐ 5.	0-1" Dial Indicator	128397	$19.99
☐ 6.	Five-Piece Safety Set	143624	$24.99
☐ 7.	4' of ½" Power Twist Link Belt	145530	$28.99
☐ 8.	Pinnacle 24" Precision Straightedge	147859	$89.99

Above items are available at Woodcraft stores, *woodcraft.com* or by calling (800) 225-1153. Prices subject to change without notice.

A bent or warped rip fence isn't a common problem, but if left undetected, this fault will sabotage your blade-aligning efforts. To check, lock down the fence and test it with a straightedge. Try to slip a .004" feeler gauge between the fence and straightedge, as shown in Photo F. Perfection at every spot along the fence isn't absolutely necessary, but if you detect any bumps or valleys more than 3" long, they could affect the guidance of your workpiece. If your fence has removable faces, simply shim the old faces or make new replacements. If your saw has a stamped or extruded metal fence, you can add an auxiliary face and shim it straight.

CHECK YOUR JUICE

A 20-amp saw can't run at full power/speed if it's plugged into a 15-amp extension cord, or if it's sharing that circuit with other running power-hungry machines. For best performance, connect your saw to a separate circuit.