Tool-Mark Problem Solver

The Damage	Causes	Solutions (Solutions in ■ green help avoid tool marks, and those in ■ red guide in fixing them.)
 **Sanding Swirls** Cross-grain grit scratches on the stock's surface	■ Improper sanding technique ■ Damaged sandpaper ■ Grit schedule not followed through **Culprits:** power-sanders, cross-grain hand-sanding	■ Gradually move from coarse to fine sandpaper grades. ■ Let the sander do the work; avoid undue pressure. ■ Keep firm control over the sander. ■ Replace damaged sandpaper. ■ Hand-sand following the stock's grain.
 **Scoring** Lines made in stock by cutters	■ Cutters not tracking properly or fences misaligned ■ Poor-quality tooling **Culprits:** saw, router, planer, jointer, hand plane	■ Repair or replace damaged cutters. ■ Ensure cutters/saw teeth are properly set. ■ Purchase only high-quality blades/bits. ■ Align fences. ■ Sand, hand-scrape, or re-mill stock, depending on the number and depth of score marks.
 **Ridges** Raised lines made in milled stock	■ Cutters nicked or not tracking properly **Culprits:** planer, jointer, router, hand plane	■ Repair or replace damaged cutters. ■ Shift cutters so nicks do not align from one cutter to the next. ■ Sand or hand-scrape stock.
 **Gouges** Chunks torn from the stock	■ Highly figured or very hard/brittle stock ■ Cutting against the grain **Culprits:** planer, jointer, hand plane, router, saw	■ Dampen surface of figured stock before milling. ■ Take light cuts. ■ Use slower feed rate/higher cutter speed. ■ Reverse feed direction. ■ Send stock through at an angle. ■ Re-mill stock.
 **Chatter** Stock removed unevenly, resulting in closely spaced scallops, like waves on water.	■ Stock bouncing away from and into cutters as it is fed ■ Cutters deflecting from and rebounding into stock ■ Feed rate too fast **Culprits:** jointer, planer, router, hand plane	■ Properly support and restrain stock. ■ Ensure cutters are sharp and properly set. ■ Move stock through cutters at the appropriate speed. ■ Take lighter cuts on stock. ■ Sand, hand-scrape, or re-mill stock, depending on the extent of the chatter.
 **Snipe** Stock slightly scooped at its end(s)	■ Stock not properly supported ■ Infeed roller dropping off end of stock ■ Misaligned jointer tables ■ Flexibility in planer mechanism **Culprits:** planer, jointer, router	■ Adjust jointer infeed/outfeed tables. ■ Use additional supports for long stock. ■ Feed scrap stock through planer following workpiece. ■ Take lighter final cuts on stock. ■ Upgrade to a more robust planer. ■ Mill pieces long and cut off snipe.
 **Fuzzing** Raised wood fibers resembling peach fuzz	■ Cutters not cleanly slicing wood fibers ■ Damp or wet wood **Culprit:** router	■ Sharpen or replace cutters. ■ Take lighter final cut on stock. ■ Use only air- or kiln-dried wood, 6–8% moisture content for hardwoods, and under 12% for softwoods. ■ Hand-sand/hand-scrape fibers.
 **Burns** Stock's surface carbonized by heat build-up	■ Heat from cutters not dissipated ■ Excessive heat generated by binding stock or dull cutters ■ Resinous stock with low combustion temperature **Culprits:** saw, router, mortise machine, drill	■ Operate cutters at an appropriate speed. ■ Keep stock moving through cutters. ■ Sharpen or replace cutters. ■ Properly align fences and cutters. ■ Take light final cut on problem stock. ■ Hand-sand/hand-scrape stock.
 **Scratches** Narrow scrapes on the stock's surface	■ Sharp debris on stock or tool/workbench surfaces ■ Careless tool or project handling **Culprit:** any hard, pointed object that contacts the work	■ Keep materials, tools, and work area clean. ■ Sand, hand-scrape, or re-mill stock, depending on the number and depth of the scratches.
 **Dents** Crushed wood fibers	■ Excessive clamping pressure ■ Careless blows from hammers or other tools **Culprits:** clamps, hammers, any hard, blunt surface	■ Apply appropriate clamping pressure. ■ Employ clamping pads to spread pressure. ■ Use softwood blocks to cushion hammer blows. ■ Assemble projects with padded hammers. ■ Raise dent with steam; then hand-sand and hand-scrape.

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