

Wood Materials & Surface Finishing Master Handout

A complete practical guide to working with wood at Create Space London—combining timber species selection, sheet goods, woodworking safety, grit-by-grit sanding preparation, wood joining, and applying oils, hard waxes, and varnishes.

1 TIMBER CATEGORIES, SPECIES & WORKSHOP SAFETY RULES

- **Hardwoods (Oak, Ash, Beech, Walnut, Maple, Cherry):** Dense, durable timbers from broad-leaf deciduous trees. Ideal for fine furniture, turned bowls, cutting boards, guitar bodies, and high-end joinery.
- **Softwoods (Redwood Pine, Spruce, Cedar, Larch, Douglas Fir):** Lightweight, easy to machine and sand. Perfect for structural framing, stage props, outdoor planters, workbenches, and practice projects.
- **Sheet Goods (Birch Plywood, MDF, Valchromat):** Manufactured boards offering isotropic flat strength. Birch Plywood has attractive layered edges; MDF/Valchromat are smooth and uniform for CNC carving.
- **Workshop Safety Rules:** Dust extraction **MUST** be active during all sanding, sawing, and routing. Wear an FFP3 mask when working with MDF. **NEVER** wear gloves when using orbital sanders, table saws, bandsaws, or lathes.

2 COMPREHENSIVE SANDING & SURFACE PREPARATION

Proper sanding is the foundation of any great finish. Never skip grit steps—each step erases scratches from the previous grit:

- **Coarse Grits (60 – 80 Grit):** Rapid stock removal. Flattens rough-sawn timber, removes deep planer marks, glue squeeze-out, or old paint. (Do not use for final smoothing!).
- **Medium Grits (120 – 150 Grit):** General smoothing. Erases coarse sanding marks and cleans up minor machining defects before fine sanding.
- **Fine Grits (180 – 220 Grit):** Standard pre-finish prep. Prepares raw wood for oils, waxes, and varnishes. (220 grit is ideal for opening wood pores without burnishing).
- **Ultra-Fine Grits (320 – 400+ Grit):** Inter-coat sanding between varnish coats or buffing hard-wax oils and wood lathe turnings.
- **Technique:** Always sand **WITH** the grain on your final pass. Wipe away dust with a tack cloth or vacuum between grit steps. **Raising the Grain:** Lightly mist raw timber with water after 180 grit, let dry, and sand flat with 220 grit to knock down raised fibers before applying water-based finishes.

3 TIMBER SPECIES, SHEET GOODS, JOINING & SURFACE FINISHES

Wood Material & Finishing Category	Creative Project Uses, Application Techniques & Practical Workshop Tips
Hardwood Species & Creative Uses (Oak, Ash, Beech, Walnut, Maple, Cherry)	• European Oak: Strong, prominent grain figures; excellent for dining tables, heavy joinery, and steam bending. • American Walnut: Rich dark chocolate tone; prized for high-end furniture, luxury boxes, and turned bowls. • Hard Maple & Beech: Dense, fine grain, highly abrasion-resistant; ideal for butcher blocks, cutting boards, tool handles, and workbench tops. • Ash & Cherry: Ash has flexible, shock-resistant grain (great for bentwood); Cherry darkens naturally into a rich reddish-amber with light exposure. • Workshop Tip: Take light 1mm passes on the surface planer. Apply Osmo Polyx-Oil or natural mineral oil/wax to bring out natural grain colors.
Softwood Species & Creative Uses (Scandi Redwood, Pine, Spruce, Larch, Cedar)	• Scandinavian Redwood / Scots Pine: Easy to machine, warm knots; great for rustic tables, shelving, crates, and internal furniture frames. • Whitewood / Spruce: Lightweight and straight-grained; perfect for internal wall studding, framing, and prototype models. • Siberian Larch & Western Red Cedar: Naturally weather/rot resistant due to natural oils; top choice for outdoor planters and exterior cladding. • Douglas Fir: High strength-to-weight ratio with distinctive reddish growth rings; excellent for structural beams and workbenches. • Workshop Tip: Check timber for loose knots or sap pockets before cutting. Softwoods accept stains, dyes, and paints very easily.
Engineered Sheet Materials (Birch Plywood, MDF, Valchromat)	• Birch Plywood (BB/BB Grade): Multiple plies of Baltic birch hardwood. Ideal for flat-pack furniture, laser-cut boxes, shelving, and CNC chairs. Sand edges smooth to show off the clean layers. • MDF & Valchromat: MDF is homogeneous wood fiber that paints smoothly once edges are sealed. Valchromat is moisture-resistant and colored throughout, revealing a rich matte tone when sanded. • Workshop Tip: On the CNC router, use down-cut spiral bits to keep the top face crisp, or compression bits for full-depth cuts.
Penetrating Wood Oils (Danish, Linseed, Tung, Mineral Oil)	• Danish Oil: Soaks deep into wood fibers, drying to a resilient satin sheen. Great for furniture and shelving (apply 3 coats with a lint-free rag). • Tung & Linseed Oil: Traditional eco-friendly slow-drying oils offering elastic water resistance. • Food-Safe Mineral Oil: Non-drying oil mandatory for end-grain cutting boards, butcher blocks, and salad bowls. • Practical Tip: Wipe off all excess surface oil 15 minutes after application to prevent sticky, gummy patches.
Hard-Wax Oils & Natural Waxes (Osmo Polyx, Paste Wax, Beeswax)	• Hard-Wax Oils (Osmo/Fiddes): Combines natural oils (soak in) with hard waxes (carnauba/beeswax) that cure on the surface to form a silky, water-repellent barrier. The ultimate finish for dining tables, desks, and oak flooring. • Paste Wax & Beeswax: Applied over dried oil or bare wood as a buffed topcoat for a soft, tactile, lustrous sheen. • Practical Tip: Buff hard-wax oil with 0000 steel wool or a white buffing pad for a buttery-smooth satin feel.

Wood Material & Finishing Category	Creative Project Uses, Application Techniques & Practical Workshop Tips
Protective Film Varnishes (Water-Based Polyurethane, Spar Urethane)	• Water-Based Polyurethane: Quick drying, non-yellowing, low odor. Preserves the light natural color of Birch Plywood, Ash, and Maple. • Oil-Based Varnish & Spar Urethane: Adds a warm amber glow, highly flexible, weather/UV-resistant for outdoor planters and benches. • Practical Tip: Lightly scuff-sand between varnish coats with 320 grit sandpaper to remove dust nibs and ensure strong layer bonding.
Wood Joining Methods & Glues (Dowels, Biscuits, Pocket Screws, PVA)	• Joining Options: Biscuit jointers, pocket hole jigs, dowel jigs, and bar clamps for assembling furniture frames and tabletop slabs. • Practical Tip: Good clamping pressure is key! Leave PVA glued joints under clamp pressure for 30–45 minutes; clean squeeze-out glue with a damp cloth before it dries hard.

Note: Keep this handout as a practical workshop reference. All physical machine access must be booked and supervised through CSL staff.