

Metal Materials Creative & Practical Handout

A practical guide to metalworking in Create Space London. Explore creative applications for steel, aluminium, and brass, along with essential workshop safety techniques.

1 UNDERSTANDING METALS FOR CREATIVE WORK

Metals bring strength, industrial aesthetic, and polished finishes to creative projects. They are grouped into two simple categories:

- **Magnetic / Iron Metals (Ferrous):** Mild Steel, Stainless Steel, Cast Iron. Strong, heavy, and easy to weld. Mild steel will rust unless painted, clear-coated, or patinated, making it popular for industrial sculpture and furniture framing.
- **Non-Magnetic Metals (Non-Ferrous):** Aluminium, Brass, Copper, Bronze. Lightweight, rust-proof, easy to machine, and visually striking. Excellent for decorative metalwork, jewellery accents, and precision mechanical parts.

2 ESSENTIAL SAFETY & WORKSHOP RULES

- **SWARF SAFETY:** Metal cutting and turning create sharp metal ribbons and hot chips. NEVER clear metal swarf with your bare hands or a cloth—always use a brass rake or brush.
- **NO GLOVES ON LATHES & DRILLS:** Gloves must NEVER be worn when operating the engineering lathe or pillar drill. Gloves can catch in rotating chucks and pull your hands in.
- **ALWAYS REMOVE CHUCK KEYS:** Never leave the key in the metal lathe chuck. Remove it immediately after tightening your material.
- **USE CUTTING FLUID:** Applying cutting fluid or oil keeps tools sharp, prevents metal from sticking to cutter tips, and produces a smoother finish.

3 CREATIVE USES, MATERIAL TYPES & PRACTICAL EXAMPLES

Metal Alloy Type	Creative Project Ideas, Tool Compatibility & Workshop Tips
Mild Steel (Bar, Tube & Sheet) (Iron Alloy)	• Creative Uses: Furniture legs, structural lamp bases, welded metal sculptures, industrial wall brackets, custom hardware. • Workshop Tools: Metal Lathe, Metal Hacksaw, Pillar Drill, Angle Grinder, Off-hand Grinder. • Practical Tip: Easy to turn on the lathe and drill. Clean off grease with solvent before painting or applying a rust patina.
Aluminium (Sheet, Rod & Angle) (Lightweight Non-Ferrous)	• Creative Uses: Lightweight chassis boxes, custom robot frames, decorative front panels, kinetic art pieces, sound equipment housings. • Workshop Tools: Metal Lathe, CNC Router (with single-flute bits), Pillar Drill, Metal Bandsaw. • Practical Tip: Aluminium is soft and machines quickly, but can stick to drill bits. Use a spray of WD-40 while drilling or cutting to keep cuts clean.

Metal Alloy Type	Creative Project Ideas, Tool Compatibility & Workshop Tips
Brass (Bar, Rod & Sheet) (Golden Decorative Alloy)	• Creative Uses: High-end furniture inlay trim, custom clock dials, decorative jewellery pins, engraved brass nameplates, vintage-style control knobs. • Workshop Tools: Metal Lathe, Pillar Drill, Hand Files, Engraving Tools. • Practical Tip: Brass machines beautifully and turns into small, neat chips on the lathe. It can be polished to a mirror finish with brass polish.
Stainless Steel (Rod & Tube) (Rust-Proof Heavy Alloy)	• Creative Uses: Outdoor garden sculptures, kitchenware items, heavy-duty marine hardware, modern architectural accents. • Workshop Tools: Metal Lathe (with carbide tools), Metal Hacksaw, Heavy Pillar Drill. • Practical Tip: Stainless steel gets very hard if you let tools rub against it. Drill with firm, steady pressure at a slow speed with plenty of fluid.

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