

# Plastics Material Creative & Practical Handout

A practical guide to working with plastics in Create Space London. Learn what plastics to choose for your creative projects, how to shape them safely, and real-world project ideas.

## 1 UNDERSTANDING PLASTICS FOR CREATIVE PROJECTS

Plastics are versatile materials for making signage, prop making, lighting, enclosures, and sculptures. For workshop use, they fall into two simple types:

- **Heat-Formable Plastics (Thermoplastics):** These soften when heated and harden when cooled. You can bend them, heat-press them, vacuum form them, laser cut them, or 3D print them over and over. Examples: Acrylic (Perspex), PLA, PETG, HIPS, and Polypropylene.
- **Set / Resin Plastics (Thermosets):** These are poured as liquids or cured permanently with hardeners. Once set, they cannot be melted or reshaped with heat (e.g., Epoxy Resin, Casting Polyurethane, Fiberglass). You can carve or sand them, but sanding creates fine dust that requires a dust mask.

## 2 ESSENTIAL SAFETY & WORKSHOP RULES

- **NO PVC OR VINYL IN THE LASER CUTTER:** Never laser cut PVC, vinyl, or faux leather containing chlorine. Heating these produces dangerous toxic fumes that harm your health and destroy the laser optics.
- **NO GLOVES ON ROTATING MACHINES:** Never wear gloves when using the plastic bandsaw, disc sander, or profile cutter (gloves can catch in rotating parts). Wear heat-resistant gloves **ONLY** when handling hot plastic from the line bender or vacuum former.
- **CLEAN SANDERS BEFORE USE:** Always clean wood dust out of the disc sander extraction hood before sanding acrylic or plastic—sparks or hot friction embers can ignite leftover wood dust.

## 3 CREATIVE USES, MATERIAL TYPES & PRACTICAL EXAMPLES

| Plastic Material & Form                        | Creative Project Ideas, Tool Compatibility & Workshop Tips                                                                                                                                                                                                                                                                                                                                                                                                              |
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| Acrylic / Perspex<br>(PMMA)<br>(Sheet Plastic) | <ul style="list-style-type: none"><li>• Creative Uses: Custom LED neon signs, illuminated lightboxes, display stands, jewellery, picture frames, decorative laser-cut cake toppers.</li><li>• Workshop Tools: CO2 Laser Cutter (gives a shiny, polished edge), Plastics Bandsaw, Line Bender (for sharp 90° bends), Disc Sander.</li><li>• Practical Tip: Cast acrylic is best for crisp laser engraving; extruded acrylic bends smoothly on the line bender.</li></ul> |
| PLA & PETG Filaments<br>(3D Printing Plastics) | <ul style="list-style-type: none"><li>• Creative Uses: Custom prop replicas, miniature figurines, replacement machinery knobs, architectural scale models, costume armor.</li><li>• Workshop Tools: FDM 3D Printers.</li><li>• Practical Tip: PLA is ideal for detailed decorative models. PETG is tougher and better for functional parts that need to withstand drops or outdoor weather.</li></ul>                                                                   |

| Plastic Material & Form                                                      | Creative Project Ideas, Tool Compatibility & Workshop Tips                                                                                                                                                                                                                                                                                                                                                               |
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| <b>High-Impact Polystyrene (HIPS)</b><br><b>(Vacuum Forming Sheet)</b>       | <ul style="list-style-type: none"> <li>• Creative Uses: Molded masks, custom packaging trays, cosplay armor pieces, light diffusers, tray containers.</li> <li>• Workshop Tools: Vacuum Former, Line Bender, Plastic Bandsaw, Hand Shears.</li> <li>• Practical Tip: HIPS droops evenly when heated in the vacuum former. Always use heat-resistant gloves when pulling down the clamping frame.</li> </ul>              |
| <b>Polypropylene (PP) &amp; HDPE</b><br><b>(Flexible &amp; Tough Sheets)</b> | <ul style="list-style-type: none"> <li>• Creative Uses: Flexible notebook covers, stencil templates, durable tote bag inserts, waterproof plant tags, living hinges.</li> <li>• Workshop Tools: CNC Router (using single-flute bits), Bandsaw, Hand Tools.</li> <li>• Practical Tip: Avoid laser cutting polypropylene as it melts along the edges. Cut it mechanically on the CNC router or bandsaw instead.</li> </ul> |

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