

Material & Capability Guide

材料与能力指南

Shenzhen Zhuocheng Hardware Co., Ltd

Section 1 — CNC Machining Materials / 可加工材料



Aluminum Alloys / 铝合金

Lightweight, high-strength, anodizable. Ideal for structural & aesthetic parts.

- 6061 / 6061-T6
- 6063
- 6082 / EN AW-6082
- 7075 / 7075-T6
- 2024
- 5052



Stainless Steel / 不锈钢

Corrosion-resistant, high-strength. Suited for food, medical & outdoor use.

- SUS201
- SUS303
- SUS304 / 18-8
- SUS304L
- SUS316 / 316L
- SUS410
- SUS416
- SUS420
- SUS430
- 17-4 PH
- 15-5 PH



Carbon Steel & Alloy Steel / 碳钢 & 合金钢

Structural parts, high-strength shafts, gears & machined components.

- A36
- 1018
- 1020
- 1022
- 1045 / C45
- 1060
- 1080
- 1144

- 1215
- 12L14
- 4140 / 42CrMo
- 4130
- 4340
- 40Cr
- 1.0718



High-Strength Steel / 高强度钢

Spring steel, hardened fastener grades. Maximum load-bearing applications.

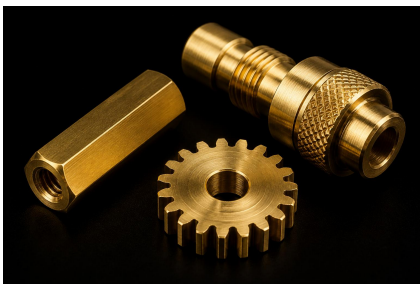
- Spring Steel
- Grade 8.8 Steel
- Grade 10.9 Steel
- Grade 12.9 Steel



Tool Steel & Mold Steel / 工具钢 & 模具钢

High hardness, high wear resistance. For dies, molds & cutting tools.

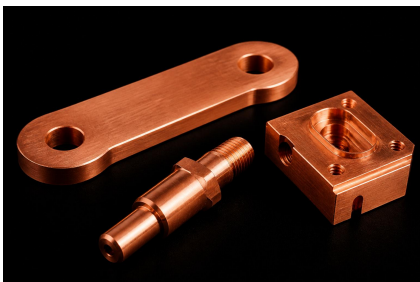
- D2
- O1
- A2
- H13
- M2 HSS
- CrWMn
- P20



Brass / 黄铜

Excellent machinability, decorative & electrical applications.

- C3604
- C360
- H59
- H62
- CuZn37 / M63



Pure Copper / 紫铜

Maximum electrical & thermal conductivity. Connectors & heat sinks.

- C1100 Copper
- T2 Copper



Bronze & Special Copper Alloys / 青铜 & 特种铜合金

Bearings, springs, contacts. High wear resistance & spring-back.

- CuSn12
- BRONZO B14
- Phosphor Bronze
- BeCu C17200
- CuNi10Fe1Mn
- Nickel Silver



Titanium Alloys / 钛合金

Aerospace, medical. Best strength-to-weight ratio.

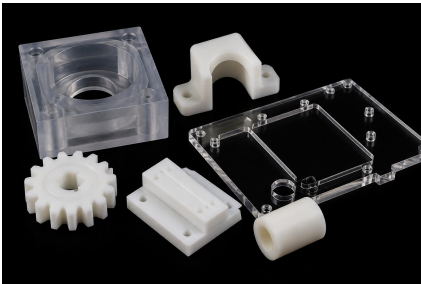
- Grade 2 Titanium
- Grade 5 Ti-6Al-4V



Superalloys / 高温合金

Extreme heat, corrosion & pressure environments.

- Inconel 625
- Inconel 718
- Hastelloy
- Monel 400



General Engineering Plastics / 通用工程塑料

Lightweight, insulating, corrosion-free. Housings, brackets & guides.

- ABS
- PC
- Acrylic / PMMA
- PVC
- HDPE
- UHMW-PE
- PET



High-Performance Plastics / 高性能工程塑料

Self-lubricating, high-temperature, chemical-resistant precision parts.

- POM / Delrin
- PA6 Nylon
- PA66 Nylon
- PEEK
- PTFE (Teflon)

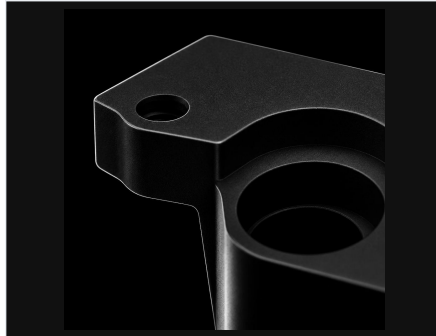
Section 2 — Surface Finishing / 表面处理能力

Aluminum Surface Treatments / 铝合金表面处理



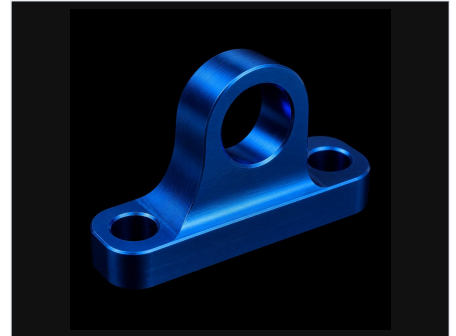
Clear Anodizing

Natural aluminum look, corrosion protection



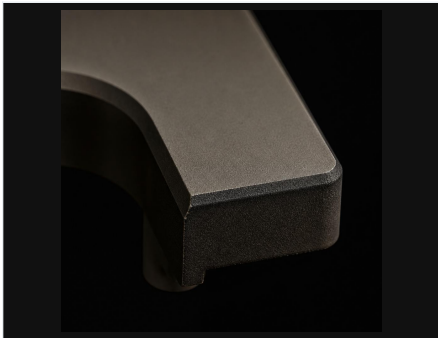
Black Anodizing

Matte black, heat absorption



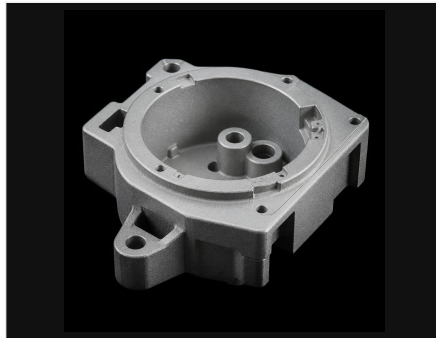
Color Anodizing

Custom colors with metallic depth



Hard Anodizing

HV 400–600 · 25–80 μm



Sandblasting

Uniform matte texture



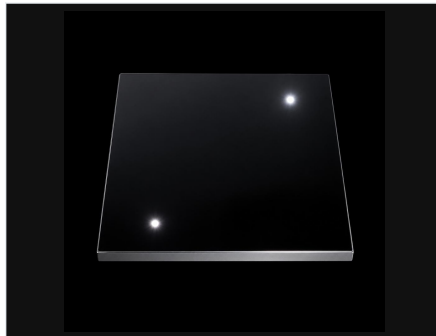
Brushed Finish

Linear satin texture



Polishing

High-luster decorative finish, visible buff marks



Mirror Polishing

Optical mirror quality, $R_a \approx 0.2$



Powder Coating

60–120 μm · Durable color, outdoor structures

Steel & Stainless Steel Treatments / 钢 & 不锈钢表面处理



Zinc Plating

5–25 μm · 48–120 h salt spray



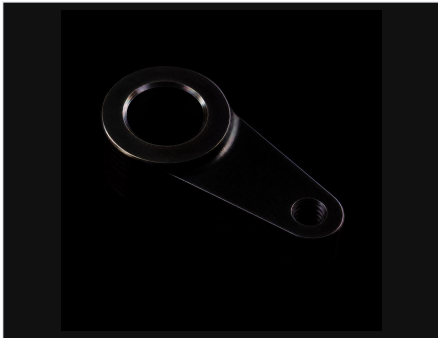
Nickel Plating

3–15 μm · 72–200 h salt spray



Chrome Plating

Mirror hardness, decorative & functional



Black Oxide

24–48 h salt spray



Passivation

48–96 h salt spray · SS enhanced protection



QPQ / Melonite

HV 500–700 · 200+ h salt spray



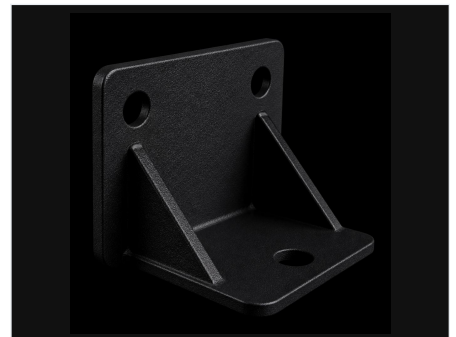
Electropolishing

Medical grade, ultra-clean surface



Mirror Polishing

#8 mirror finish, $R_a \approx 0.2$



Powder Coating

300–1000 h salt spray · Heavy duty

Copper & Brass Treatments / 铜 & 黄铜表面处理



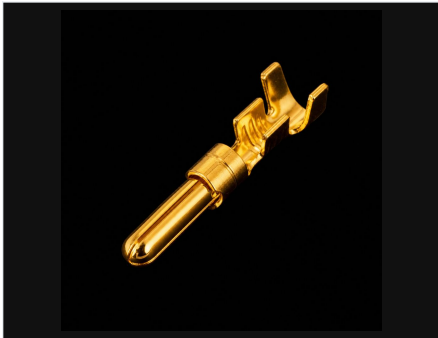
Nickel Plating
Corrosion protection, silver-white



Tin Plating
Excellent solderability



Silver Plating
Maximum conductivity, RF connectors

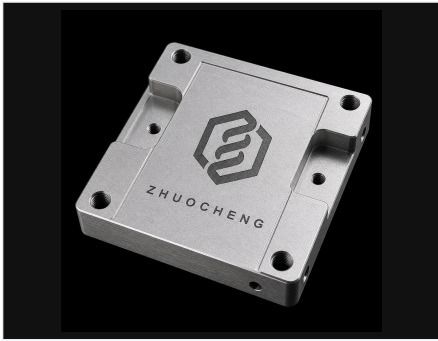


Gold Plating
Premium contacts, high reliability



Polishing
Decorative warm-gold mirror finish

Marking & Logo Processing / 打标 & 标识工艺



Laser Engraving

Permanent, high-precision oxide marks



CNC Engraving

Deep V-cut mechanical channels



Silk Screen Printing

Full-color ink on flat surfaces



Chemical Etching

Recessed logo on stainless / brass



Pad Printing

Ink conforms to curved surfaces

Section 3 — Testing & Quality Control / 检测与质量控制

Dimensional Inspection / 尺寸检验

Test Item	Specification
CMM Accuracy	±0.001 mm
CNC Machining Tolerance	Up to ±0.005 mm
Surface Roughness	Ra 0.2–3.2

Material & Mechanical Testing / 材料 & 力学测试

Test Item	Specification
Hardness Testing	HRC / HRB / HV
Tensile Strength	Up to 1000+ MPa
Yield Strength Testing	✓
Torque Testing	✓
Thread Gauge Inspection	✓

Environmental & Reliability Testing / 环境 & 可靠性测试

Test Item	Specification
Salt Spray Testing	24 / 48 / 72 / 96 / 120 / 500 / 1000 Hours
Coating Thickness Testing	✓
Corrosion Resistance Testing	✓
Wear Resistance Testing	✓