



## Vacuum Brazed Cold Plates: Cooling Technology to Match Complex Packaging Needs



**Vacuum-brazed cold plates from Thermacore can be custom engineered to match the most complex application's thermal/mechanical performance, packaging requirements, pressure drop and dimensional requirements.**

Thermacore tailors the internal flow configuration to the application, creating a design that maximises thermal performance and minimises cold plate pressure drop. A wide variety of sizes and shapes are available to help designers meet tough configuration challenges and space requirements.

Our cold plates can incorporate [embedded](#) heat pipes for enhanced thermal performance, and they are even available with unique surface finishes and hole locations for easy mounting in any position. Our vacuum-brazed cold plates are designed for heat dissipation using various fluids including air, water, water/glycol and PAO.

Thermacore also offers customised design, development and manufacturing of the vacuum brazed assemblies. Our manufacturing capabilities encompass interior and exterior machining, fin forming, fin cutting, vacuum brazing and heat treating.

### Testing Capabilities

- Thermal Performance Testing
- Helium Leak Testing
- Leak/Proof/Burst Test (Hydrostatic to 10,000 psig)
- Flow/Pressure Drop Testing
- Air/Water/Polyalphaolefin (PAO)/HFE, Glycol-Water, Pressure Cycle Testing
- Hardness/Conductivity Testing

### Aluminium Brazing Alloys and Fillers Available



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### **Brazeable Alloys include:**

- Wrought Aluminium 6061, 6063, 6082, 6951 (heat treatable) and 1100
- 3000 Series (non heat treatable)
- Cast Alloys A356, A357 and 443, 700 Series (less typical)
- 2000 and 7000 Series materials not typically brazed due to alloy limitations
- 5000 Series due to magnesium content

### **Filler Metals**

- Silicon, copper, zinc and others added in small quantities to aluminium to lower its melting point
- Magnesium also for vacuum brazing
- Typical Corrosion Resistant Filler Alloys include 4047, 4343 and 4045
- Comes in sheet, wire and powder forms
- Clad Brazing Sheet (filler alloy embedded on aluminium surface) also used
- No. 21 through 24 can be used for vacuum brazing