Optimal welding conditions were obtained for joints between 9Cr-ODS and JLF-1 steels

Nagasaka et al., MPT/P5-21

**Optimal conditions:**

1. **Electron-beam welding (EBW) process**
   - Post-weld heat treatment (PWHT): 780°C x 1 h
   - To form tempered martensite by recovery

2. **Hot iso-static pressing (HIP) process**
   - HIP temperature: 1050°C or 1100°C
   - To enhance matrix Fe diffusion
   - PWHT: 1050°C x 1 h + 36°C /min cooling + 780°C x 1 h
   - To eliminate the localised soften and to form refined carbide and tempered martensite by recovery

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**Fig. Tensile properties of dissimilar-metals joint with various welding conditions**

**Fig. Hardness around the bonding interface in the dissimilar-metals joints**