RAPID SOLIDIFICATION (RS) OF METAL ALLOYS – PLANAR FLOW CASTING (PFC)

Process

In the melt spinning (MS) or planar flow casting (PFC) process a molten metal passes a nozzle and immediately touches the water cooled rotating Cu wheel. Ultrafine grained or amorphous material of metals and alloys can be manufactured by a rapid solidification (RS) device. Such ribbons or flakes have thicknesses of less than 100 µm.

Melt Spinner

- Cooling wheel
  - Cu alloy
  - Ø 300 mm x 80 mm
  - 3,000 min⁻¹
- Inductive heating (40 kHz)
  - 2 crucibles
    (10 – 20 cm³; up to 1,000 cm³)
  - up to 1,700 °C

- Atmosphere
  - air, gas and vacuum in the recipient
  - ribbon width up to 20 mm

Application potential (examples)

- Advanced alloys of aluminium and magnesium
- Catalizer materials
- Braze materials
- Thermoelectric materials
- Materials for hydrogen storage

Service offer

- Application-oriented development of rapidly solidified alloys
- Characterisation and analysis of material properties
- Utilisation of RS materials for demonstration and prototypes