

Silver Alloy SF 928 CH

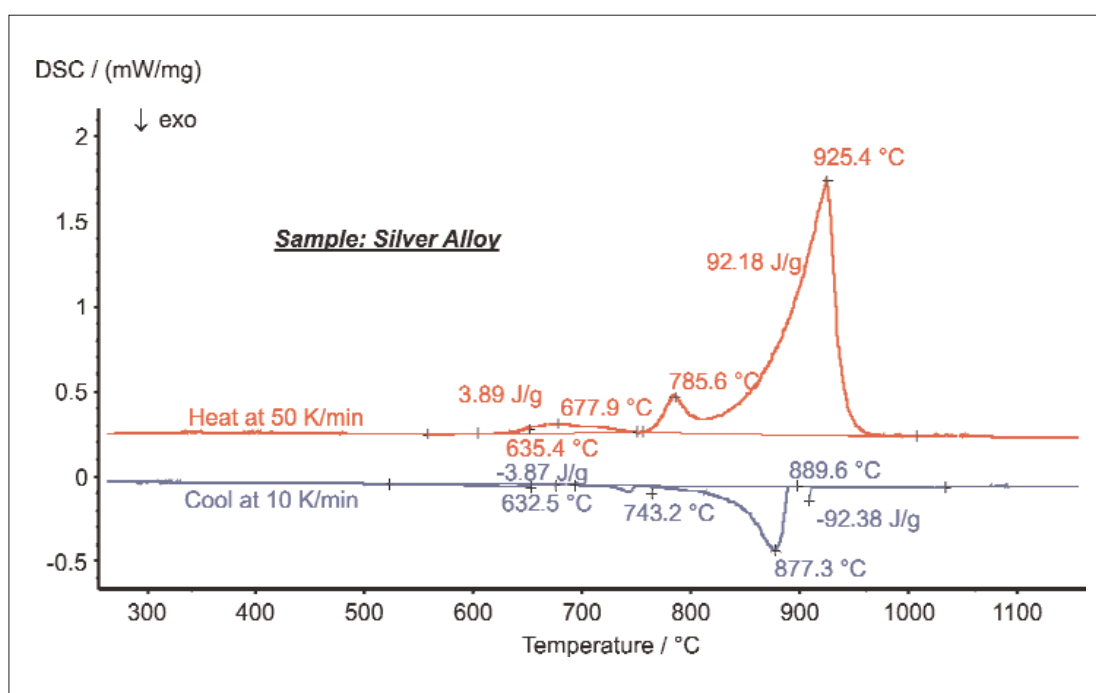
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Silver is a precious metal well-known for its high thermal and electrical conductivity. It is therefore used in many electrical and electronic products. Printed circuits, for example, are made using silver paints, and computer keyboards using silver electrical contacts. Silver is also used in high-voltage contacts because it is the only metal that will not arc across contacts, hence it is extremely safe. Furthermore, the metal is chosen for its beauty in the manufacture of jewelry and silverware which are traditionally made from the silver alloy known as Sterling silver which contains 92.5% silver. Fine silver (99.9% pure) is generally too soft for producing large functional objects. Therefore, it is generally alloyed with other metals (e.g. copper) to give strength whilst preserving the ductility of the silver and a high precious metal content. Silver alloy SF 928 CH contains 92.5% pure silver and 7.5 % other elements. The other elements are copper (72%) and zinc (28%).

Test Conditions:

Temperature range: RT ... 1150°C
Heating/cooling rates: 50/10 K/min
Atmosphere: Argon at 50 ml/min

Sample mass: 57.42 mg
Crucible: Pt with liner and lid
Sensor: DSC type S



Results:

The specific heat-flow rate was measured at a high heating rate (50 K/min) up to 1150°C and during cooling at 10 K/min. Due to the high heating rate, melting is shifted to higher temperatures. Melting of the alloy occurs in three steps (peak temperatures at 678, 786 and 925°C during heating). The entire heat of fusion was 96.1 J/g (3.89+92.18 J/g). Solidification of the alloy was measured at 890°C. Three separate peaks occurred again during the solidification process. The enthalpy change during solidification was 96.2 J/g (3.87+92.38 J/g) and therefore nearly the same as during heating. The onset temperature of melting (635°C) was close to the last solidification peak (at 633°C) even though an extremely high heating rate was employed during the heating cycle.