

STRAIGHT FROM THE LAB



New standard for sheathed thermocouples

The new standard was released in April and has the designation IEC 61515 (2016). One topic it deals with is continual maximum temperatures in stationary air for sheathed thermocouples. The standard also governs the relationship between seller and buyer, who can make a number of demands. However, both parties must be in agreement and understand the consequences of those demands.

With regard to acceptance testing and suchlike, the IEC 61515 format is similar to that of the corresponding standard for Pt100s: IEC 60751 (2008). It states that the temperature-emf relationship, tolerances and cable colours cannot be altered.

Sheathed thermocouples are ordinary thermocouples without noble metal wires such as those found in types N, K, J, E and T. For example, N and K with a Ø3 mm outer diameter and a sheath of Inconel 600 are both given a stated temperature limit of 1070 °C.

For anyone taking measurements in this temperature range, the temperature limit is critical, especially if materials or environments damaging to types N and K, such as a vacuum, are present. What you can do is to switch to a type R or S thermocouple, or, for higher temperatures, a type B. The disadvantage with these is their requirement for ceramic protection tubes, which can easily break when industrial furnaces are being filled and emptied.

Pentronic has recently acquired its own furnace to monitor how sheathed thermocouples function at higher temperatures. The furnace's maximum temperature is 1700 °C. It is now being tested and is not part of the accreditation process.

