

# JM

## HTX™ platinum thermocouple wire

Extra strength, exceptional accuracy



**Johnson Matthey**  
Inspiring science, enhancing life

# HTX™ platinum thermocouple wire

Johnson Matthey has developed **HTX** platinum thermocouple wire: a high strength thermocouple wire that withstands the most demanding applications, particularly those seen in the glass and semiconductor industries.

Our **HTX** wire is available as type R and type S thermocouples, and we can manufacture it in any diameter within our typical size range to meet your specific requirements.

## High strength

**HTX** lasts up to 400 times longer than standard platinum thermocouple under load at high temperatures. This is achieved by adding micro alloys of zirconium to stabilise the grain boundaries within the wire. This stabilisation prevents grains occupying the complete wire diameter and helps stop 'bamboo' structures developing.

Containing the grains allows the temperature measurement to be maintained, offering reliability in harsh environments.

## Superior durability and accuracy

**HTX** wire is highly durable. It maintains excellent functionality after 2,450 hours at 1400°C with 400psi tensile loading during accelerated life testing.

Having undergone extensive testing, we've proven both type R and type S thermocouples using **HTX** wire repeatedly demonstrate IEC 60584-1: 2013 class 1 performance. And whilst meeting ASTM E230 standard tolerances, they're also within ASTM E230 special tolerances at high temperatures.

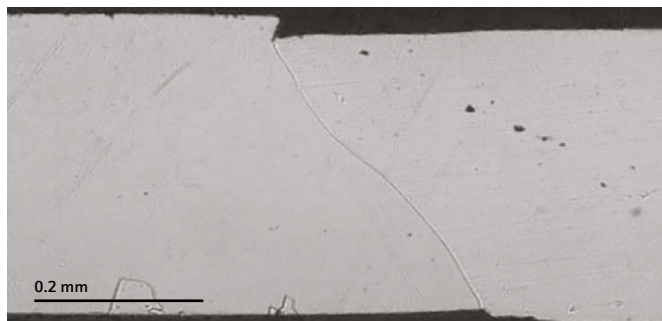
## Improved drift properties

Independent trials at NPL, the UK's national measurement institute, confirm that **HTX** has a better EMF output stability compared to conventional thermocouples. Using **HTX** wire reduces drift during thermal cycling tests showing that **HTX** thermocouples maintain their accuracy for longer.

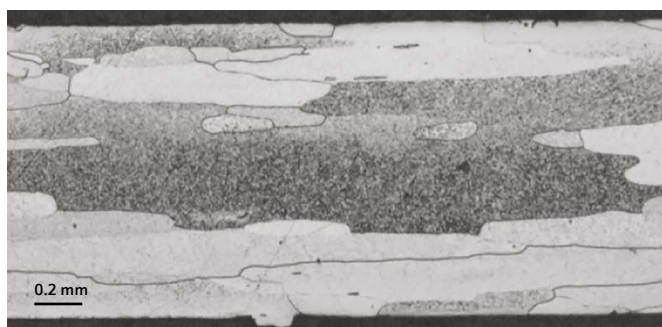
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Micrograph of standard Pt wire showing large grain structure and resulting grain boundary movement (bamboo structure), leading to mechanical failure of the wire.



Micrograph of HTX Pt wire showing the grain boundary pinning effect that results in superior strength and durability.

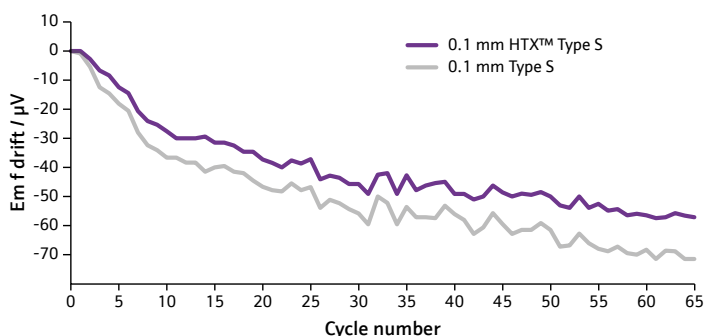


Chart showing a reduction in EMF drift during thermal cycling trials.