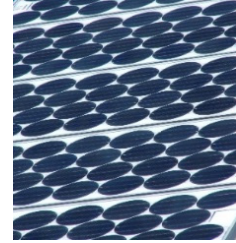


# Thermocouples

## For the photovoltaic solar cell industry



**BASF's advanced thermocouples control critical deposition and doping processes in the manufacturing of solar cells. Precise temperature control can enable higher product yield.**

BASF supplies thermocouples for horizontal diffusion processing systems/ furnaces. Our products have been successfully used for applications including:

- P-N type diffusion/oxidation/CVD processes
- POC13-doping process
- Typical doping temperature range 800 – 900°C
- Closed tight loop temperature controls

### Custom Engineering

BASF engineers will work directly with you to customize your thermocouples for maximum longevity. BASF expertise in high temperature thermocouples derives from products we have provided to the major semiconductor and solar cell manufacturers all around the world, and our vast experience with precious metals.

In our state-of-the-art production facilities in Fremont, California and Rome Italy, we take extraordinary care to ensure that every instrument is manufactured with the highest degree of quality. Instruments are tested and calibrated against exacting standards, before they leave our ISO 9001:2008 certified factory. BASF is committed to providing innovative designs, exceptional quality, rapid deliveries and competitive pricing.

### Technical Assistance

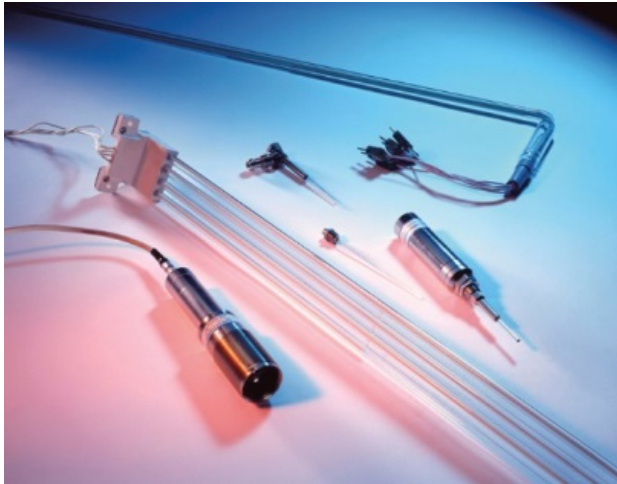
Our laboratories are very amenable to exchanges and cooperation with our customers. We can perform specific calibrations at both fixed points or by comparison versus standards, with an accuracy of better than 0.2 °C.

We can make metallographic and physical investigations of thermocouples which may allow customers to better understand the reasons of a failure or unexpected measurement drifts. We also provide tailor-made evaluation studies on drift analyses. This can help customers to precisely assess the accuracy of installed thermocouples, their drift in time, and preventive maintenance program adjustments. By offering superior technical assistance, BASF can deliver a positive impact on the overall cost of ownership of process tools.

### Precious metals expertise

Metals – particularly those in the Platinum group – are critical components of many products made by BASF such as contact thermocouples. Ensuring that those raw materials are where they need to be, when they need to be there, in the form they need to be and at the lowest possible cost is what BASF's Precious and Base Metal Services group is all about. Given our unique understanding of market fundamentals, such as current and future supply, technology changes and market risks, we help ensure that BASF and our customers have a cost-effective, reliable supply of the raw materials they need. A fundamental understanding of precious metal and precious metal technologies is also critical. The experience of our research and development group in precious metal and precious metal technologies is unmatched. We have led the industry with breakthrough innovations. No one knows more about precious metals. We are the precious metal experts.

Contact a technical specialist today for recommendations about your unique needs, including made-to-order, custom-designed thermocouple assemblies – our specialty.



## Superior Calibration

Every BASF thermocouple is supplied with a calibration report traceable to national standards laboratories and conforming with the latest national and international specifications and criteria.

## Precious metal recovery

Our scrap metal return program can save you money on future orders. We can often use the refined precious metals coming from customer-supplied scrap material to manufacture new thermocouples.

## About Us

BASF's Catalysts division is the world's leading supplier of environmental and process catalysts. The group offers exceptional expertise in the development of technologies that protect the air we breathe, produce the fuels that power our world and ensure efficient production of a wide variety of chemicals, plastics and other products, including advanced battery materials. By leveraging our industry-leading R&D platforms, passion for innovation and deep knowledge of precious and base metals, BASF's Catalysts division develops unique, proprietary solutions that drive customer success.

**BASF - We create chemistry**

[www.catalysts.basf.com/tempensing](http://www.catalysts.basf.com/tempensing)

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