About us

SAFINA, a.s. has a long tradition in the complex processing and manufacture of products from precious and non-ferrous metals. SAFINA, a. s. is a company with significant influence and scope in the European, North American, and Asian markets.

Today SAFINA, a. s. acts on the international market with production sites and sales offices in 5 different countries. Products of SAFINA, a.s. are available and delivered to consumers across 44 countries, suggesting innovative solutions for its customers.
Thermocouple Wires

Assortment
SAFINA, a. s. is a renowned and traditional manufacturer of PtRh thermocouples. It has been dealing with their manufacturing for almost half a century. An extraordinary emphasis is placed on accuracy and reliability of thermocouples during manufacturing process. Each manufactured batch is tested in our modern accredited laboratory and is provided with a quality certificate. Measured values are compared to measurement standards, which are based on international norms.

<table>
<thead>
<tr>
<th>Type</th>
<th>Leg composition</th>
<th>Temperature range of application (°C)</th>
<th>Tolerance</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Long-term</td>
<td>Short-term</td>
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<tr>
<td></td>
<td></td>
<td>0-1 300</td>
<td>0-1 600</td>
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<tr>
<td>S</td>
<td>Pt – 10% Rh</td>
<td>(–)</td>
<td>(+)</td>
</tr>
<tr>
<td>R</td>
<td>Pt – 13% Rh</td>
<td>(–)</td>
<td>(+)</td>
</tr>
<tr>
<td>B</td>
<td>Pt – 6% Rh, Pt – 30% Rh</td>
<td>(–)</td>
<td>(+)</td>
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</tbody>
</table>

SAFINA, a. s. offers thermocouples in form of individual thermocouple legs (wires) as well as in form of couples produced by connection of both legs. Additionally thermocouples clad in protective ceramic capillary can be supplied on request.

Correct manipulation with thermocouples:
Materials of extreme purity are used for manufacturing of thermoelectric couples. Any contamination with dirt or inconsiderate manipulation has a significant impact on the accuracy of measurement with thermoelectric couple. Following factors, which cause its deterioration at the application, must be taken into account for ensuring of thermocouple accuracy.

Contamination by chemical substances vapours
Vapours of metal and non-metal substances can condensate on the surface of thermocouple in case of measurement with unprotected couple. The substances diffuse under high temperatures into the surface of thermocouple wires and thus decrease accuracy.

Reduction atmosphere
Platinum atomisation occurs in the reduction atmosphere, which decreases the operating life of thermocouple and its accuracy.

Contamination with lubricants and organic substances
Organic substances are decomposed by heat and create reduction atmosphere acting in the above mentioned way.

Selection of suitable type and diameter of thermocouple
Selection of an optimal type of thermocouple depends on application temperature, atmosphere and required length of operating life, accuracy and sensitivity of the couple.

Long-term usage
Subject to compliance with all aforementioned measures, gradual decrease of the thermoelectric voltage value occurs in thermocouples (type S and R) exposed to high temperatures on a long-term basis. It is caused by diffusion of rhodium into the Pt leg. Unfortunately, this phenomenon cannot be prevented and therefore thermocouples must be regularly checked and exchanged.

Accuracy of thermocouples
All thermocouples supplied by SAFINA, a. s. are in compliance with the standard EN 60584-1 based on the international temperature range ITS-90.