

We are committed to realize the potential of precious metals as responsibly as possible. We underline this commitment with our pledge to responsibility: **precious to us.**

Our pledge to RESPONSIBILITY

RESOURCES
are precious to us

CLIMATE
is precious to us

PEOPLE
are precious to us

We conserve resources and promote a circular economy.

We decarbonize our business.

We prioritize people's well-being and interests.



herae.us/sustainability

Materials for Probing

Heraeus solutions for your test requirements

What makes Heraeus special:

Our core competencies at a glance

- › We melt the alloy you need: Processing of precious metal alloys into semi-finished products (fine wire, wire cuttings, foils)
- › We innovate materials for your next-gen test equipment: Unique combination of material expertise, application and manufacturing know-how
- › We customize our products to your needs: from alloying to ultrafine wires



Your Benefits:

Specialized alloys tailored to your testing application

- › Supportive advice on choosing and adapting the right material and configuration for your application
- › Consistently high quality standard and fast delivery times
- › Reliable innovation cycles of new alloys due to extensive facilities for mechanical/electrical testing (CCC/ MAC) and surface analysis in Heraeus laboratories



Get to know:

Our Semiconductor Test Material Portfolio

Pd-based Alloys

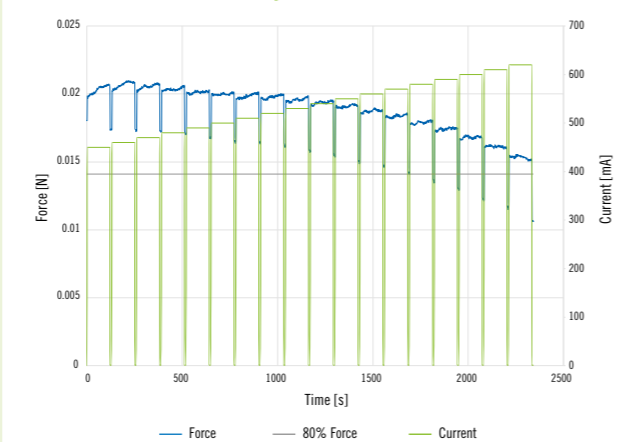
	Hera 648	Hera 6321	Palysium/Hera 6307
Main Components [wt%]	Pd35Ag30Au10Pt10	Pd39Ag29	Pd52Ag11
Density [g/cm³]	11.8	10.4	10.5
Young's Modulus [GPa]	108	112	120
Yield Strength R_{p0,2} [MPa]	1050 – 1400	1250 – 1550	1250 – 1550
UTS [MPa]	1100 – 1450	1300 – 1600	1300 – 1600
R_{p0,2}/E [Ratio]	0.010 – 0.013	0.011 – 0.014	0.011 – 0.013
Hardness [HV]	330 – 400	400 – 450	400 – 500
Thermal Conductivity [W/mK]	28	66	150
Electrical Resistivity [μΩm/cm]	35.9 – 33.2	21.3 – 12.3	< 6.4
IACS [%]	4.8 – 5.2	8.1 – 14.0	> 27
CCC* [mA]		380	590
MAC [mA]		290	506

Revolutionary Pd-Alloy: Palysium

Innovative Heraeus alloy with unique microstructure

- › Due to its unique superlattice structure, Palysium has very high electrical conductivity (2.5 times higher than Hera 6321) combined with excellent spring properties and processing capabilities for wire diameters down to 15 μm.
- › These enable the realization of very accurate smaller needle sections addressing smaller pitch sizes, as well as faster and more reliable testing for more cost-efficient testing.

CCC-Measurement* of Palysium



Further Alloys

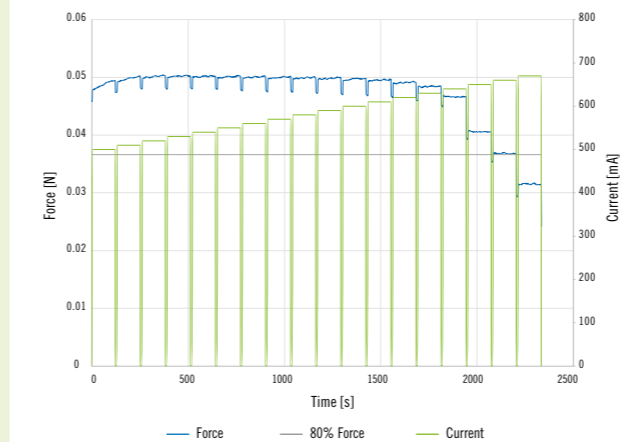
	Hera 1206	Hera 5270	Hera 4000
Main Components [wt%]	PtNi31.5	Rh dot	Ir
Density [g/cm³]	15.1	12.4	22.56
Young's Modulus [GPa]	234	330	528
Yield Strength R_{p0,2} [MPa]	1900	2800	2300
UTS [MPa]	1600 – 2000	2100 – 2900	2400
R_{p0,2}/E [Ratio]	0.008	0.008	0.004
Hardness [HV]	400 – 490	450 – 700	700
Thermal Conductivity [W/mK]		150	59
Electrical Resistivity [μΩm/cm]	41.1 – 33.2	< 5.4	7.2 – 6.6
IACS [%]	4.2 – 5.2	> 32	24 – 28
CCC* [mA]		650	
MAC [mA]		540	

Heraeus Rh-Alloy: Hera 5270

Significantly improved processability of pure Rh by doping

- › Pure Rh is characterized by high hardness and excellent conductivity. Processing of Rh is demanding due to embrittlement and cracks during drawing processes of ultrafine wires.
- › Hera 5270 significantly improved the processability of pure Rh by doping the material. Satisfactory properties can be achieved even for wire diameters down to 20 μm.

CCC-Measurement* of H5270



Easy access:

Our Material Database

Suitable precious metals and alloys are listed in the Heraeus Material Database which offers highest efficiency in material choice:

- › **Quick and easy access:**
No registration required, browse materials right away
- › **Transparency:**
Find the right material by setting filters, e.g. applications
- › **Comparability:**
Compare up to 4 materials and find out how they perform, e.g. electric resistivity, Young's Modulus, thermal conductivity



Simply scan the QR code and get to know our products.

Need personal advice?

Contact our experts at Heraeus



Simply scan the QR code and get in touch with our sales team.

*according to ISMI reference with: 41 μm diameter, 8 mm length, flat tip and end, OT 75 μm, offset 250 μm, 120 s current cycle time, 10 s off-time between cycles, room temperature