

The C. HAFNER range of precious metal alloys,
solders and semi-finished products



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General information for users of our products



C. HAFNER ranks amongst the market leaders in the precious metal processing sector and offers you a wide range of precious metal alloys in the form of alloys, sheets, strips, tubes, wires, rods and casting materials.

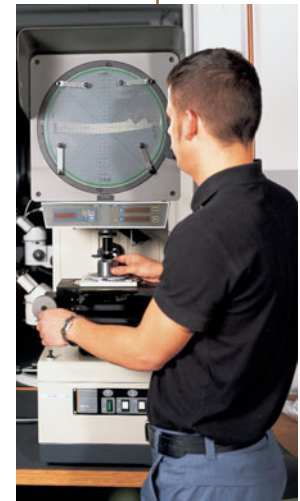
Our customers are manufacturers and distributors of industrial and handcrafted jewellery and companies producing luxury goods and decorative products. We supply industrial manufacturers of precious metal industrial products.

In addition to supplying high-quality C. HAFNER precious metal products, we assist our customers in finding individual solutions when introducing new products or processes into their production, and thereby help them to choose the right product.

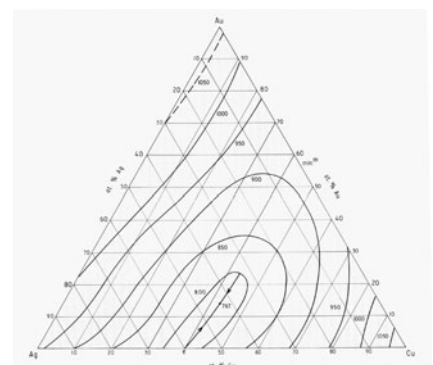
You will find us at the forefront of new technologies. We are expanding our range of alloys – both traditional ones and those developed for special applications – as well as up-dating the technical specification of C.HAFNER products. We do this through research and development carried out in-house by our own qualified staff or in co-operation with public research institutes.

It is part of our philosophy to nurture a close relationship with our customers. Our priority is to maintain a responsible attitude towards handling precious metals. The ability to always supply the right precious metal alloy in the right form, supported by our modern production facilities, an efficient QA system and a team of qualified, experienced employees are the key to your success and ours.

We are certified in accordance with DIN EN 9001:2000.



Our production facilities are subject to constant inspection. This ensures the consistent quality of our products.



The technical capabilities for precious metal casting

Of all known production techniques, investment casting using the lost-wax process is the one which offers the greatest freedom of design. This method has been employed successfully for over 5000 years and has been constantly improved. Today it still remains one of the most important production processes in the jewellery industry for both one of a kind piece creation and for series production.

C. HAFNER OFFERS A VAST RANGE OF CASTING ALLOYS

- over 100 different gold alloys and special alloys
- white gold alloys with or without nickel (DIN EN 1811)
- silver and low tarnish silver alloys (NONERO)
- platinum alloys with different hardness
- master alloys (without gold)



3000-year-old sandstone casting
mould



C. HAFNER casting alloys are suitable for all casting processes such as centrifugal casting, vacuum casting and vacuum pressure casting

We supply precious metals for casting in the form of granules or casting cubes, depending on the alloy. In addition we offer technical support and advice on the best techniques to use our products.

ALLOYS FOR SPECIAL APPLICATIONS

- alloys with low melting range for casting together with gemstones
- zinc-free alloys for casting under vacuum
- alloys containing silicon for oxide-free castings with less surface roughness
- alloys with special physical properties (hardening, strength etc.)
- fine grain casting alloys



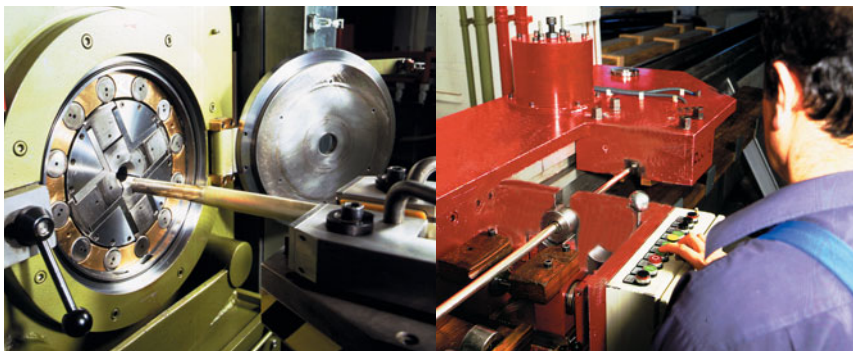
The technical capabilities of precious metal tubing

For precious metal processing industries e.g. jewellery, writing instruments and medical engineering, as well as other technical applications in the tube sector, C. HAFNER offers an extensive range of tube cross-sections in a wide variety of different alloys and dimensions.

C. HAFNER high-quality tubes are subject to strict quality control with regard to surface finish and accuracy of dimensions.



ALLOYS:	all Au, Ag, Pt, Pd based alloys
STANDARD OF FINENESS:	all according to ISO 9202. Fineness can be customised.
PROFILES:	round, half-round, oval, triangular, square, hexagonal, rectangular, octagonal; special profiles on request
DIMENSIONS: (according to the alloy)	diameter 30 mm to 0.8 mm, wall thickness 7 mm to 0.10 mm; special dimensions on request
SUPPLIED AS:	straight, wound (round, oval), with or without insert
HARDNESS:	hard-drawn or customised hardness
LENGTH:	4 m max.; sorted as required, saw cut
TOLERANCES:	up to ± 0.01 mm dependent on tube dimensions; fitments possible

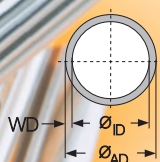


Perfecting a high-quality tube:
after hammering the tube
is straight drawn to its final
dimensions

1. HARDNESS

Tubes are normally supplied hard-drawn.
Different hardnesses are available on request.

2. DIMENSIONS



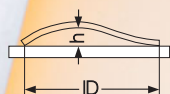
PROFILE CROSS-SECTION

Standard tolerances according to DIN EN 12449.

Narrower tolerances available on request.

Outer diameter or inner diameter can be produced as fitment.

3. STRAIGHTNESS



DRAWN STRAIGHT. Straightness attained by final draw.

Manual straightening if required.

STRAIGHTENED means deviations of 3 mm per metre tube length are permissible.

h = permissible tolerance of straightness

WOUND TUBES

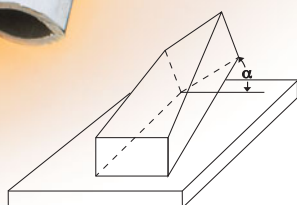
Wound tubes are available with inserts of copper, aluminium and brass.

NOTE

Slight deviations in the winding diameter may arise depending on the material and the material hardness.

DISTORTION OF STRAIGHT TUBES

a = 45° maximum permissible distortion per metre tube length.



4. SURFACES

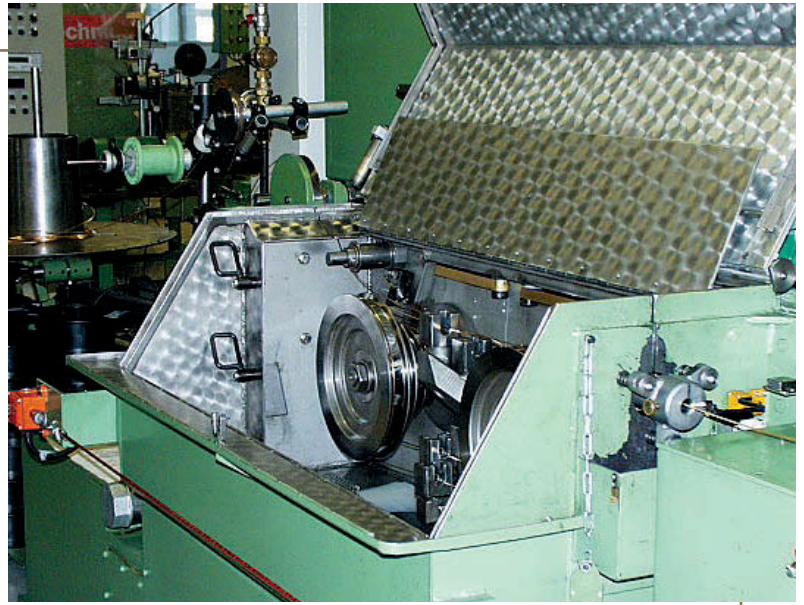
SURFACE QUALITY

Standard surface finish is the surface as drawn.

Bright surface finish is a polished surface.

The technical capability of precious metal wire

C. HAFNER offers a wide range of wire products in different alloys, profiles and dimensions. Our speciality are customised profiles. We supply rods for processing on CNC lathes and milling machines. Whether drawn straight or straightened rods we offer the right product for your automated parts production.



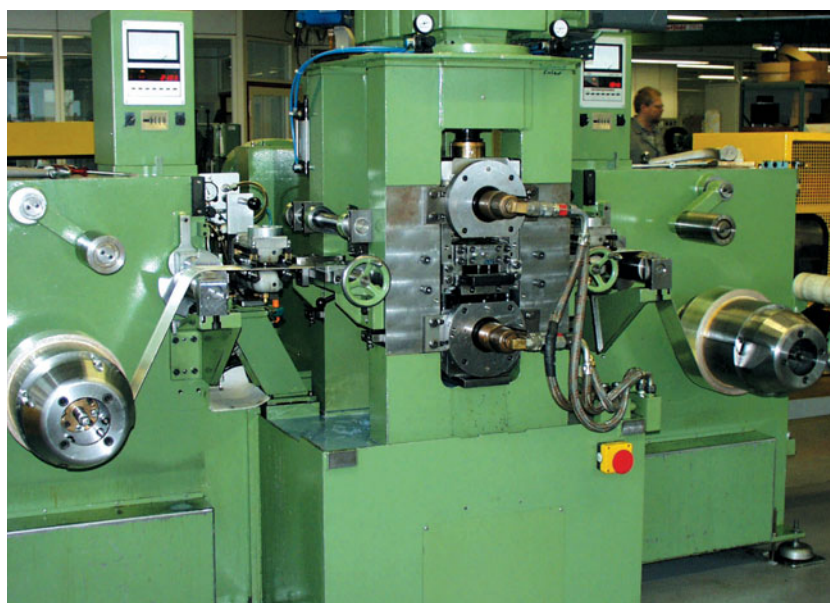
ALLOYS:	all Au, Ag, Pt, Pd based alloys
STANDARD OF FINENESS:	all according to ISO 9202. Fineness can be customised.
PROFILES:	round, half-round, oval, triangular, square, hexagonal, rectangular, octagonal; special profiles on request
DIMENSIONS: (according to the alloy)	diameter 25 mm to 0.05 mm, round; special dimensions on request
SUPPLIED AS:	rods, in coils, on spools, cut sections
HARDNESS:	hard-drawn or customised hardness
LENGTH:	4 m max.; sorted as required, saw cut
TOLERANCES:	up to ± 0.002 mm dependent on wire thickness

Precious metal rods for
CNC machine processing



The technical capabilities of precious metal sheet and foil

The C. HAFNER sheet and foil range has an large product list in a wide variety of alloys and dimensions. Our state-of-the-art production methods and many years of experience are the basis of the high quality of our products.



Quality combined with prompt delivery –
a requirement always met by C. HAFNER

ALLOYS:	all Au, Ag, Pt, Pd based alloys
STANDARD OF FINENESS:	all according to ISO 9202. Fineness can be customised.
COLOURS:	the full range of alloy colours and shades
DIMENSIONS: (according to the alloy)	width from 2.50 mm to 350 mm max.; thickness 0.030 mm to 25 mm
SOLDER-BACKED:	sheet with hard-solder backing
SUPPLIED AS:	flat sheet or in coils
HARDNESS:	soft or customised hardness
LENGTH:	sheets up to 2 m max. length, strips up to 100 kg/coil max. weight
TOLERANCES:	up to ± 0.002 mm dependent on wire thickness
SURFACE FINISH:	brushed or bright rolled

Bright rolled
to size



Our range of coloured gold alloys and jewellery solders

GOLD ALLOYS AND JEWELLERY SOLDERS

Fine gold content -/000	Alloy no.	Colour	Density g/cm ³	Vickers-hardness HV 5/30 annealed	Melting range °C	Supplied as	Solders					
							soft solder 3 WT (°C) no.		medium solder 2 WT (°C) no.		hard solder 1 WT (°C) no.	
333	9910	yellow	10.9	85	870-810	C	2420*	690	2410*	715	2400*	750
333	9920	yellow	10.8	100	870-815	C, S, W, T	2420*	690	2410*	715	2400*	750
333	9830	reddish	10.9	120	925-880	C, S, W, T	2420*	690	2410*	715	2400*	750
333	9780	pink	10.8	90	905-855	C, S, W, T						
333	9600	red	11.0	95	990-960	C, S, W, T						
375	9311	pale yellow	11.0	120	915-850	S, W, T	2270*	680	2260*	720	2250*	740
375	9200	yellow	11.1	110	870-820	C, S, W, T	2270*	680	2260*	720	2250*	740
375	9180	pink	11.1	105	960-925	C, S, W, T						
376	9206	yellow	11.1	110	870-820	C	2270*	680	2260*	720	2250*	740
417	8580	yellow	10.4	112	850-820	C	1650	680				
417	8570	red	11.5	102	945-890	C						
417	8661	yellow	11.3	98	920-870	S, W, T	1650	680				
585	6530	greenish	13.9	110	915-820	S, W, T	2450*	750	2440*	780	2430*	815
585	6790	pale yellow	14.1	135	880-825	C, S, W, T	2450*	750	2440*	780	2430*	815
585	6800	pale yellow	13.7	130	880-820	C	2450*	750	2440*	780	2430*	815
585	6980	pale yellow	14.0	100	910-850	C	2450*	750	2440*	780	2430*	815
585	7000	pale yellow	14.2	125	900-820	S, W	2450*	750	2440*	780	2430*	815
585	6710	yellow	13.3	140	825-790	C, S, W, T	1410	700	2450*	750	2440*	780
585	6660	yellow	13.2	160	825-780	C, S, W	1410	700	2450*	750		
585	6680	yellow	13.0	130	840-710	C	1410	700				
585	7140	yellow	13.7	150	830-790	C, S, W	1410	700	2450*	750	2440*	780
585	7230	yellow	12.9	120	850-800	S, W	1410	700	2450*	750	2440*	780
585	7170	reddish "Hamilton"	13.7	160	850-810	C, S, W, T	1410	700	2450*	750	2440*	780
585	6970	pink	13.3	120	910-875	C, S, W, T			2930	815	1420	840
585	6840	red	12.9	100	935-920	C, S, W, T			1420	840	1470	870
666	6010	green	16.2	45	1010-1000	C, S, W	2450	750	2440	780	2430	815

C = casting, S = sheet/foil, W = wire, T = tube

Gold solders available as: 0.3 mm sheet, 0.5/0.7 mm wire (round) and 0.2 x 1 mm ribbon solder

*not alloyed with cadmium **not alloyed with cadmium and nickel

x only available as 0.3 mm sheet

Our range of coloured gold alloys and jewellery solders

GOLD ALLOYS AND JEWELLERY SOLDERS

Fine gold content -/000	Alloy no.	Colour	Density g/cm ³	Vickers-hardness HV 5/30 annealed	Melting range °C	Supplied as	Solders					
							soft solder 3 WT (°C) no.	735	medium solder 2 WT (°C) no.	2470	790	hard solder 1 WT (°C) no.
750	4030	green	15.9	45	1020-1010	C, S, W	2480*	735	2470	790	2460*	830
750	4010	yellow 2N	15.4	130	920-880	S, W, T	2480*	735	2470*	790	2460*	830
750	4015	yellow	15.4	130	920-880	C	2480*	735	2470*	790	2460*	830
750	4310	deep yellow 3N	15.3	145	890-870	C, S, W, T	2480*	735	2380	800	2330	830
750	4315	deep yellow	15.3	145	890-870	C	2480*	735	2380	800	2330	830
750	4100	pink 4N	14.9	170	880-860	C, S, W, T			1100*	790	1130	830
750	4105	pink	14.9	165	880-860	C			1100*	790	1090*	860
750	4120	pink	15.1	150	860-840	C, S, W, T	2480*	735	2380	800	2330	830
750	4125	pink	15.1	150	860-840	C	2480*	735	2380	800	2330	830
750	4280	red	15.1	170	900-890	S, W			1100*	790	1090*	860
750	4340	red 5N	15.4	180	890-870	C, S, W, T			1100*	790	1090*	860
750	402	yellow	15.5	122	920-870	S, W, T	2480*	735	2380	800	2330	830
875	2790	yellow	15.8	110	880-840	S, W, T					23150	820
900	22060	deep yellow	17.6	65	990-950	C, S, W, T			23022*	850	23021*	920
917	2740	deep yellow	17.5	100	990-960	C, S, W						
917	2720	deep yellow	17.6	70	990-950	C, S, W, T			23022*	850	23021*	920
960	22005	deep yellow	18.2	100	990-960	C, S, W						
990	26800	deep yellow	18.9	60	1040-850	C, S, W, T			2380	800	2330	830
999	13000	Fine gold	19.3	25	1060	S, W, T			23022*	850	23021*	920

C = casting, S = sheet/foil, W = wire, T = tube

Gold solders available as: 0.3 mm sheet, 0.5/0.7 mm wire (round) and 0.2 x 1 mm ribbon solder

*not alloyed with cadmium **not alloyed with cadmium and nickel x only available as 0.3 mm sheet



C. HAFNER offers the perfect alloy for every type of jewellery

Our range of white gold alloys and jewellery solders

WHITE GOLD ALLOYS AND JEWELLERY SOLDERS

Fine gold content -/000	Alloy no.	Colour	Density g/cm ³	Vickers-hardness HV 5/30 annealed	Melting range °C	Supplied as	Solders soft solder 3 WT (°C) no.	medium solder 2 WT (°C) no.	hard solder 1 WT (°C) no.
333	9970	white	12.3	95	920-850	C, W, S, T Pd and Ni-free		15190* 720	15160** 790
333	14840	white	12.3	115	1020-930	C, W, S, T contains 10% Pd		15190* 720	15160** 790
375	9300	white	13.0	65	950-920	C, W, S, T Pd and Ni-free		15190* 720	15160** 790
375	14870	white	12.6	100	960-850	C, W, S, T contains 5% Pd		15190* 720	15160** 790
417	8650	white	12.8	70	950-910	C, W, S, T Pd and Ni-free			
417	12000	white	11.3	120	1010-965	W, S, T contains Ni			
585	14600	white	15.1	65	1270-1210	W, S, T contains 17,5% Pd	15500*x 740	15450*x 790	15530** 815
585	14710	white	14.0	110	1035-985	C contains 7% Pd	15500*x 740	15450*x 790	15530** 815
585	14730	white	14.9	85	1115-1050	C, W, S, T contains 17,5% Pd	15500*x 740	15450*x 790	15530** 815
585	14490	white	14.6	130	1090-890	W, S, T contains 16% Pd	15500*x 740	15450*x 790	15530** 815
590	14010	white	14.5	170	1075-1000	C, W, S, T contains 15% Pd	15500*x 740	15450*x 790	15530** 815
590	11720	white	13.0	135	925-870	C, W, S, T contains Ni	15500*x 740	15450*x 790	15530** 815
750	14500	white	16.0	70	1280-1210	W, S, T contains 15% Pd	15760 750	15720** 800	15750x 830
750	14530	white	15.9	120	1050-945	C contains 7% Pd	15760 750	15720** 800	15750x 830
750	14570	white	16.8	70	1250-1170	C, W, S, T 10% Pd-Gehalt	15760 750	15720** 800	15750x 830
750	14510	white	16.0	100	1180-1050	C contains 10% Pd	15760 750	15720** 800	15750x 830
750	14650	white	15.7	125	1230-1180	W, S, T contains 13% Pd	15760 750	15720** 800	15750x 830
750	14740	white	16.1	160	1075-1000	C, W, S contains 14% Pd	15760 750	15720** 800	15750x 830
750	14780	white	14.2	145	950-870	W, S, T contains 4% Pd/Mn	15760 750	15720** 800	15750x 830
760	11220	white	15.0	195	950-915	C, W, S, T contains Ni	15760 750	15720** 800	15750x 830

C = casting, W = wire, S = sheet/foil, T = tube

*not alloyed with cadmium **not alloyed with cadmium and nickel

White gold solders available as: 0.3 mm sheet, 0.5/0.7 mm wire (round) and 0.2 x 1 mm ribbon solder

x only available as 0.3 mm sheet

Our range of silver alloys and jewellery solders

SILVER ALLOYS AND JEWELLERY SOLDERS

Fine gold content -/000	Alloy no.	Colour	Density g/cm ³	Vickers-hardness HV 5/30 annealed	Melting range °C	Supplied as	Solders soft solder 3 WT (°C) no.		medium solder 2 WT (°C) no.		hard solder 1 WT (°C) no.	
835	42600	white	10.1	98	810-750	C, W, S	40130*	650	40020	710	40010*	740
925	42195	white	10.2	56	860-840	W, S	40130*	650	40020	710	40010*	740
935	42200	white	10.3	75	870-750	C, W, S, T	40130*	650	40020	710	40010*	740
935	42201	white	10.3	65	880-760	C, W, S, T	40130*	650	40020	710	40010*	740
935	42190	white	10.3	54	890-850	W, S	40130*	650	40020	710	40010*	740
955	42170	white	10.3	57	890-860	W	40130*	650	40020	710	40010*	740
970	42090	white	10.4	50	900-880	S	40130*	650	40020	710	40010*	740
999	42000	white	10.5	25	961	W, S, T	40020	710	40010*	740	40000*	790

C = casting, W = wire, S = sheet/foil, T = tube *not alloyed with cadmium **not alloyed with cadmium and nickel
 Silver solders available as: 0.4 mm sheet, 0.5/0.7 mm wire (round) and 0.2 x 1 mm ribbon solder x only available as 0.3 mm sheet



A newly developed and recently installed continuous-casting machine ensures the consistent quality of C. HAFNER semi-finished products.

Our range of platinum alloys and jewellery solders

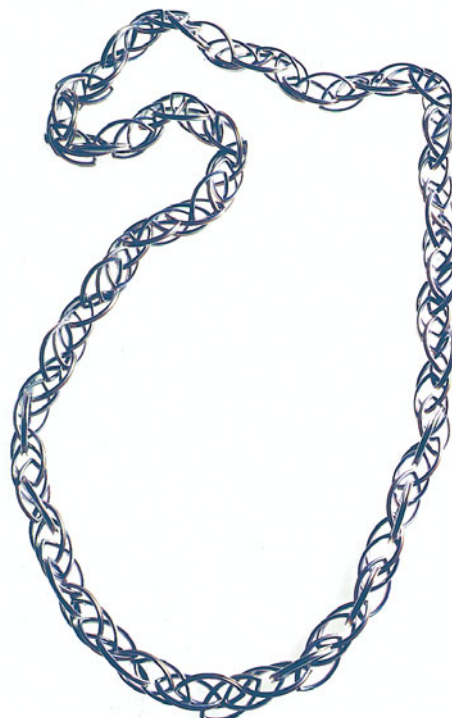
PLATINUM ALLOYS AND JEWELLERY SOLDERS

Fine gold content -/000	Alloy no.	Density g/cm ³	Vickers-hardness HV 5/30 annealed	Melting range °C	Supplied as	Solders soft solder 3 WT (°C) no.	medium solder 2 WT (°C) no.	hard solder 1 WT (°C) no.
800/200Ir	13280	21.7	190	1830-1815	W, S	16640** 980	16630** 1060	16620** 1220
900/100Ir	13280	21.6	110	1800-1790	C, W, S, T	16640** 980	16630** 1060	16620** 1220
950/50Cu	13209	20.8	100	1740-1725	W, S	16640** 980	16630** 1060	16620** 1220
950/50Co	13290	20.2	150	1740-1730	C, W, S	16640** 980	16630** 1060	16620** 1220
950/50W	13299	21.3	155	1845-1830	W, S	16640** 980	16630** 1060	16620** 1220
950/50Ir	13220	21.5	85	1798-1780	W, S	16640** 980	16630** 1060	16620** 1220
950/50Au	13245	21.3	85	1730-1670	W, S, T	16640** 980	16630** 1060	16620** 1220
950/50Ru	13295	20.4	130	1820-1810	C, W, S, T	16640** 980	16630** 1060	16620** 1220
950/50Pt-S	13207	19.7	220	1600-1510	C, W, S	16640** 980	16630** 1060	16620** 1220
960/40Cu	13210	20.3	110	1745-1730	C, W, S, T	16640** 980	16630** 1060	16620** 1220
960/40Pd	13240	20.8	82	1760-1750	C, W, S	16640** 980	16630** 1060	16620** 1220
999/-	13200	21.5	55	1769	W, S, T	16640** 980	16630** 1060	16620** 1220

C = casting, W = wire, S = sheet/foil, T = tube
Platinum solders available as: 0.3 mm sheet, 0.5/0.7 mm wire (round) and 0.2 x 1 mm ribbon solder

**not alloyed with cadmium and nickel

Platinum – the most valuable of all the precious metals lends a unique fascination to exceptional jewellery creations



Chain by Isabelle Mössner

Cehapall® – our range of palladium alloys and jewellery solders

PALLADIUM ALLOYS AND JEWELLERY SOLDERS

Fine gold content -/000	Alloy no.	Colour	Density g/cm ³	Vickers-hardness HV 5/30 annealed	Melting range °C	Supplied as	Solders soft solder 3 WT (°C) no.	medium solder 2 WT (°C) no.	hard solder 1 WT (°C) no.
500U	14970	dark grey	11.1	90	1280-1200	C, W, S, T	16730 880	16720* 980	16710* 1110
950	14961	grey	11.7	85	1400-1340	C, W, S, T	16730 880	16720* 980	16710* 1110
960K	14965	grey	11.7	80	1400-1340	Machine made chains	16730 880	16720* 980	16710* 1110
999/-	13100	grey	12	50	1552	W, S, T	16730 880	16720* 980	16710* 1110

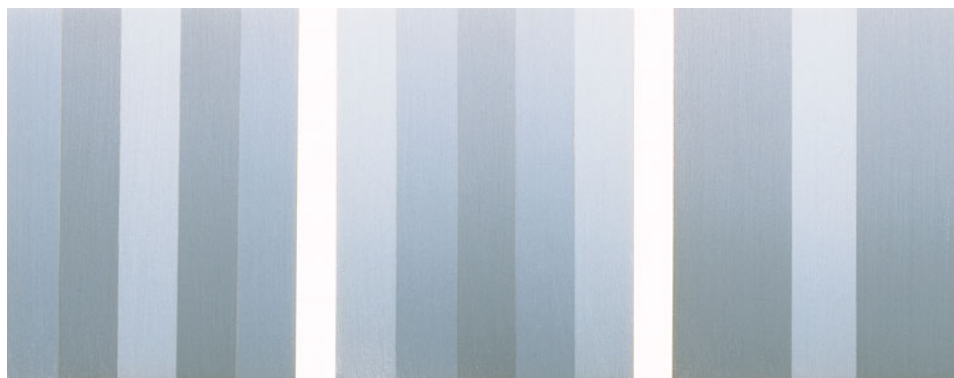
C = casting, W = wire, S = sheet/foil, T = tube

Palladium solders available as: 0.3 mm sheet, 0.5/0.7 mm wire (round) and 0.2 x 1 mm ribbon solder

*not alloyed with cadmium

Cehapall®

Contrasts in grey



Combination of Pd/500 - Pt 960 - Ag/935



C. HAFNER

WHERE JEWELLERY BEGINS

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