

Platinum Labware, Crucibles, Dishes, Platinum Thermocouples, Platinum Bushing Coatings, Liner, used by the glass industry, Electrodes, Precious Metal Sheets, Plates, Pipes, Wires and Gauzes

LABOR-PLATINA

CATALOGUE

guide

Commonly used materials
Our basic products' parameters
Care and cleaning of Platinum Labware,
handling guide
About our service for goldsmiths and jewelers





LABOR-PLATINA

CATALOGUE

guide

PLATINUM LABWARE, CRUCIBLES, DISHES,
PLATINUM THERMOCOUPLES,
PLATINUM BUSHING COATINGS, LINER,
USED BY THE GLASS INDUSTRY,
ELECTRODES, PRECIOUS METAL SHEETS,
PLATES, PIPES, WIRES AND GAUZES

LABOR-PLATINA LTD

- Manufactures high quality Platinum Labware, finished and semi-finished products made of precious metals (Pt, Ir, Rh, Au, Ag, Pd) for laboratories, manufactories, the industry, worldwide, products like Platinum Bushing Coatings, Liners, mainly used in the glass producing industry, Platinum Crucibles, Platinum Dishes, Platinum (S and R-Type) Thermocouples, Platinum Electrodes, Platinum Tubing, Pipes, Platinum Wires, Platinum Gauzes, Wire Meshes, Platinum Sheets, Plates and much more, standards and special editions, within short terms, at fair prices
- Prepares precious metals for goldsmiths, jewelers and other precious metal clients
- Buys used and polluted Platinum Labware, just as needless precious metal positions on Day price
- Sells raw Platinum Group Metals (PGMs) and finished products on Day price
- Produces in wage system products made of the client's own Platinum Metals
- Repairs Platinum Labware



BUSINESS HOURS:
mon-fri, 8 a.m.-2 p.m.

MATERIALS

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OUR SERVICE FOR GOLDSMITHS AND JEWELERS

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OUR BASIC PRODUCTS' PARAMETERS

The listed product parameters show you only our basic series.

If you need a product, which you can not find, we will tell you the conditions of a special production. Please ask us by e-mail or by phone.

Please tell us exactly the required material quality (the % of metals in an alloy e.g. Pt95%-Ir5% or Pt 995/1000). If you are not sure which material would be the best, please ask us by e-mail or by phone. Helpfull could be the list with the commonly used alloys between our material descriptions.

The weight of products in our lists stand for pure platinum as material. In case of other precious metals could be helpful for calculating their weights using our list with the multipliers between our material descriptions.

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PHYSICAL DATA OF PLATINUM GROUP METALS

	Rhodium	Palladium	Silver	Iridium	Platinum	Gold
Atomic weight	102.91	106.70	107.88	193.10	195.23	197.20
Density g/cm ³	12.50	12.00	10.50	23.40	21.45	19.30
Melting point °C	1966	1552	960.8	2454	1769	1063
Boiling point °C	4500	3980	2210	5300	4530	2970
Specific heat kal/gr °C	0.058	0.059	0.057	0.032	0.038	0.031
Heat of fusion kal/gr °C	52	34.2	25.9	28	23.7	15.9
Heat conductivity kal/cm °C	0.210	0.168	0.096	0.111	0.1664	0.7461
Expansion coefficient	0.085/40°C	0.117/20°C	0.195/20°C	0.056/20°C	0.089/20°C	0.140/20°C
Electric conductivity m/Ω mm ²	19.6	9.3	62.5	18.2	9	45
Temperature coefficient of el.resist. α in K	4.43 • 10 ⁻³	3.77 • 10 ⁻³	4.10 • 10 ⁻³	3.93 • 10 ⁻³	3.92 • 10 ⁻³	3.98 • 10 ⁻³

Six of the Platinum Group Metals (PGMs), just like the usually together appearing ores, have a high melting point and a great resistance to chemical influences.

Similar to how these metals take place in the periodic table we can make a difference between two subgroups. The upper row in the table is the lighter, the under row in the table represent the heavier group, which have approximately a two times higher specific weight.

Each precious metal has its couple with similar characteristics in the other group. Ruthenium is similar to osmium. Unalloyed are both not machinable. Rhodium is similar to iridium. Both are quite hard precious metals and not easily to machine. Palladium is similar to platinum. Both are softer metals and easily to machine. Because of that they are the most popular precious metals in the industry. Like gold to silver is platinum the more expensive couple of palladium. The electric conductivity of each pair is similar, too.

FINENESS OF PLATINUM

International standards define 5 qualities of Platinum:

fineness		characteristic	
950/1000		Jewel Platinum	Containing 5% palladium or copper. For technical aims e.g. Labware unusable
995/1000	2N	Technically clear platinum	Usable for technical aims e.g. Labware
999/1000	3N	Chemically clear platinum	The impurity is less then 1%, its verification requires minimum chemistry methods
999.9/1000	4N	Physically clear platinum	The verification of impurity requires minimum physical methods
999.99/1000	5N	Spectroscopewise clear platinum	The impurity can be verified with a spectroscope only

A Our products are made of platinum with a fineness 998/1000, even if a fineness 995/1000 would be acceptable.

Platinum Labware include also other platinum metals e.g. Ir or Au, to rise its solidity, heat resistance and its resistance to chemical influences, because platinum by its own would be too weak for the everyday use e.g. in laboratories.

COMMONLY USED ALLOYS

alloys	uses
95% Pt 5% Ir	raw material for Labware or industrial uses
95% Pt 5% Rh	raw material for Labware or industrial uses
95% Pt 5% Au	raw material for Labware or industrial uses
97% Pt 3% Ir	raw material for Labware or industrial uses
90% Pt 10% Rh	raw material for Labware or industrial uses
96% Pt 4% Cu	raw material for jewels
95% Pt 5% Cu	raw material for jewels
90% Pt 10% Ir	raw material for special uses
85% Pt 15% Ir	raw material for special uses
80% Pt 20% Ir	raw material for special uses
65% Pt 35% Ir	raw material for special uses
80% Pt 20% Rh	raw material for special uses

USEFULL MULTIPLIERS FOR CALCULATING THE WEIGHT OF LABWARE MADE OF OTHER PRECIOUS METALS

material	multiplier
Ir	1.09
Pt	1.00
20% Pt 80% Au	0.92
10% Pt 90% Au	0.91
Au	0.90
30% Pt 70% Ag	0.64
20% Pt 80% Ag	0.59
10% Pt 90% Ag	0.54
Rh	0.58
Ag	0.49

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ALLOYS, DEFINED BY THE HUNGARIAN PRECIOUS METAL
EXAMINING AND STANDARDIZING AUTHORITY (NEHITI)

Name	Quantity of the base metal in ‰	Quantity of composition metals in ‰							
		Cu	Ag	Ni	Zn	Pd	Cu+Zn	Ni+Pd	Ag-Cu+Zn
Gold alloys (carat)									
Au 22	Au 916	0-84	0-84	-	-	-	-	-	-
Au 18	Au 750	0-250	0-250	-	0-250	-	-	-	-
Au 14	Au 585	60-415	60-415	-	0-450	-	-	-	-
Au 9	Au 375	100-305	100-320	-	0-625	-	-	-	-
White Gold alloys									
Au 18 white Ni	Au 750	0-100	-	100-180	0-80	-	-	-	-
Au 18 white Pd	Au 750	-	-	-	-	100-200	0-50	-	-
Au 18 white NiPd	Au 750	-	-	-	-	-	-	100-200	-
Au 14 white Ni	Au 585	50-200	-	145-165	70-200	-	-	-	-
Au 14 white Pd	Au 585	-	-	-	-	150-200	-	-	-
Au 14 white NiPd	Au 585	-	-	-	-	-	-	145-200	-
Silver alloys									
Ag 925 ‰	Ag 925	75	-	-	-	-	-	-	-
Ag 900 ‰	Ag 900	100	-	-	-	-	-	-	-
Ag 835 ‰	Ag 835	165	-	-	-	-	-	-	-
Ag 800 ‰	Ag 800	200	-	-	-	-	-	-	-
Silver-Palladium alloys									
Ag 925 ‰ Pd	Ag 925	-	-	-	-	75	-	-	-
Ag 900 ‰ Pd	Ag 900	-	-	-	-	100	-	-	-
Platinum alloys									
Pt 950 ‰	Pt 950	50 or	-	-	-	50	-	-	-

PLATINUM GROUP METAL (PGM) QUALITIES

Qualities		Density g/cm ³	Melting point °C	Specific electrical resistivity Ω • mm ² /m	Hardness HV		Tensile strength Rm kp/mm ²		Elasticity A10 %	
Type	Symbol				weak	strong	weak	strong	weak	strong
Pt	Pt 99,95 Pt 99,9	21,4	1769	0,108	40	120	12-16	20-26	min. 20	max. 50
Rh	Rh 99,9 Rh 99,8	12,4	1966	0,045	130	400	51	210	7	2
Ir	Ir 99,9 Ir 99,8	22,4	2454	0,053	210	450	-	-	-	-
Pt-Rh	PtRh5	21,0	1810-1830	-	50	100	17-22	40-60	min. 15	max. 5
	PtRh10	19,8	1830-1855	0,192	65	180	23-37	55-70	min. 15	max. 5
	PtRh30	17,7	1870-1890	-	100	200	45-65	90-115	min. 8	max. 2
Pt-Ir	PtIr3	21,4	1770-1775	0,18	70	170	20-28	40-50	min. 12	max. 5
	PtIr5	21,5	1775-1785	0,19	80	180	22-32	45-55	min. 12	max. 5
	PtIr10	21,6	1785-1800	0,25	100	200	30-45	55-65	min. 10	max. 5
	PtIr15	21,6	1810	0,285	150	240	40-60	70-85	min. 8	max. 3
	PtIr20	21,64	1815	0,315	175	270	60-75	80-100	min. 8	max. 3
PtIr35	21,8	1900	0,350	275	350	95-120	125-140	min. 5	max. 2	

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**GOLD ALLOYS FOR THE JEWEL INDUSTRY
(HUNGARIAN STANDARD MSZ 16371-74)**

Type of alloy	Symbol of quality	Chemical composition in %					Total impurity	Colour of alloy
		Composition metals						
		Au	Ag	Cu	Ni	Zn		
Au-Ag-Cu	Au 750 vs	74,8-75,2	8,0-8,6	16,4-17,0	-	-	0,3	Red-yellow
	Au 750 zs	74,8-75,2	16,4-17,0	8,0-8,6	-	-		Green-yellow
	Au 585 vs	58,3-58,7	10,1-10,7	30,8-31,4	-	-		Red-yellow
	Au 585 zs	58,3-58,7	27,4-28,0	13,5-14,1	-	-		Green-yellow
Ag-Cu-Ni-Zn	Au 750 fl	74,8-75,2	-	14,7-15,3	4,2-4,8	5,2-5,8	0,3	White
	Au 750 f	74,8-75,2	-	14,2-14,8	4,7-5,3	5,2-5,8		White
	Au 585 f	58,3-58,7	-	19,7-20,3	14,2-14,8	6,7-7,3		White
	Au 585 fl	58,3-58,7	-	24,7-25,3	7,2-7,8	8,7-9,3		White

**OUR SERVICE
FOR GOLDSMITHS AND JEWELERS**

For goldsmiths, jewelers and other clients working with precious metals we provide the following services:

- Melting and moulding into casting moulds of any kind of precious metals. The maximum weight for melting and moulding of one unit is between 1000 and 1300 grams, depending on the material. The melting process can be done in hydrogen, in an electric furnace, in a smelter generator, in vacuum, in protective gas, or with air
- Primary rolling of square profile ingots, bars from 20x20 mm to 1x1 mm
- Cold and warm mechanical forging of through us melted and moulded precious metal ingots, in order to improve the material's crystalstructure and workability
- Producing Wires with near any diameters made of any precious metal, multi-phase mechanical drawing-out, on diamond tensile facings, with mechanical winding. The annealing in the right time of wires guarantees our tube-annealing-furnace. The smallest diameter of wire, which can be produced is 0.05 mm. The material amount of a unit drawn-out for one time is between 0 and maximum 1500 grams
- Producing Sheets made of any precious metal. The largest laminateable width: 260 mm. The finest plate thinness, depending on the material is 0.1 mm
- Cutting out sheets made of any precious metal, circular cutting, spot-welding, turning, surfacing, boring and making other operations professionally with, professional tools and professional machines

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**PLATINUM, RHODIUM, IRIIDIUM AND THEIR ALLOYS
(HUNGARIAN STANDARD MSZ 16372-76)**

Type of alloy	Symbol of quality	Chemical composition in %					
		Composition metals			Impurities		
		Pt	Rh	Ir	Au*	Fe	Total
Pt-Rh	Pt Rh 5%	94.7-95.3	4.7-5.3	-	0.15	0.04	0.22
	Pt Rh 10%	89.7-90.3	9.7-10.3	-			0.23
	Pt Rh 30%	69.7-70.3	29.5-30.3	-			0.25
Pt-Ir	Pt Ir 3%	96.7-97.3	-	2.7-3.3			
	Pt Ir 5%	94.7-95.3	-	4.7-5.3			
	Pt Ir 10%	89.7-90.3	-	9.7-10.3			
	Pt Ir 15%	84.7-85.3	-	14.7-15.3			
	Pt Ir 20%	79.7-80.3	-	19.7-20.3			
	Pt Ir 35%	64.7-65.3	-	34.7-35.3			

*Beside Au are included also rhodium and iridium, just as palladium, ruthenium and osmium.

**ASSORTMENT OF PLATINUM, RHODIUM AND IRIIDIUM QUALITIES AND
THEIR CHEMICAL COMPOSITIONS (HUNGARIAN STANDARD MSZ 16372-76)**

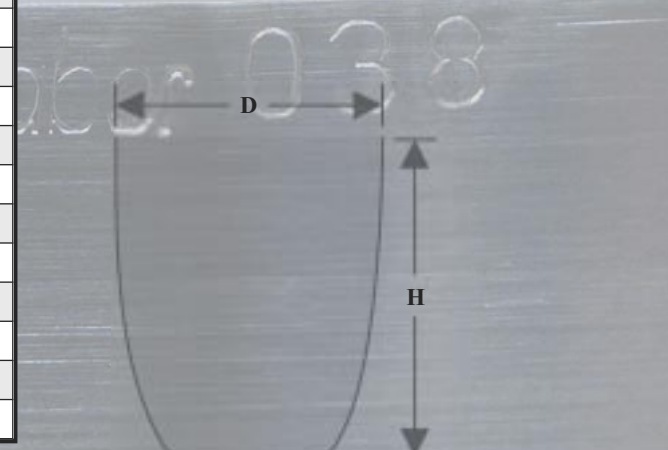
Symbol of quality	Chemical composition in %									
	Min. of Pt	Maximum impurity								
		Pd+Ir+Rh+Ru	Au	Pb	Fe	Si	Sn	Al	As	Total
Pt 99.95	99.95	0.025	0.005	0.005	0.01	0.005	0.001	0.005	0.001	0.05
Pt 99.9	99.90	0.050	0.005	0.005	0.01	0.005	0.005	0.005	0.005	0.10

Symbol of quality	Chemical composition in %							
	Min. of Rh	Maximum impurity						
		Pt+Pd+Ir	Au	Pb	Fe	Si	Ba	Total
Rh 99.99	99.9	0.05	0.01	0.01	0.02	0.01	0.005	0.1
Rh 99.8	99.8	0.09	0.03	0.02	0.02	0.03	0.01	0.2

Symbol of quality	Chemical composition in %							
	Min. of Ir	Maximum impurity						
		Pt+Pd+Rh	Au	Pb	Fe	Si	Ba	Total
Ir 99.9	99.9	0.05	0.01	0.01	0.02	0.01	0.005	0.1
Ir 99.8	99.8	0.09	0.03	0.02	0.03	0.02	0.01	0.2

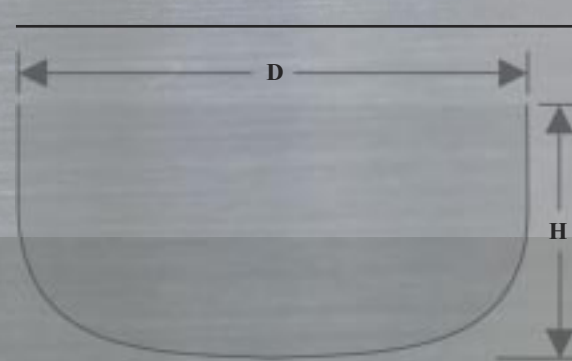
PLATINUM CRUCIBLES

Diameter	Height	Capacity	Weight	Weight of a lid
mm		cm ³	g	
60	65	130	74	14
50	55	75	54	10,5
45	50	55	40	8,2
42	47	46	36	7
40	45	40	32	6
38	42	32	28	5,2
36	40	28	25	4,5
34	38	24	21	3,8
32	36	20	18	3,2
30	34	16	15	2,8
28	32	13	13	2,4
26	30	10	11	2
24	27	8	8,5	1,7
22	25	6	6,5	1,5
20	23	4,8	5,5	1,3
18	21	4	4	1
16	19	3	3	0,8
14	17	2	2,5	0,6
12	14	1,5	2	0,5
10	12	1	1,5	0,4



EVAPORATION DISH

Diameter	Heith	Capacity	Weight
mm		cm ³	g
24	35	55	1
30	15	100	0,5
100	47,5	250	96
90	42,5	182	72
80	37,5	120	50
75	35	105	42
70	32	86	36
65	30	69	30
60	27,5	54	24
55	25	42	19
50	22,5	31	15
45	20	22	11
40	20	16	9
35	16	11	7
30	14	7	5
25	12	4	3,3
20	10	2	2



PLATINUM WIRES

Diameter	Weight
mm	g/m
10,0	1680
9,5	1520
9,0	1365
8,5	1217
8,0	1078
7,5	948
7,0	825
6,75	768
6,50	712
6,25	658
6,0	606
5,75	557
5,50	510
5,25	464
5,0	421
4,8	388
4,6	356
4,4	326
4,2	297
4,0	270
3,8	243
3,6	218
3,4	195
3,2	173
3,0	152
2,9	142
2,8	132
2,7	123
2,6	114
2,5	105
2,4	97
2,3	89
2,2	82
2,1	74
2,0	67
1,9	61
1,8	54,6
1,7	48,7
1,6	43,1
1,5	37,9
1,4	33,0
1,3	28,5
1,2	24,3
1,1	20,4

Diameter	Weight
mm	g/m
1,0	16,80
0,95	15,20
0,90	13,65
0,85	12,17
0,80	10,78
0,75	9,48
0,70	8,25
0,65	7,12
0,60	6,06
0,55	5,10
0,50	4,21
0,45	3,41
0,40	2,70
0,35	2,06
0,30	1,52
0,27	1,23
0,25	1,05
0,22	0,82
0,20	0,67
0,18	0,55
0,16	0,43
0,14	0,33
0,12	0,24
0,10	0,168
0,08	0,108
0,07	0,083
0,06	0,061
0,05	0,042

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PLATINUM PIPES

Inner Dia. in mm	Weight in g/mm							
	Thickness of wall in mm							
	0,80	0,60	0,50	0,40	0,30	0,25	0,20	0,15
10	582	429	354	280	208	173	137	103
8	474	348	286	226	168	139	111	82
6	376	267	219	173	127	105	84	62
5	313	226	185	146	107	88	70	52
4	259	186	152	119	87	72	57	42
3	205	146	118	92	67	55	43	32
2	151	105	84	65	47	38	30	22
1	97	65	51	38	26	21	16	12
0,8	86	57	44	32	22	18	13	10
0,6	75	49	37	27	18	14	11	8

PLATINUM STRIPS

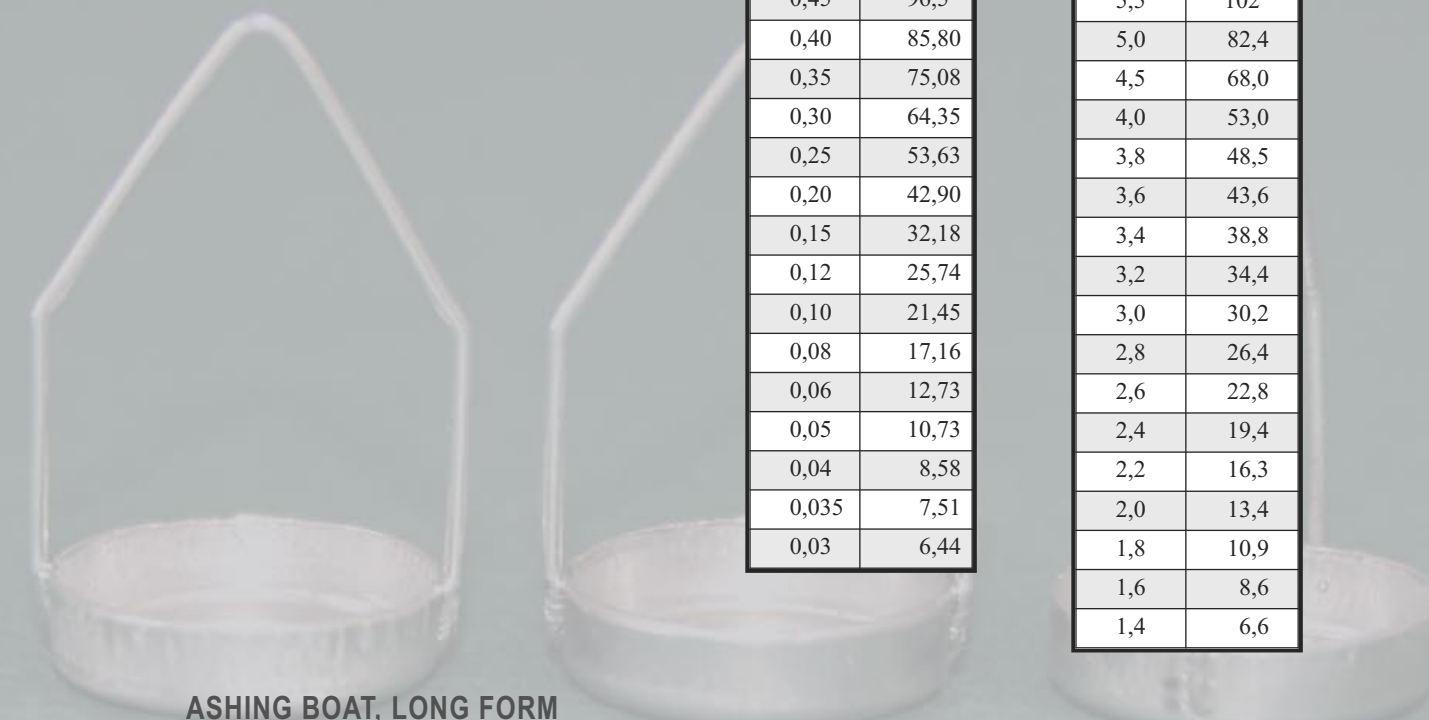
Thickness in mm	Weight in g/m							
	Width in mm							
	5	4	3	2,5	2	1,5	1	0,5
0,5	53,50	42,80	32,10	26,75	21,40	16,05	10,70	
0,4	42,80	34,24	5,68	21,40	17,12	12,84	8,56	
0,3	32,10	25,68	19,26	16,05	12,81	9,63	6,42	3,21
0,25	23,75	21,40	16,05	13,37	10,70	8,14	5,35	2,78
0,20	21,40	17,12	2,84	10,70	8,56	6,42	4,28	2,14
0,15	16,05	12,84	9,63	8,04	6,42	4,81	3,21	1,60
0,10	10,70	8,56	6,42	5,35	4,28	3,21	2,14	1,07
0,08	8,56	6,85	5,13	4,27	3,42	2,53	1,71	0,58
0,06	6,42	5,13	3,05	3,21	2,57	1,92	1,28	0,64
0,05	5,35	4,28	3,21	2,67	2,11	1,61	1,07	0,54
0,04	4,28	3,42	2,57	2,14	1,71	1,24	0,86	0,43
0,03							0,50	

PLATINUM SHEETS

Thickness	Weight
mm	g/100 cm ²
1,0	214,5
0,9	193,1
0,8	171,6
0,7	150,2
0,6	128,7
0,5	107,3
0,45	96,5
0,40	85,80
0,35	75,08
0,30	64,35
0,25	53,63
0,20	42,90
0,15	32,18
0,12	25,74
0,10	21,45
0,08	17,16
0,06	12,73
0,05	10,73
0,04	8,58
0,035	7,51
0,03	6,44

**PLATINUM DISCS,
0.1 MM THICK**

Diameter	Weight
mm	g/1000 disc
10,0	336
9,0	272
8,0	216
7,5	190
7,0	165
6,5	142
6,0	121
5,5	102
5,0	82,4
4,5	68,0
4,0	53,0
3,8	48,5
3,6	43,6
3,4	38,8
3,2	34,4
3,0	30,2
2,8	26,4
2,6	22,8
2,4	19,4
2,2	16,3
2,0	13,4
1,8	10,9
1,6	8,6
1,4	6,6



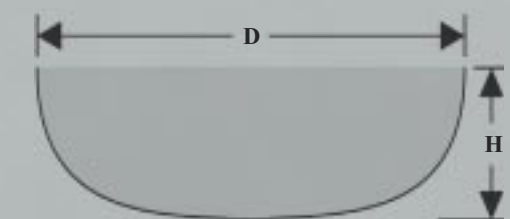
ASHING BOAT, LONG FORM

Length	Width	Height	Weight
cm	mm		g
15	4	4	1
35	6	3	2,5
50	8	6,5	5
65	10	8	9

ASHING BOAT, WIDE FORM

Length	Width	Height	Weight
cm	mm		g
15	6	4	1
30	8	6	2,5
45	10	8	5
60	12	10	9

WINE DISH



Upper dia.	Height	Capacity	Weight
mm		cm ³	g
85	20	70	24
80	20	70	24
75	19	65	22
70	18	60	20

HANDLING GUIDE FOR PLATINUM PRODUCTS

PLATINUM LABWARE CAN BE USED FOR

- 1.) Melting
 - a.) Sodium carbonate
 - b.) Sodium nitrate or nitrite
 - c.) Sodium borate or sodium metafosphate
 - d.) Alkaline bifluorides
 - e.) Alkaline or alkaline earth-chlorides
 - f.) Alkaline bisulphates or pyrosulphates

The loss of weight of platinum in point a.) and d.) is only less than 1 milligram. Melting mixtures of nitrates and nitrites in point b.) causes a more serious loss of the weight of platinum, but at regular laboratory conditions this loss is not expected more than 1-2 milligram. Sodium metafosphate damages the metal only at extremely high temperatures and only in reducing circumstances. Over 1000°C alkaline chlorides and alkaline earth-chlorides damages the metal, because of the releasing chlorine from the melted salts. Over 700°C alkaline bisulphate slightly damages the platinum. The damaging will be reduced by adding ammonium sulphate.

- 2.) Vaporation (Steaming)
 - a.) Sulphuric acid with or without fluorine acid
 - b.) Fluorine acid
 - c.) Hydrochloric acid, salpêtre acid in presence of halogens, especially chlorides, but it is forbidden to keep hydrochloric acid or halogens salpêtre acid or other oxidizing substances together, because the releasing halogen damages the platinum
 - d.) Alkaline hydroxides and carbonates, but the pollution with their silicon compounds must be avoided
 - e.) Sodium peroxides solutions

The risk of the reaction with platinum in point d.) and e.) is very high.

- 3.) Burning (Annealing)
 - a.) Barium sulphate
 - b.) Alkaline earth-carbonates, oxalates, etc.
 - c.) Sulphates which are not reducible easily
 - d.) Oxides which are not reducible easily, like Al_2O_3 , BaO, SrO, TiO_2 , ZrO_2 , ThO_2 , MoO_3 , WO_3 , Ta_2O_5 , Mn_3O_4 , and in the absence of carboniferous substances: ZnO, Co_3O_4 , NiO, CdO
 - e.) As quantity determination of ashes of organic substances, like for example: coke, coal or plants.
 - f.) To avoid the alloying of platinum with sulphur, phosphorus, iron etc. carbonic substances should be burned at as far as possible low temperatures by adding much air. These pollutants are present in the substance, because of the reduction of sulphates, phosphates and iron-compounds.
 - g.) To determine the evaporating substances of combustibles. Here important, to prevent the coal loss, is to keep a non-oxidizing atmosphere. The risk of damaging the platinum is especially high, if the combustible is rich in sulphur and compounds.

- 4.) Electrolytic procedures
 - a.) Platinum, as anode, is used in the most electrolytes, except in extreme acidic halogenoid solutions.
 - b.) As cathode, it can be used for the separation of metal form acid, alkali or ammoniac solution. For the separation of zinc, gallium and bismuth the platinum previously has to be coated in a galvanic process with copper, to prevent it being alloyed with the precipitating metals from the solution.

- 5.) Platinum can be heated (ignited) without the danger of being damaged
 - a.) With air, in nitrogen, in oxygen up to the melting point of platinum
 - b.) In nitrogen oxides
 - c.) In bromine and in iodine gas
 - d.) In hydrogen

Annealing in carbon dioxide is not recommended, because CO_2 easily breaks up and the leaving carbon easily attacks the platinum.

UNDER FOLLOWING CIRCUMSTANCES PLATINUM LABWARE GET DAMAGED

- 1.) In case of heating in atmospheres containing the following gases
 - a.) In ammoniac. Its area becomes dark, matte, in short time it gets a porous and crystalline appearance
 - b.) In hydrogen sulphide, the platinum's area becomes coated with platinum sulphide.
 - c.) In chlorine, in which platinum becomes a crystalline substance, because of the steadily formation and decomposition of platinum chloride.
 - d.) Evaporating, especially dissociating chlorides.
 - e.) Particularly in carbonic gases and steams, which dissociates the platinum, probably because of the fragile platinum carbide's formation.
 - f.) Never heat Platinum Labware in the reductive zone of the gas flame.
- 2.) In case of heating in the following liquids
 - a.) Aqua regia or systems establishing aqua regia (e.g.: chloride + $cHNO_3$, nitrate + $cHCL$).
- 3.) In case of heating with the following molten or gaseous bodies
 - a.) Sulphur, selenium and tellur. The influence of sulphur steams is extremely slow and a serious influence is only visible after a very long time of heating. Selenium and tellur easily alloy with platinum.
 - b.) Phosphorus, arsenic, antimon. The alloyage starts already at red heat.
 - c.) Magnesium-pyrophosphate over 900°C.
 - d.) Silicon and borax on high temperatures.
 - e.) Molten lead, zinc, tin, bismuth, silver, gold and copper or alloys and decomposing salts of them, which proceed by the reduction of these metals.
 - f.) Molten alkaline oxides and peroxides are very damaging. Alkaline hydroxides in presence of air.
 - g.) In presence of molten nitrates, alkaline hydroxides or carbonates. The influence on platinum is very pernicious.
 - h.) The influence on phosphorus pentoxide and phosphorous acid is relatively small.
 - i.) Molten cyanides, when platinum cyanide comes into being.
 - j.) Ferro oxide over 1200°C, because oxygen evolves and the iron alloys with the platinum.
 - k.) Silicon, silicates, aluminium and magnesium oxide over 1000°C. On lower temperatures these have no influence on platinum.
 - l.) Molten alkaline chloride over 1000°C.
 - m.) Lead and bismuth oxide at 1250°C, but also under 1250°C, particularly in presence of reducing substances.

PLATINUM LABWARE CLEANING

Mechanical cleaning with salt by scrubbing with several times boiled out, finely sifted (DIN 80) wet sea sand, which can only remove the dirt on the surface. Possibly caused deformations, by the use of the Labware, it is not recommended to repair by your self, because it can cause an undoing. In this case it is useful to bring intermittently the Labware to our company for remoulding it, hereby the Labware's lifetime can be multiplied.

Chemical cleaning of Platinum Labwares may be done with boiling it in hydrochloric acid. Then smelt sodium carbonate Na_2CO_3 and potassium carbonate K_2CO_3 , in proportion 1:1, and pour it out. After that fill it with potassium or sodium, with hydrogen sulphate $KHSO_4$ or $NaHSO_4$ or pyrosulphate $K_2S_2O_7$ or $Na_2S_2O_7$, then smelt and pour it out again. You can repeat these alternately, if necessary.

Do not cool down the hot Labware in cold water, wait till it cools down to the room temperature.

PLATINUM LABWARE REPAIRS

This description lists the general cases of repairs, helps to calculate the price for repairs, and shows the possibilities of repairing. Only a correct analyse can show us, which repairing can help. This analyse we can do after the delivery to our company. This analyse is free of any charges.

Repairs are usually preventable, if we pay attention to our Handling Guide (see page 14-15).

REPAIRS BECOMES NECESSARY:

- If the Labware became deformed, as much as it is unusable
- If the Labware became perforated
- If the Labware became polluted, as much, with other alloys or became alloyed with other substances, while using it

WHEN THE LABWARE BECAME DEFORMED, AS MUCH AS IT IS UNUSABLE

In the first case, if the deformation yet is not too extreme, often it is enough to remould it. In this case the material demand is minimal and a good result can be reached. So it is recommended to repair a still in use Labware in time, when it is only slightly deformed, because so its service life could be prolonged.

In that case, if the crucible's deformation, is not remouldable (crumpled, flatten or torn), there is the possibility to remelt and to reproduce this Labware by using its own material. Here we have to calculate with a much higher loss of material, which must be add to the reproduction again, so this increases the price of the repairing.

WHEN THE LABWARE BECAME PERFORATED

In the case of a perforation, it is possible to tinker the Labware, perhaps a new base could be prepared. The efficiency of patching is quite good, because on the given place the thickness of the plate not too much, but grows. After such a manipulation, of course, the Labware gets a partial remoulding, so that practically the repairing does not effects disturbing bulgings on the wall of the Labware. Beacuse this procedure does not go with much material supplement, this is an economical and effective repairing method. Unfortunately when the Labware's perforation was caused by becoming alloyed this procedure does not mean a solution.

WHEN THE LABWARE BECAME POLLUTED, AS MUCH, WITH OTHER ALLOYS OR BECAME ALLOYED WITH OTHER SUBSTANCES, WHILE USING IT

If Labware becomes polluted, as much as it could not be cleaned, the possibility is the already above described reproduction by remelting and reusing itself's material, because at higher temperatures usually the pollution is burning out of the alloy, and so the material become useable again.

The alloying of the Labware with other substances unfortunately results, that the Labware and its material itself becomes useless, so the repairing of the Labware becomes impossible.

In that case we can offer a customer friendly solution, we buy the polluted platinum Labware or its rest and ascribe it into the price of the production of a new Labware.

Labor-Platina Ltd



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ZERTIFIKAT ♦ CERTIFICATE ♦ 認証証書 ♦ CERTIFICADO ♦ CERTIFICAT



CERTIFICATE

Upon accreditation No. NAT-4-0008/2004
of the National Accreditation Body the
ÉMI-TÜV SÜD Kft.
H-2000 Szentendre, Dózsa György út 26.

certifies that

LABOR-PLATINA
Gyártó, Kereskedelmi és Szolgáltató Kft.
H - 1211 Budapest, Színesfém u. 11-15.
H - 2085 Pilisvörösvár, Fő út 134.

has established and applies
a Quality Management System for

**Processing and sales of noble metal products for industrial
purposes**

An audit was performed, Report No. 9924955
Proof has been furnished that the requirements
according to

MSZ EN ISO 9001: 2001

are fulfilled. This Certificate is valid until **2011-05-28**.

Certificate Registration No. **MS 052 4-061**



ÉMI-TÜV SÜD Kft.
Szentendre, 2008-05-29



TANÚSÍTÓ
NAT-4-0008/2004



Member of the European Confederation of Organisations for Testing and Certification
Notified Body 1417

TRADING CONDITIONS

Az alábbi Általános Szállítási Feltételek valamennyi, a Labor-Platina Kft. által gyártott és forgalmazott nemesfém termékre, gyártmányra és alapanyagra vonatkozik, amennyiben ettől eltérő írásos megállapodás nincsen.

A továbbiakban a nemesfémek kifejezést használjuk minden Platinából, Palládiumból, Iridiumból, Rhodiumból, Aranyból, Ezüstből, vagy ezek ötvözetéből készült alapanyagokra, eszközökre, gyártmányokra.

1. PLACE OF PERFORMANCE

A nemesfémek átadását, amennyiben külön megállapodás ebben a kérdésben nincs, telephelyünkön teljesítjük. A nemesfémek telephelyünkről történő elszállítása, vagy a telephelyünkre történő beszállítása, továbbá a nemesfémek biztosítása a vevő számlájára és kockázatára történik. Ha a Labor-Platina Kft. ebben közreműködik, akkor ez a vevő megbízásából, illetve felelősségére történik. Megállapodás alapján, külön térítés ellenében a Labor-Platina Kft. a nemesfémeket a vevő által meghatározott címre kiszállítja, ilyenkor az, a nemesfémek a vevő által írásban történő átvételéig a Labor-Platina Kft. tulajdonát képezi, így a szállítással kapcsolatos kockázatok valamint költségek a Labor-Platina Kft.-t terhelik. Nemesfémek beszállítása esetén a Labor-Platina Kft.-hez beszállított nemesfémek akkor tekinthetők beszállítottaknak és átvetteknek, amikor a Labor-Platina Kft. megbízottja a csomagot kibontotta, a nemesfémeket lemérte, megvizsgálta és az átvett nemesfémek minőségi és mennyiségi igazolásaképpen a szállítólevelet aláírta.

Amennyiben a beszállított nemesfémek csomagolása, vagy maguk a nemesfémek sérültek vagy hiányosak, a Labor-Platina Kft. jegyzőkönyvet készít, melyet a vevőnek megküld. és az átvételt megtagadja. Amennyiben a beszállított nemesfémekkel kapcsolatosan bűncselekmény gyanúja merül fel, a Labor-Platina Kft. jegyzőkönyvet készít, az adott tételt elkülöníti, és az érintett hatóságokat értesíti. A vevő, vagy megbízottjának aláírása a szállítólevélen vagy a számlán a nemesfémek átvételét és egyben az Általános Szállítási Feltételek elfogadását jelenti.

2. PRECIOUS METALS QUALITY

A nemesfémeket mindenkor a hatályos Magyar szabványban, vagy a külön megállapodás szerinti minőségben gyártjuk és forgalmazzuk.

3. PRECIOUS METALS PACKING

A Labor-Platina Kft. által gyártott nemesfémek szállítás előtti csomagolásáról a Labor-Platina Kft. gondoskodik, a csomagolás mindig olyan módon és anyagokkal történik, hogy a becsomagolt nemesfém

az érzékeny és törékeny árukkal szemben támasztott szállítási feltételek megléte esetén nem sérül meg. Javításra vagy bármilyen célra a Labor-Platina Kft.-hez beszállított nemesfémek megfelelő csomagolása a vevő költségére és felelősségére történik. Amennyiben a beszállított nemesfémek csomagolása hiányos vagy sérült, a Labor-Platina Kft. az átvételt jogosult megtagadni.

4. PRICES

A szállított nemesfémeket aállítás napján az adott értékesítési helyen érvényes áron +ÁFA-val számlázzuk. A nemesfémek napi ára az adott fém árából, a kezelési költségekből valamint a megmunkálás díjából kerül kiszámításra.

A nemesfémek külön megállapodás alapján történő házhozszállításának fuvardíját az eladási áraink nem tartalmazzák.

5. PAYMENT TERMS

A Labor-Platina Kft. által kiállított számlákat esedékességükkor kell kifizetni, azaz amennyiben külön megállapodásban ez nincs rögzítve, a számla kiállításától számított nyolc banki napon belül, átutalással a LaborPlatina Kft. Budapest Banknál vezetett számlájára kell teljesíteni. (Számlasszám: 10100826-49920500-01000000)

A fizetési feltételek be nem tartása feljogosítja a LaborPlatina Kft.-t a szállítások beszüntetésére, vagy készpénzfizetés kizárólagos alkalmazására.

A szállított nemesfémek a számla kiegyenlítéséig a Labor-Platina Kft. tulajdonát képezik.

Késedelmes fizetés esetén a jegybanki alapkamat kétszeresét érvényesítjük mint késedelmi kamatot.

6. OTHER TERMS

Reklamáció elismerése vagy elutasítása tekintetében, amennyiben a reklamáció a nemesfémek anyagösszetételre vonatkozik a Nemesfémvizsgáló és Hitelesítő Intézet véleményét tekintjük mérvadónak, mint független és hivatalos szakvéleményt. A végzett vizsgálatok költségei a vevőt terhelik.

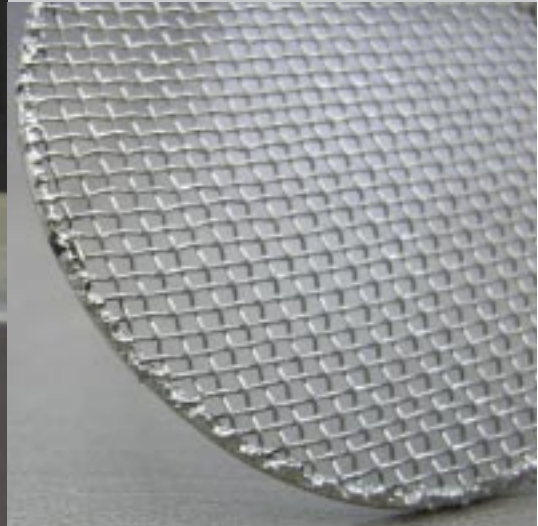
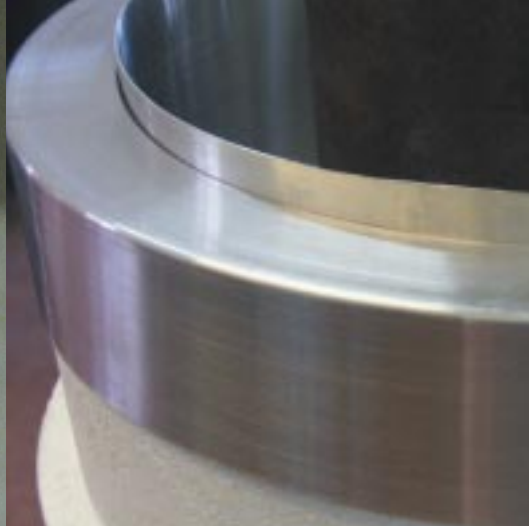
Jogos reklamáció esetén vevőinket a reklamált nemesfémek árának jóváírásával kártalanítjuk. Ezen felüli igényt nem ismerünk el.

Vevőinkkel a nemesfémek gyártásában, szállításában, forgalmazásában előforduló vitás kérdéseket a LaborPlatina Kft. békés úton kívánja rendezni. Ennek eredménytelensége esetén az alperes székhelye szerinti illetékes bíróság dönt.

A nemesfémek szakszerűtlen kezeléséből vagy szállításából, vagy más, a vevőnek tulajdonítható okból – beleértve a vis major esetét is – bekövetkezett, harmadik személynek okozott károkért a Labor-Platina Kft. nem vállal felelősséget.

A Labor-Platina Kft. honlapján (www.laborplatina.hu), az interneten, valamint a Labor-Platina Kft. által készített írásos ismertetőkből elhelyezett információkat igyekszünk a lehető legjobban ellenőrizni, emellett az esetleges tévedésekből vagy elírásokból bekövetkezett károkért vagy meghibásodásokért a Labor-Platina Kft. felelősséget nem vállal.

Budapest, March 2010.



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