

# ***Manilal Maganlal & Company***



**MANUFACTURER & SUPPLIER OF PLATINUM  
LABORATORY & SCIENTIFIC INSTRUMENTS**



382 / 7, J S S Road,  
Mumbai - 400 002,  
Maharashtra, India

Telefax : +91-22-2201-4567  
Mob. : +91 - 9820026702

***Website: <http://www.mmcplatinum.com/>***

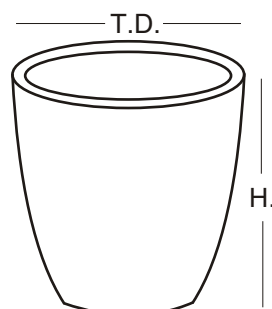
***Email : [choksi\\_sanjay@yahoo.co.in](mailto:choksi_sanjay@yahoo.co.in)***

Since 1970

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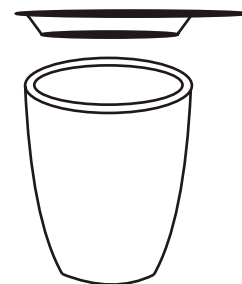
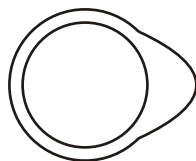
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# PLATINUM CRUCIBLE SHAPE “AZ / UA”



Top Diameter = T.D.

Height = H.



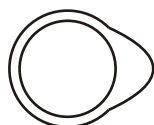
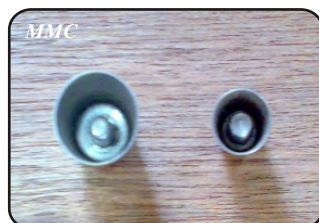
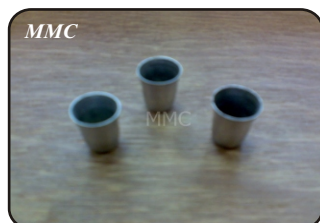
	No.	Capacity cc	Top Diameter mm	Height mm	Appropriate Weight (gram)		
					Crucible	Reinforced Rim	Lid
 PLATINUM CRUCIBLE LID	101	10	26	29	08	09.5	02.5
	102	15	29	33	11	13.0	04.0
	103	20	32	36	16	18.0	04.5
	104	25	35	39	20	23.0	05.0
	105	30	37	41	25	28.0	05.0
	106	35	39	43	29	32.0	06.0
	107	40	41	46	33	36.5	07.0
	108	50	44	49	42	46.0	08.0
	109	75	50	55	60	65.0	10.0
	110	100	56	62	80	85.0	16.0

Crucibles in this series have nominal capacities ranging from 10 cc to 100 cc.

All crucibles are exactly similar in shape and proportion with dimensions confirming simple ratios. These crucibles are designed with extra thick base, to withstand heavy wear.

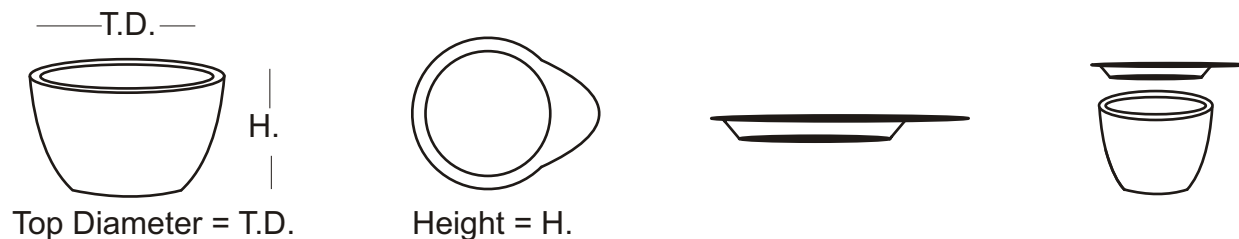
Unless specified, crucibles is always supply having plain rim and with lid. The purity of Platinum metal used for manufacture of these crucibles is 99.95% at least.



## PLATINUM MICRO CRUCIBLE



No.	Capacity cc	Top Diameter mm	Height mm	Weight gram	
				Crucible	Lid
111	1	12.0	13	2.0	0.50
112	3	17.0	19	4.5	1.50
113	5	20.5	22	5.5	1.75

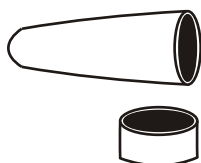
## PLATINUM CRUCIBLE SHAPE “BZ / UB”



MMC	No.	Capacity cc	Top Diameter mm	Height mm	Appropriate Weight (gram)		
					Crucible	Reinforced rim	Lid
 PLATINUM CRUCIBLE SHAPE “BZ / UB” & LID	114	10	29	24	08	09.5	03.0
	115	15	32	26	13	15.0	05.0
	116	20	37	30	16	18.0	05.0
	117	25	41	34	20	23.0	06.5
	118	35	44	36	30	33.0	08.0
	119	50	49	40	42	45.0	10.0
	120	70	55	45	60	64.0	16.0

Crucibles in this series have nominal capacities ranging from 10 cc to 70 cc. These crucibles have broader diameter and the base, in tender for furnace ignition. All crucibles of this series are exactly similar in shape & dimensions confirming simple ratios. Unless specified, crucibles in this range is always supplied having plain rim and with lid. The purity of Platinum used for manufacture of these crucibles is 99.95% at least.

## J LAWRENCE SMITH TYPE CRUCIBLE No. 121



**For Alkali Determination.**

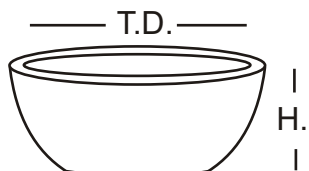
**Capacity** : 20 cc  
**Height** : 90 mm  
**Top Diameter** : 21 mm  
**Approximate Weight** : 34 gram



This is a special type of crucible with round base and fit cap which is used for silicate analysis.

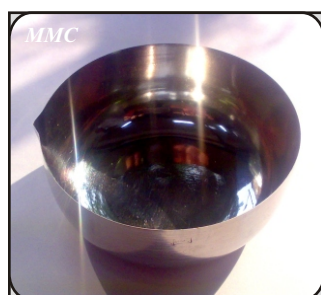
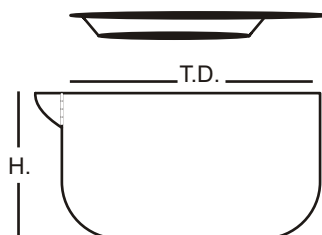
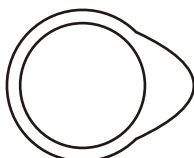


## PLATINUM DISHES



Top Diameter = T.D.

Height = H.



PLATINUM DISH  
WITH  
LID



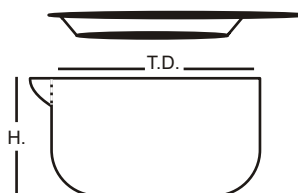
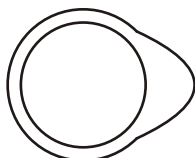
No.	Capacity cc	Top Diameter mm	Height mm	Appropriate Weight (gram)		
				Dish	Reinforced rim	Lid
122	030	050	22	016	018.5	12
123	050	057	26	019	022.0	15
124	060	063	27	024	026.0	18
125	075	070	28	028	031.0	20
126	100	075	29	037	041.0	22
127	150	085	35	058	062.0	28
128	250	100	41	093	100.0	45
129	500	125	50	175	185.0	63
130	700	143	58	205	215.0	82




## PLATINUM MICRO DISHES



Top Diameter = T.D.

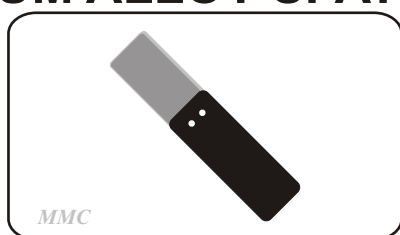
Height = H.



	No.	Capacity cc	Top Diameter mm	Height mm	Appropriate Weight (gram)		
					Dish	Reinforced rim	Lid
	131	10	35	17	08	10	5
	132	15	38	19	10	13	6
	133	20	42	20	13	17	8

Dishes in this series are available from 10 to 700 cc / ml capacities, having similar in shapes & proportionate dimensions & weights. These dishes have rounded thick base, to withstand heavy wear. These dishes are normally supplied with pouring lip & without lid. Lids for these dishes can be manufactured against specific order. The purity of the platinum utilized is 99.95% at least. Shallow dishes for iron & steel, water & sugar analysis are manufactured against order.

## PLATINUM ALLOY SPATULA No. 134



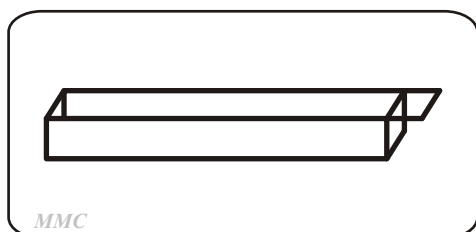
Spatula of special hard platinum alloy is available in flat type 99 mm long weight 14.0 gram (approximate).

## PLATINUM SPOONS No. 135



Platinum spoons of hemispherical shape has wire handle of 1.5 mm thick and 35 mm long weighing 4.0 gram (approximate).

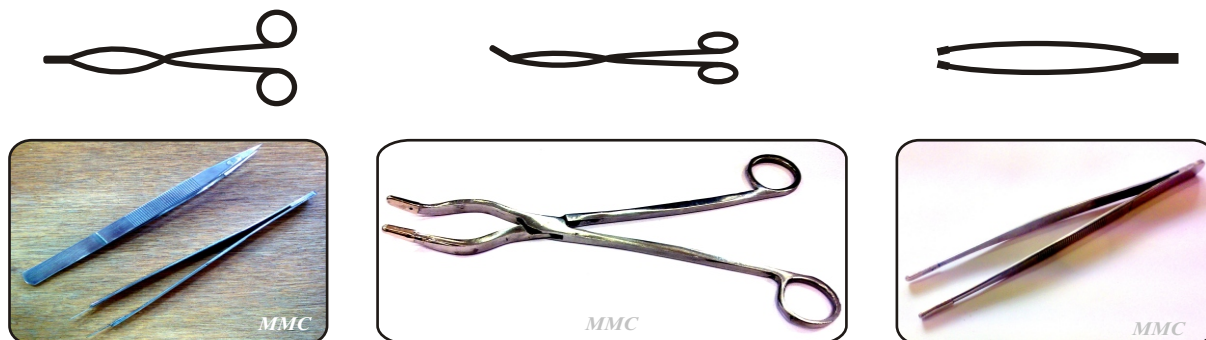
## PLATINUM COMBUSTION BOATS WITH WELDED EDGE



Combustion Boats with or without handle are available in the following size.

No.	Capacity cc	Width mm	Height mm	Length mm	Appropriate Weight (gram)	
					With Handle	Without Handle
136	00.25	05	05	010	01	00.75
137	03.00	09	09	060	06	05.75
138	12.00	15	13	100	18	16.00

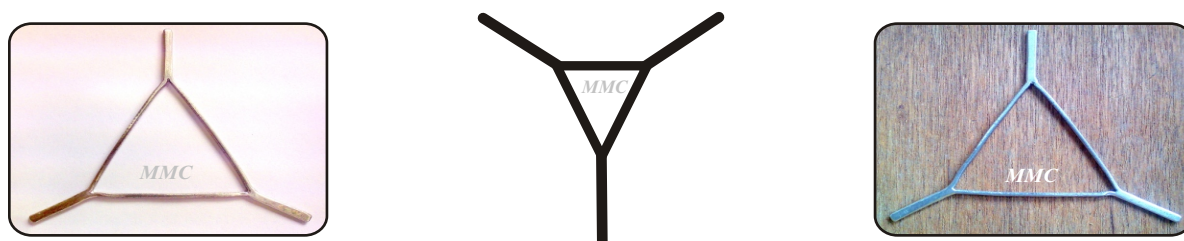
## PLATINUM TIPPED 'SS' TONGS & FORCEPS No. 139



No.	Size (cm)	Weight of the tips (gram)
139a	15.00	1.500 - 2.000
139b	20.00	1.500 - 2.000
139c	30.00	2.000 - 3.000
139d	45.00	4.000 - 6.000
139e	60.00	6.000 - 8.000

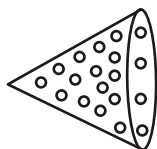
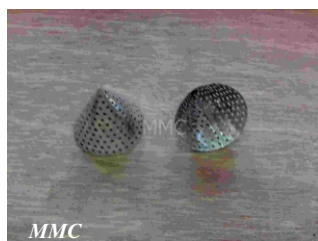
Platinum Tipped 'SS' tongs and forceps with pointed tips and rounded tips are also available with us.

## PLATINUM TRIANGLES No. 140



Platinum Triangles with twisted / welded ends available for all crucibles.

## PLATINUM FILTER CONES No. 141



Platinum Filter Cones are manufactured from perforated sheet with 36 X 0.9 mm holes / cm in following sizes.

No.	Diameter (mm)	Depth (mm)	Weight (gram)
141a	20	17	01.5
141b	25	22	03.0
141c	50	43	12.0

## PLATINUM WIRES No. 142



No.	Diameter mm	Weight in gram per meter
142A	5.00	421.17
142B	4.00	269.55
142C	3.00	151.62
142D	2.00	067.39
142E	1.80	054.58
142F	1.60	043.13
142G	1.50	037.91
142H	1.40	033.00
142I	1.30	028.63
142J	1.20	024.26
142K	1.10	020.38
142L	1.00	016.85
142M	0.90	013.65
142N	0.80	010.78

No.	Diameter mm	Weight in gram per meter
142O	0.70	8.250
142P	0.60	6.060
142Q	0.55	5.100
142R	0.50	4.210
142S	0.45	3.410
142T	0.40	2.690
142U	0.35	2.060
142V	0.30	1.520
142W	0.25	1.050
142X	0.20	0.675
142Y	0.15	0.379
142Z	0.12	0.243
142AA	0.10	0.168



# PLATINUM - PLATINUM / RHODIUM THERMOCOUPLE WIRES No. 143

No.	Wire Diameter		Weight gram / metre Pt. Pure	Weight gram / metre Pt. / Rh 10%	Weight gram / metre Pt. / Rh 13%
	Mm	Swg			
143A	1.00	19.0	16.85	15.70	15.38
143B	0.70	22.0	08.25	07.69	07.53
143C	0.55	24.0	05.10	04.75	04.65
143D	0.50	25.0	04.21	03.92	03.84
143E	0.45	26.0	03.41	03.19	03.11
143F	0.40	27.5	02.69	02.51	02.45

OTHER SIZE WIRES ARE ALSO AVAILABLE

N. B. Thermocouple Wires supplied in double running length.  
Since, are calibrated as per IS Temp. v / s emf. values

## PLATINUM FOILS No. 144

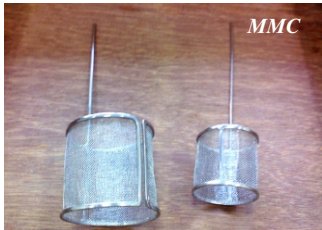
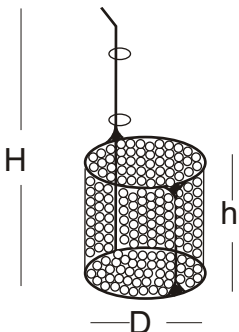
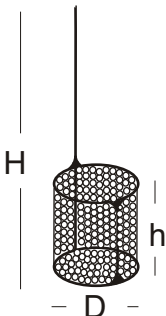
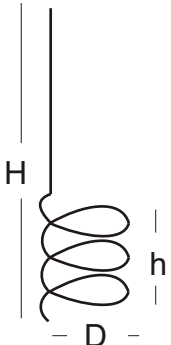


No.	Thickness mm	Weight gram / 100 Sq cm
144A	1.00	214
144B	0.90	192
144C	0.80	171
144D	0.70	149
144E	0.60	128
144F	0.50	107


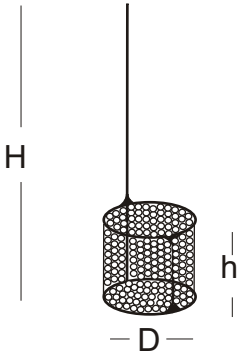
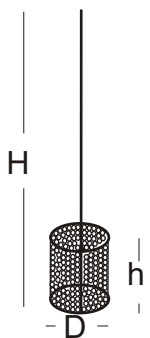
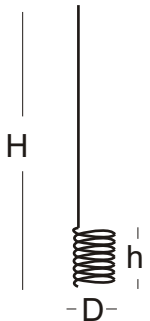
No.	Thickness mm	Weight gram / 100 sq cm
144G	0.40	86.50
144H	0.30	64.20
144I	0.25	53.50
144J	0.20	42.80
144K	0.15	32.15
144L	0.10	21.40


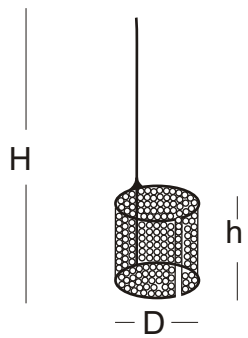
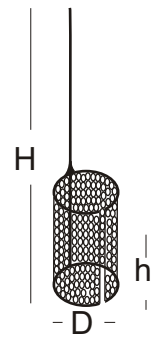
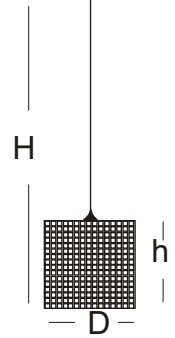
Other size & thickness can be offered against specific inquiry

# PLATINUM IRIIDIUM 10% ELECTRODES No. 145

No.	145A	145B	145C
			
Height Overall (H)	125 mm	140 mm	140 mm
Height of Cylinder (h)	045 mm	032 mm	032 mm
Diameter of Cylinder (D)	045 mm	032 mm	032 mm
Approximate Weight	034 gram	019 gram	013 gram
Approximate Surface Area	125 cm <sup>2</sup>	070 cm <sup>2</sup>	0.75 cm <sup>2</sup>

90% Platinum 10% Iridium Electrode is use for Copper Deposition  
Other size electrodes can be prepared against specific inquiry.

No.	145D	145E	145F
			
Height Overall (H)	150 mm	170 mm	140 mm
Height of Cylinder (h)	045 mm	045 mm	030 mm
Diameter of Cylinder (D)	045 mm	025 mm	010 mm
Approximate Weight	031 gram	036 gram	010 gram
Approximate Surface Area	125 cm <sup>2</sup>	070 cm <sup>2</sup>	0.35 cm <sup>2</sup>

No.	145G	145H	145I (Square)
			
Height Overall (H)	150 mm	130 mm	140 mm
Height of Cylinder (h)	045 mm	050 mm	30 mm
Diameter of Cylinder (D)	045 mm	030 mm	30 mm
Approximate Weight	028 gram	016 gram	013 gram
Approximate Surface Area	120 cm <sup>2</sup>	095 cm <sup>2</sup>	0.18 cm <sup>2</sup>

## PRECIOUS METAL SALTS No. 146

**Salts of Platinum & Platinum Group Metals & Silver are available with us :**

01. 60% Palladium Chloride
02. Palladium Sponge 99.9%
03. 80% Platinum Oxide
04. 40% Platinum Chloride (minimum 5 gram packing)
05. Platinum Sponge 99.9%
06. Rhodium Sponge
07. Rhodium Trichloride 39%
08. Ruthenium Sponge 99.9%
09. Gold Potassium Cyanide
10. Platinum Black
11. Rhodium Black
12. Palladium Black
13. Rhodium Sulphate
14. Chloroplatinic Acid
15. Potassium Chloroplatinate
16. Ammonium Chloroplatinate
17. Potassium Silver Cyanide 54%

Minimum ordering quantity 10 gram

Any other Precious Metal Salts made of Platinum Rhodium, Palladium, Gold & Silver against specific orders undertaken.

All items manufactured from special platinum guarantee 99.95% and over unless otherwise specified.

## SILVER PRODUCTS No. 147

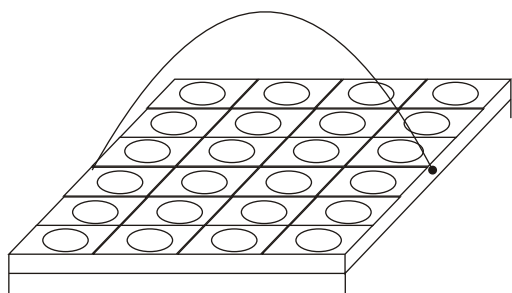
Wires, Bars, Strips, Anodes, Foils, Capacitor Caps etc. to the consumers specifications of Purity 99.9% & 99.99%.

## PALLADIUM METAL PRODUCTS No. 148

Crucibles, Lids, Wires, Bars, Strips, Anodes, Foils, Capacitor Caps etc. to the consumers specifications of Purity 99.9% & 99.99%.

## PLATINUM PARTING TRAY No. 149

Parting Tray is utilized for analysis of Gold Samples. It is made out of the Alloy with composition of pure metal of purity 99.95% of metals with composition platinum / 5% or 10% of tray & handle and the cuples (cups) of pure platinum or 2% alloy of Pt-Ir. The tray are available in the various size with 4, 24 & 36 cuples and its corresponding weights are :



No.	Cuples	Weight (gram)
149A	04	050.000 - 060.000
149B	16	110.000 - 125.000
149C	24	170.000 - 190.000
149D	36	275.000 - 300.000

## IRIDIUM PELLETS No. 150



No.	Diameter (mm)	Thickness (mm)	Weight (gram)
150A	2.7	0.3	0.040
150B	20	1.0	6.000
150C	25	1.0	10.000
150D	30	1.0	15.000

These Pellets are utilized for Rally Camera.

These Pellets are non-radiated & can be activated by Atomic Energy Department only. Other size and dimension can also be manufactured as per the order.



## PLATINUM GOLD ALLOY CRUCIBLE & MOULD No. 151

These Platinum Gold Alloy Apparatus having non-sticky properties & therefore it is used for glass & cement / geology analysis.

Other size and dimension can also be manufactured as per the order.



## PLATINUM SOLDER No. 152

Platinum solder in strip & foil form

A. 1000°C &

B. 1100°C



## PLATINUM BLANKS No. 153

Platinum blanks are used for fluorometry analysis especially for Uranium Determination.



No.	Capacity cc	Upper Diameter mm	Height mm	Slant Height mm	Base Diameter mm	Thickness mm	Approximate Weight (gram)
153	0.4	16	3.2	4	10	0.40	2.50

# **USE AND MAINTENANCE**

## **APPLICATION AND LIMITATIONS**

### **FUSIONS:**

The Pure platinum recipients can be used to melt the following:

1. Sodium or Potassium carbonate.
2. Sodium carbonate, sodium nitrite or nitrate.
3. Sodium borate or sodium metaphosphate. (The platinum is slightly attacked at very high temperature or in reducing atmosphere).
4. Alkaline bifluorides.
5. Alkaline bisulphate. (The platinum is slightly attacked above 700 degree centigrade; this can be reduced through the addition of ammonium sulphate).
6. Alkaline or alkaline earth chlorides in natural atmosphere (The platinum is slightly attacked in the presence of air and above 1000 degree centigrade through the release of chlorine. There is no attack in natural atmosphere).

Nevertheless, platinum does have certain application limits.

Thus the following should not be melted in such recipients.

- A. Free metals.
- B. Alkaline Oxides, hydroxides and peroxides.
- C. Salts of heavy metals ( Lead, Tin, Bismuth, Antimony ) as well as their organic compounds.
- D. Phosphates in the presence of substances which reduce compounds capable of releasing chlorine.
- E. Cyanides or sulphides.

### **EVAPORATION:**

The pure platinum recipients may be used for evaporation with:

- a. Sulphuric acid in the presence or absence of hydrofluoric acid.
- b. Hydrofluoric acid in the absence of chlorides and other halides.
- c. Hydrochloric acid in absence of oxidizing agents.
- d. Hydroxides or alkaline carbonates.

All basic or neutral solutions may be evaporated in platinum recipient, as can acid solutions except for those containing hydrochloric acid in the presence of an oxidizing agent.

### **ELECTROLYSIS:**

Platinum is used:

1. As an anode in most electrolytes, except for strongly hydrochloric solutions.
2. As a cathode for deposition of metals using acid solution.

For electrolysis of tin, silver, zinc, gallium and bismuth salts, the platinum electrodes should first be copper plated to prevent superficial alloying with the deposited metal.

## **PRECAUTION TO BE TAKEN WHEN USING PLATINUM EQUIPMENT:**

Chemists using platinum laboratory apparatus must take the following precautions to prevent irreparable damage to them:

### **HEATING:**

0. Flame heating.

Platinum instruments must always be heated in an oxidizing atmosphere, i.e. out side the reducing part of the flame. In order to prevent contamination while the crucible or dish is being heated, it is to be placed on a triangle made of platinum and not on a base metal screen or triangle.

1. Electric heating in air is the choice procedure and the heating plates are to be covered with clean asbestos sheet. In general, a higher temperature than is absolutely necessary should be held neither needlessly nor too long.
2. Platinum undergoes superficial alternation when heated in an atmosphere of ammonia, sulphuric gas or chlorine.

### **HANDLING:**

#### **General Precaution:**

1. Platinum apparatus are to be handled only with platinum tipped tongs. When they are hot, they must only be set on platinum supports or on thoroughly cleaned pure alumina sheets.
2. Up on removal from an oven or a flame, sudden contact with cold metal surfaces must be avoided.
3. New instruments must never be placed touching each other in an oven since they may stick together above temperature of 1000 degree centigrade. This phenomenon disappears with use. Likewise, the use of new covers and new crucibles together should be avoided.

#### **Special Precaution:**

### **IGNITIONS :**

When organic substance or precipitates deposited on filter paper are to be calcinated, heating is to take place slowly at low temperature until complete oxidation of the carbon is achieved. The substance may then be brought to its calcinations temperature.

### **ELECTROLYSIS :**

At the end of electrolysis, the electrodes are removed from the bath by lowering the recipient without switching off the current to keep the deposited metal from dissolving in an acid medium which in particular would be the case of copper in a nitric medium. The electrodes are then washed in distilled water, then in alcohol, dried and weighed.

The deposited metal is re-dissolved in dilute nitric acid and the oxide such as PbO<sub>2</sub> and MnO<sub>2</sub> in diluted nitric acid added with hydrogen peroxide.

Naturally, aqua-regia can not be used nor may hydrochloric acid in presence of peroxide.

## **MAINTENANCE & CLEANING:**

Cleaning & polishing platinum apparatus immediately after use greatly extend their service lives.

Immediately after use, the platinum recipient are to be cleaned:

1. Either by pouring nitric acid solution (diluted with hydrogen peroxide if need be) or a hydrochloric solution in to them.
2. Or by melting potassium bisulphate, sodium carbonate or borax in them.

Aqua regia or hydrochloric acid in the presence of peroxide are not suited for this owing to the formation of free chlorine which dissolves the platinum.

The recipient is then washed in boiling water and if mechanical clearing proves to be necessary, it is polished with very fine and clean sand or talc. (DO not use hard tools or emery cloth).

If the existence of a base metal alloyed with the platinum is suspected, immerse the recipient in boiling hydrochloric acid for a few minutes, rinse it and then immerse it in boiling nitric acid.

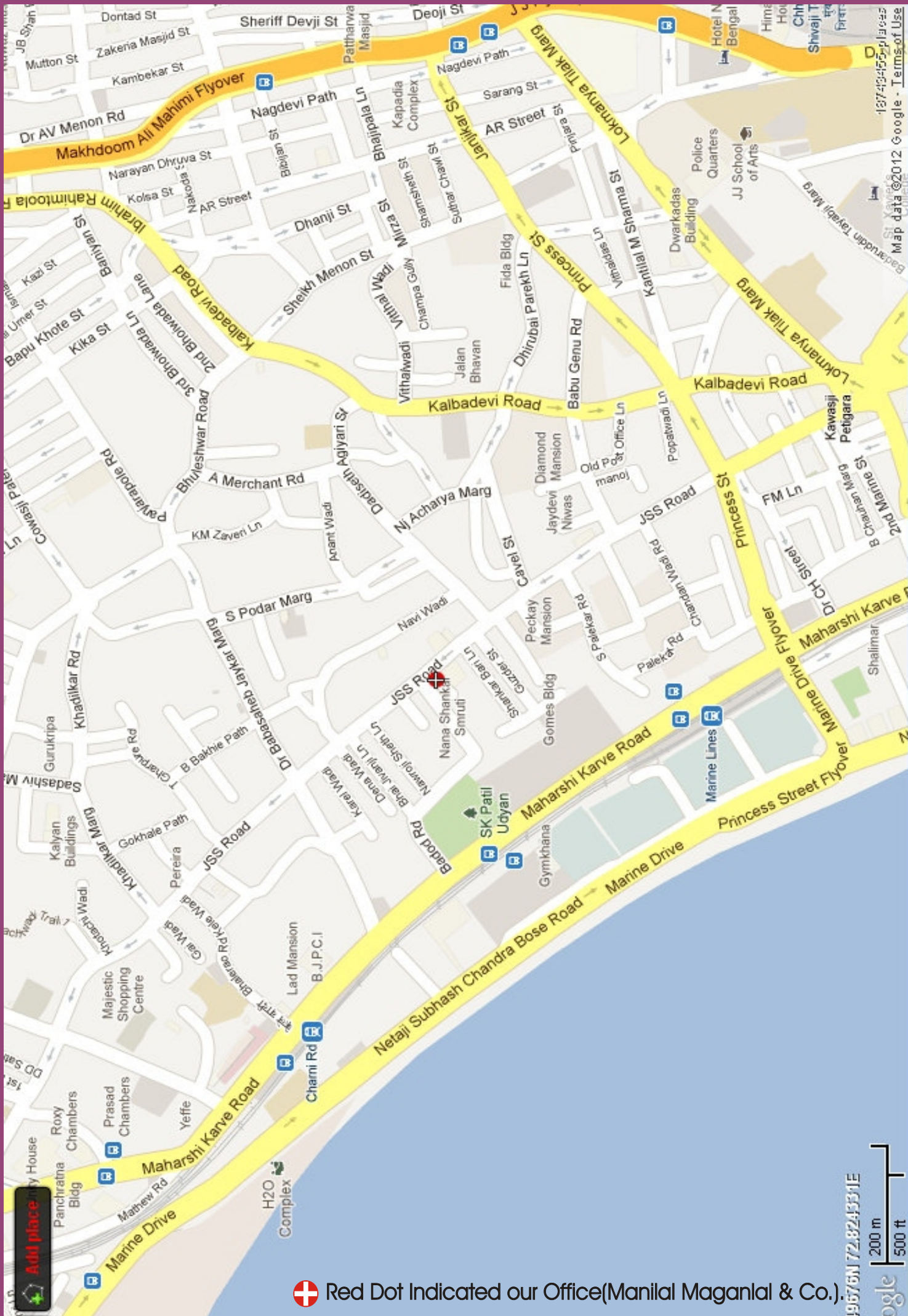
If the weight or appearance has not changed and if the acid baths have not reacted with the base metals, you can be assured the latter are not present.

After using the approximate solvents to rid the electrodes of their metal deposits, they are washed in distilled water and then in alcohol before being dried in a stream of hot air. It is best to avoid anything the electrodes over a Bunsen burner, the heat of which might alloy the traces of deposited metals eventually remaining with the platinum.

The clean electrodes are to be carefully stored upright away from impact in a large beaker or in compartmentalized box.

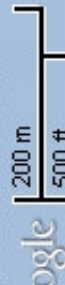
The platinum tipped crucible tongs must always be placed so that the ends are facing upwards away from any contamination.





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