Product Code	307-166
Colour	Black
Preparation	Product Ready to Use
Tanks	Polypropylene, Teflon or Glass
Anodes	Platinised Titanium (with 2.5 um Pt)
Heaters	Porcelain or preferably PTFE
Agitation	Solution and/or work movement is recommended

USAGE: Heat the ready-to-use solution to 65-70°C. Dipping the platinum coated titanium (+) anode into it. Put the material you want to plate into the solution with the help of a current-conducting (-) hanger (Platinex hanger is recommended). Perform the plating process by immersing it and applying 1.8 -2.0V voltage and moving it for 60 - 120 seconds. Add 2ml of ruthenium darkener into the bath as the color of the bath becomes lighter.Dark Ruthenium plating can be used as an alternative to black rhodium plating . Provides 0.1 micron coating with 5 minutes of application.

IMPORTANT NOTE: The more accurate the pre-treatment processes before plating, the better the plating quality will be. Please contact our company regarding the pre-treatment preparation.

OPERATING CONDITIONS

Ruthenium Content:	5.0 g/l ± 1.0
pH:	1.0
Temperature:	65 – 70°C
Voltage:	1.8 – 2.0V
Anode-To-Cathode Ratio:	5 : 1 or higher
Plating Efficiency:	3 - 4 mg/A.mn
Deposition Rate:	~ 0.1 µ 5-6 minute
Plating Time:	4.0 m/minute (2 – 6)

DEPOSITION CHARACTERISTICS

Purity:	> 99.9 %
Hardness:	750 - 850 HV
Density:	12 g/cm^3
Colorimetric Values:	L:50 a:0 b:2.5

MAINTENANCE RATE

Consumed 300 Amps Per Minute

- 1 gr Black Ruthenium XT Replenisher (5 g/100ml Ru)
- And 10 - 20 ml of Black Ruthenium XT darkener

SOLUTION MAINTENANCE

The Ruthenium metal content should be maintained at the recommended concentration (4 - 6 g/l) with periodic additions of BLACK RUTHENIUM XT Replenisher containing 5 g/100ml of Ruthenium.

During operation with BLACK RUTHENIUM XT solution, the pH tends to increase and should therefore be controlled regularly.

In general, any metallic contamination could interfere with the operation of the BLACK RUTHENIUM XT bath and should therefore be prevented by proper rinsing in water of the parts to be plated. A final rinse in deionised water is recommended.

EQUIPMENT REQUIRED

1. TANKS

Tanks should be made from Polypropylene or Teflon. Prior to use, the tank should be leached with a 10 ml/l of concentrate Sulfuric Acid solution for several hours and subsequently rinsed in several changes of water.

2. HEATERS

Heaters should be made from Porcelain or preferably PTFE. The temperature of the bath should be maintained at the recommended optimum temperature of 65°C.

3. FILTRATION

The solution should be filtered continuously. All parts of the filter unit in contact with the solution should be made from heat resistance plastic. When cartridge filters are used, then the cartridge should be leached in 1 % BLACK RUTHENIUM Acid solution prior to being used. Filter capacity is to be such that the solution volume is filtered at least twice per hour. Filter cartridges should be made from Polypropylene. Particle retention should be 5 microns. Cotton filters are not recommended.

4. AGITATION

Moderate agitation is necessary to ensure even deposition and to allow maximum operating conditions. Work movement should be 2 - 6 m/min. An adjustable speed control is recommended.

5. ANODES

Platinised titanium should be used. The area should be sufficient to provide an anode-to-cathode ratio of 4 : 1 or better.

TROUBLE SHOOTING

CONSTITUENT	LOW	HIGH
Ruthenium	Low Deposition Speed	Fast Deposition Speed
Darkener	Not Enough Dark	No Deposition
pH	Low Efficiency	Dark And Dull Deposit Precipitation of Ru
Temperature	Dull Deposit	---
Current Density	Low Deposition Speed	Burning
Agitation	Pitting	---