

PMD (UK) LTD PROCESS DATA

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DECRA C1-06/02
ISSUE 4
PREV 3

DECRA GOLD C1

GOLD PLATING PROCESS

INTRODUCTION

PMD Decragold C1 is a decorative gold plating process formulated to give a pleasing deep gold colour on jewellery, cutlery etc. The deposits contain 0.2 - 0.3% cobalt and have excellent wear resistance. The solution gives a consistent colour over a wide range of operating conditions.

The Decragold C1 process is suitable for rack and barrel plating.

EQUIPMENT

Tanks	Moulded polythene or welded PVC.
Anodes	Platinised titanium.
Agitation	Vigorous solution movement.
Filtration	Glandless all plastic construction capable of at least 3 - 4 turn-overs/hour through a 5 micron polypropylene cartridge guaranteed free of winding lubrication.

SOLUTION MAKE-UP

Decragold C1 - Base Solution (037016) is supplied ready-for-use at the gold concentration recommended for the application - See Notes - Page 2.

CAUTION: Decragold C1 Plating Solutions contain cyanide and therefore the correct precautions should be taken during make-up and operation.

Prior to using a new or used tank it should be leached with a 10 g/l solution of citric acid at 50 - 60 deg C overnight.

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OPERATING CONDITIONS

Temperature	25 - 35 deg C
pH	4.4 - 4.8
Cathode Current Density	0.1 - 1.5 A/dm ² depending on type of use.
Specific Gravity	1.070 minimum.

MAINTENANCE

The solution should be regularly analysed for gold and cobalt and maintained within 5% of the optimum concentrations.

Gold	Will vary depending on application.
Cobalt	1.0 g/l.

The gold and cobalt concentration will be approximately maintained by the following addition every 1 ampere hour:

2 gm of gold as potassium gold cyanide (PGC or GPC).
2 ml of Decragold C1 Brightener.

These materials are supplied in units of Decragold C1 Replenishment, each unit consisting of:

100 gm gold as PGC (029003) + a Decragold C1 100 ml "B" Unit (047032).

Also available on request is a smaller unit as follows: 50 gm, gold as PGC (029004) + a Decragold C1 50 ml "B" Unit (047031).

The specific gravity should be maintained at 1.070 minimum by the following addition for every 0.01 S.G. low:

10 g/l Decragold C1 Buffer Salts (063005)
5 g/l Decragold C1 Conductivity Salts (060011).

Solution pH will rise gradually with use and should be reduced by adding 5 ml/l of Decragold C1 Acid Adjuster (067009) for every 0.1 pH unit reduction required. If it is necessary to increase the pH, an addition of 15 ml/l Decragold C1 Alkaline Adjuster (065007) will give a 0.1 pH unit increase.

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NOTES:

Gold Concentration: This is determined by the plating rate and deposit thickness required. e.g.: for thin (0.1 - 0.5 micron) deposits a gold concentration of 1 - 3 g/l is sufficient; for thicker deposits (1.0 - 5.0 micron) the gold concentration should be increased to 6 g/l. For thicker deposits at maximum deposition speed the concentration can be increased further to 10 g/l.

NOTES CONTINUED

For barrel plating 2 - 4 g/l gold concentration is recommended.

Deposition Rate: This will depend on current density, gold concentration and pH.

- (a) Cathode efficiency decreases with increasing current density.
- (b) Cathode efficiency increases with gold concentrations.
- (c) Cathode efficiency increases with pH.

The following data will provide guide lines:-

- 2 g/l gold, pH 4.4; 1.0 A/dm² - 1 micron in 10 minutes.
- 2 g/l gold, pH 4.8; 1.0 A/dm² - 1 micron in 8 minutes.
- 2 g/l gold, pH 4.8; 0.2 A/dm² - 1 micron in 25 minutes.
- 6 g/l gold, pH 4.4; 1.0 A/dm² - 1 micron in 8 minutes.

pH

The operating range of 4.4 - 4.8 can be widened to 4.4 - 5.2 as the solution ages. As the pH increases, cathode efficiency will also increase, but the current density range at which bright deposits are obtained will decrease.

DISPOSAL

Dispose of in accordance with local authority requirements.

PRODUCT FAMILIES

The following products or product families are referred to in this data sheet:

<u>Product Name</u>	<u>Product Number</u>
The Decragold C1 System:	
Decragold C1 Base Solution	037016
Decragold C1 100 ml "B" Unit	047032
Decragold C1 50 ml "B" Unit	047031
Decragold C1 Buffer Salts	063005
Decragold C1 Conductivity Salts	060011
Decragold C1 Acid Adjuster	067009
Decragold C1 Alkaline Adjuster	065007
Gold as PGC - 100 Gram Unit	029003
Gold as PGC - 50 Gram Unit	029004

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