
Metal Info Sheets

MetCon is one of the most advanced refineries in South Africa, adding value locally to responsibly sourced precious metals, for supply to a local and global market.

Our offering includes superlative refining, world-class wealth products and specialist jeweller services.

MetCon has refineries in Cape Town and the Special Economic Zone of ORTIA, and a dedicated team that serves South Africa's jewellery industry on a national scale.

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9ct White Gold



More palladium = harder metal = whiter metal...

FOR HANDWORK PURPOSES – STOCK 9C WHITE GOLD ALLOYS:

METGOLDW9P10%PALL	METGOLDW9P7% PALL	METGOLDW9P15%PALL	METGOLDW91	METGOLDW9P13%PALL	METGOLDW9P19%PALL
<p>Description:</p> <ul style="list-style-type: none"> • Softer white gold which is excellent for casting purposes, as well as handwork, as it contains only 10% palladium. • Because of the lesser palladium content it still has a yellowish colour, and therefore has to be rhodium plated to get the preferred white colour. 	<p>Description:</p> <ul style="list-style-type: none"> • This alloy contains 7% palladium which makes the metal a bit softer and less white. • Perfect for handwork. • Will have to be rhodium plated afterwards for the preferred white colour. 	<p>Description:</p> <ul style="list-style-type: none"> • This alloy contains 15% palladium which makes the metal much harder and whiter. When polished it has a 'gun-metal' colour. • Perfect for handwork. • To be rhodium plated if necessary. 	<p>Description:</p> <ul style="list-style-type: none"> • This is an alloy with no palladium at all. • Beautiful colour, perfect for handwork and even casting, but very soft! • Will have to be rhodium plated for preferred white colour when finished. 	<p>Description:</p> <ul style="list-style-type: none"> • Perfect for casting only. • Very hard metal. • Very white colour. • Not recommended for handwork. 	<p>Description:</p> <ul style="list-style-type: none"> • This alloy contains 19% palladium which makes the metal much harder and whiter. When polished it has a 'gun-metal' colour. • Very white colour. • Perfect for handwork. • To be rhodium plated if necessary. • Not recommended for casting.



18ct White Gold



More palladium = harder metal = whiter metal...

FOR HANDWORK PURPOSES – STOCK 9C WHITE GOLD ALLOYS:

METGOLDW18P10	METGOLDW18P12	METGOLDW18P16	METGOLDW18PTPD	METGOLDW18P13	METGOLDW18P23
<p>Description:</p> <ul style="list-style-type: none"> • Softer white gold which is excellent for casting purposes, as well as handwork, as it contains only 10% palladium. • Because of the lesser palladium content is still has a yellowish colour, and therefore has to be rhodium plated to get the preferred white colour. 	<p>Description:</p> <ul style="list-style-type: none"> • This alloy contains 12% palladium which makes the metal a bit harder and whiter. • Perfect for handwork. • Will have to be rhodium plated afterwards for the preferred white colour. 	<p>Description:</p> <ul style="list-style-type: none"> • This alloy contains 16% palladium which makes the metal much harder and whiter. When polished it has a 'gun-metal' colour. • Perfect for handwork. • Will have to be rhodium plated afterwards for the preferred white colour. 	<p>Description:</p> <ul style="list-style-type: none"> • This alloy contains 16% palladium as well as 5% platinum which gives the metal the perfect white colour. • No need to rhodium plate, although some jewellers still prefer to rhodium plate afterwards. • We supply this in a bar-form for easy working, and it is very good for handwork. 	<p>Description:</p> <ul style="list-style-type: none"> • This alloy contains 13% palladium and is a hard, white metal, good for casting and handwork. • Its melting temperature is similar to that of the 18W10%, but doesn't have the faint yellow colour that the 18W10% has. It will need to be rhodium plated. • Not recommended for handwork. • Very hard metal. 	<p>Description:</p> <ul style="list-style-type: none"> • This alloy contains 23% palladium and is a very hard, very white metal. • Rhodium plating is not necessary. • Not for casting use.



SET UP	PLATING PROCEDURE	PEN PLATING PROCEDURE
<p>Do NOT mix your plating solutions with any other solutions!</p> <ul style="list-style-type: none"> Wash all containers and rinse with distilled water. Wash all electrodes and rinse with distilled water. <p>1st Container:</p> <p>DEGREASER:</p> <ul style="list-style-type: none"> Mix 1 teaspoon with 1/2 litre distilled water. Connect stainless steel anode to red terminal. <p>2nd Container:</p> <ul style="list-style-type: none"> Fill container with tap water, then – very slowly – add 10% sulphuric acid. <p>3rd Container:</p> <ul style="list-style-type: none"> In this container you will have your either your rhodium solution/silver. Plating solution or gilding solution. Connect Pt anode to red terminal (rhodium plating). <p>4th Container:</p> <ul style="list-style-type: none"> Fill this container with distilled water only (this water will collect some plating solution when you do your final rinse, and can be used to make up volume on the solution when needed). 	<ol style="list-style-type: none"> Ultrasonically clean jewellery. Wash (preferably with running tap water). Electrolytically degrease items at 10 volts for not more than 30 seconds. Wash (preferably with running tap water). Etch in 10% sulphuric acid solution. Wash (preferably with running tap water). Rinse with distilled water. Ensure the rectifier is set to 3 – 4 volts (for rhodium plating); 4 – 4.5 volts (for gilding); 0.2 volts (for silver plating), and plate your items for 15 – 60 seconds. Shake the items while plating to remove adhering bubbles, and make sure not to touch the anodes while plating as this will burn the items. Rinse in distilled water. <p>NOTE</p> <ul style="list-style-type: none"> Hollow items should be rinsed exceptionally well to ensure that no ultrasonic soap/electrolytic degreaser or sulphuric acid is trapped inside the pieces. This WILL contaminate your solution if not well rinsed! 	<ol style="list-style-type: none"> Ultrasonically clean jewellery. Place nib in pen. Decant a small amount of pen plating solution in a container that has been washed with distilled water. Set rectifier to 3 – 3.5 volts (for rhodium plating); 3.5 – 4 volts (for gilding); 0.2 volts (for silver plating). Attach cathode clamp (black terminal) to jewellery/ items. Attach pen to red terminal. Immerse pen nib in plating solution (until well soaked). Lightly draw nib over area to be plated.

Benchwork - Yellow Gold Alloys

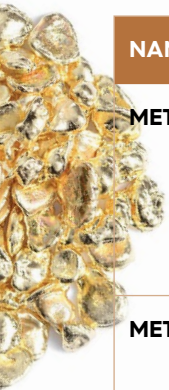


NAME	DESCRIPTION	BENCHWORK		OTHER	PRE- ALLOY USED
METGOLDR9Y1	<ul style="list-style-type: none"> Standard yellow rolling gold (9ct). General purpose use. 	Annealing Temp	Quenching:		Metroll9Y1
		<ul style="list-style-type: none"> 550 – 650° For 15 – 25 minutes 	<ul style="list-style-type: none"> At 500° In 50% water and 50% methylated spirits. 		
METGOLDR14Y1	<ul style="list-style-type: none"> Standard yellow rolling gold (14ct). Good alloy for handwork. 	<ul style="list-style-type: none"> 550 – 650° For 15 – 25 minutes 	<ul style="list-style-type: none"> At 500° In 50% water and 50% methylated spirits. 		Metroll14Y1
METGOLDR18Y1	<ul style="list-style-type: none"> Standard rich yellow gold (18ct). Soft alloy – great for casting and rolling. 	<ul style="list-style-type: none"> 550 – 650° For 15 – 25 minutes 	<ul style="list-style-type: none"> At 500° In 50% water and 50% methylated spirits. 	Cast Temp: 1015 – 1035° Flask Temp*: 450 – 650°	Metcast18Y1 / Metroll18Y1
METGOLDR22Y1	<ul style="list-style-type: none"> Rich yellow gold colour (22ct). Soft alloy – great for casting and rolling. 	<ul style="list-style-type: none"> 600 – 650° For 15 – 25 minutes 	<ul style="list-style-type: none"> At 500° In 50% water and 50% methylated spirits. 	Cast Temp: 1020 – 1060° Flask Temp*: 550 – 670°	Metcast22Y1 / Metroll22Y1

*Depending on casting system used and size of items being cast.



Casting - Yellow Gold Alloys



NAME	DESCRIPTION	BENCHWORK		OTHER	PRE- ALLOY USED
METGOLDC9Y3	<ul style="list-style-type: none"> Rich yellow casting gold (9ct). Not to use for benchwork, might crack. 	Annealing Temp <ul style="list-style-type: none"> 550 – 650° For 15 – 25 minutes 	Quenching: <ul style="list-style-type: none"> At 500° In 50% water and 50% methylated spirits. 	Cast Temp: 860 – 945° Flask Temp*: 450 – 630°	Metcast9Y3
METGOLDC14Y1	<ul style="list-style-type: none"> Standard rich yellow casting gold (14ct). Not to use for benchwork. 	<ul style="list-style-type: none"> 550 – 650° For 15 – 25 minutes 	<ul style="list-style-type: none"> At 500° In 50% water and 50% methylated spirits. 	Cast Temp: 910 – 960° Flask Temp*: 450 – 640°	Metcast14Y1
METGOLDR18Y1	<ul style="list-style-type: none"> Standard rich yellow gold (18ct). Soft alloy – great for casting and rolling. 	<ul style="list-style-type: none"> 550 – 650° For 15 – 25 minutes 	<ul style="list-style-type: none"> At 500° In 50% water and 50% methylated spirits. 	Cast Temp: 1015 – 1035° Flask Temp*: 450 – 650°	Metcast18Y1 / Metroll18Y1
METGOLDR22Y1	<ul style="list-style-type: none"> Rich yellow gold colour (22ct). Soft alloy – great for casting and rolling. 	<ul style="list-style-type: none"> 600 – 650° For 15 – 25 minutes 	<ul style="list-style-type: none"> At 500° In 50% water and 50% methylated spirits. 	Cast Temp: 1020 – 1060° Flask Temp*: 550 – 670°	Metcast22Y1 / Metroll22Y1

*Depending on casting system used and size of items being cast.

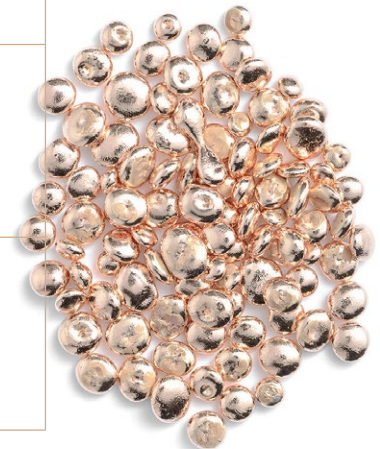


Rose & Red Gold



MC.

NAME	DESCRIPTION	BENCHWORK		OTHER
METGOLDC9RED	<ul style="list-style-type: none"> • Deep red coloured gold (9ct). • Great for casting and rolling. 	Annealing Temp	IMPORTANT	Cast Temp: 930 – 1050° Flask Temp*: 550 – 650°
		<ul style="list-style-type: none"> • 570 – 650° • For 15 – 25 minutes 	Quick cooling in 50% HOT or LUKEWARM water + 50% methylated spirits, otherwise your metal will be brittle or crack!	
METGOLDC9ROSE	<ul style="list-style-type: none"> • Rose coloured gold (9ct). • Great for rolling. 	<ul style="list-style-type: none"> • 550 – 630° • For 15 – 25 minutes 	Quick cooling in 50% HOT or LUKEWARM water + 50% methylated spirits, otherwise your metal will be brittle or crack!	Cast Temp: 910 – 950° Flask Temp*: 550 – 650°
METGOLDC18RED	<ul style="list-style-type: none"> • Deep red coloured gold (18ct). • Great for casting and rolling. 	<ul style="list-style-type: none"> • 570 – 650° • For 15 – 25 minutes 	Quick cooling in 50% HOT or LUKEWARM water + 50% methylated spirits, otherwise your metal will be brittle or crack!	Cast Temp: 1030 – 1050° Flask Temp*: 550 – 650°
METGOLDC18ROSE	<ul style="list-style-type: none"> • Rose coloured gold (18ct). • Great for rolling. 	<ul style="list-style-type: none"> • 550 – 630° • For 15 – 25 minutes 	Quick cooling in 50% HOT or LUKEWARM water + 50% methylated spirits, otherwise your metal will be brittle or crack!	Cast Temp: 1010 – 1040° Flask Temp*: 550 – 650°



*Depending on casting system used and size of items being cast.



Dental Gold Alloys

NAME	DESCRIPTION	BENCHWORK		
METGOLD16DENT	<ul style="list-style-type: none"> Rich yellow dental alloy (18ct). General purpose use. 	Annealing Temp	Quenching:	<p><i>This alloy is different than the normal rolling/casting alloys as it is suitable for dental/medical use.</i></p>
METGOLD18TRI	<ul style="list-style-type: none"> Standard rich yellow casting gold (14ct). Not to use for benchwork. 	<ul style="list-style-type: none"> 850° For 15 – 25 minutes 	<ul style="list-style-type: none"> At 500° In 50% water and 50% methylated spirits. 	
		<ul style="list-style-type: none"> 550 – 600° For 15 – 25 minutes 	<ul style="list-style-type: none"> At 500° In 50% water and 50% methylated spirits. 	



CONVERSIONS, GUIDES AND CHARTS

DISCLAIMER: THE INFORMATION USED IN THIS GUIDE IS FOR INFORMATIVE PURPOSES ONLY

RING SIZES	
SIZE	mm
A½	12.4
B	12.5
B½	12.7
C	13.0
C½	13.1
D	13.3
D½	13.5
E	13.7
E½	13.9
F	14.0
F½	14.2
G	14.4
G½	14.6
H	14.8
H½	15.0
I	15.2
I½	15.4
J	15.6
J½	15.8
K	16.0
K½	16.2
L	16.4
L½	16.6
M	16.8
M½	17.0
N	17.2
N½	17.4
O	17.6
O½	17.8
P	18.0
P½	18.2
Q	18.4
Q½	18.6
R	18.8
R½	19.0
S	19.2
S½	19.4
T	19.6
T½	19.8
U	20.0
U½	20.2
V	20.4
V½	20.6
W	20.8
W½	21.0
X	21.2
X½	21.4
Y	21.6
Y½	21.8
Z	22.0
Z½	22.2
Z+1	22.4
Z+2	22.8
Z+3	23.0

SILVER SOLDER	
SOLDER	MELTING TEMP (°C)
SILVER EASY	705–725
SILVER MEDIUM	720–760
SILVER HARD	745–780

GOLD SOLDER	
YELLOW GOLD SOLDER	
9ct EXTRA EASY	637–702
9ct EASY	658–721
9ct MEDIUM	735–755
9ct HARD	755–795
14ct EASY	685–728
14ct HARD	795–807
18ct EASY	726–750
18ct MEDIUM	765–781
18ct HARD	797–804

WHITE GOLD SOLDER	
9ct EASY	670–730
9ct MEDIUM	750–780
18ct EASY	800–820
18ct MEDIUM	830–850
18ct HARD	880–900

RED GOLD SOLDER	
9ct EASY	650–680
9ct MEDIUM	680–790
9ct HARD	750–820
18ct EASY	680–730
18ct MEDIUM	805–810
18ct HARD	820–850

PLATINUM SOLDER	
Pt 960	960
Pt 1020	1020
Pt 1200	1200
Pt 1300	1300
Pt 1400	1400
Pt 1500	1500
Pt 1600	1600

MELTING POINTS (°C)			
	Gold	–	1064.0
Zinc	–	Copper	– 1085.0
Nickel	– 455.0	Palladium	– 1555.0
Silver	– 961.8	Platinum	– 1768.0

CONVERSION	
Celsius – Fahrenheit	(°C x 1.8) + 32
Fahrenheit – Celsius	(°F - 32) x 0.555
Grams – Troy Ounces	x 0.032
Troy Ounces – Grams	x 31.104
Inches – Millimeters	x 25.4
Millimeters – Inches	x 0.039
Feet – Meters	x 0.305
Meters – Feet	x 3.281

SELECTING SILVER SOLDER		
SOLDER	FLOW POINTS (°C)	USE FOR
EXTRA HARD	810	laser welding
HARD	788	first soldering
MEDIUM	738	general soldering
EASY	719	intermediate soldering
EXTRA EASY	653	final soldering

DETERMINE METAL FOR WAX TREES		
Procedure	Specific Gravities	
Step 1: Weigh your wax models along with the main and gate sprues.	24ct yellow gold	19.32
	22ct yellow gold	17.75
Step 2: Multiply the total wax weight by the specific gravity of the metal you are casting in. Add desired button weight.	18ct yellow gold	15.58
	14ct yellow gold	13.07
	9ct yellow gold	11.57
	9ct white gold	11.07
	14ct white gold	12.61
	18ct white gold	14.64
	9ct red gold	11.59
	14ct red gold	13.26
	18ct red gold	15.18
	Example: For a 5 gram wax model, if you are casting in 14ct yellow gold, multiply 5g x 13.07. The amount of 14ct yellow gold needed for the 5g tree is 65.35g. Add your desired button weight to this to arrive at final required metal weight.	Fine silver
	Sterling silver	10.36
	Palladium	12.00
	Platinum	21.54

	Wax	Sterling Silver	9ct Gold	14ct Gold	18ct Gold	22ct Gold	Fine Gold	Platinum	Palladium
Wax	1.00	10.30	11.20	14.10	15.70	17.80	19.50	20.60	12.00
Sterling Silver	0.097	1.00	1.11	1.31	1.50	1.73	1.87	2.08	1.15
9ct Gold	0.089	0.90	1.00	1.18	1.36	1.59	1.72	1.88	1.04
14ct Gold	0.071	0.76	0.85	1.00	1.14	1.29	1.40	1.59	0.88
18ct Gold	0.064	0.67	0.74	0.88	1.00	1.15	1.25	1.34	0.77
22ct Gold	0.056	0.58	0.63	0.78	0.90	1.00	1.08	1.21	0.67
Fine Gold	0.051	0.53	0.58	0.72	0.83	0.94	1.00	1.11	0.64
Platinum	0.049	0.48	0.53	0.63	0.72	0.83	0.90	1.00	0.58
Palladium	0.083	0.87	0.87	0.96	1.14	1.30	1.49	1.74	1.00

As a guideline, use this conversion chart to convert the weight of wax to metal and one metal to another for casting.

ROUND BRILLIANT (accurate based on South African Ideal Cut)									
mm	cts	mm	cts	mm	cts	mm	cts	mm	cts
1.000	0.004	2.300	0.050	3.600	0.180	4.900	0.440	6.200	0.900
1.100	0.005	2.400	0.055	3.700	0.190	5.000	0.470	6.300	0.950
1.200	0.007	2.500	0.062	3.800	0.210	5.100	0.500	6.400	0.990
1.300	0.009	2.600	0.075	3.900	0.220	5.200	0.530	6.500	1.040
1.400	0.012	2.700	0.079	4.000	0.240	5.300	0.560	6.600	1.080
1.500	0.014	2.800	0.080	4.100	0.260	5.400	0.590	6.700	1.140
1.600	0.018	2.900	0.090	4.200	0.280	5.500	0.630	6.800	1.190
1.700	0.020	3.000	0.100	4.300	0.300	5.600	0.660	6.900	1.240
1.800	0.025	3.100	0.110	4.400	0.320	5.700	0.700	7.000	1.300
1.900	0.029	3.200	0.120	4.500	0.340	5.800	0.740	7.100	1.350
2.000	0.033	3.300	0.140	4.600	0.370	5.900	0.780	7.200	1.410
2.100	0.037	3.400	0.150	4.700	0.390	6.000	0.820	7.300	1.470
2.200	0.044	3.500	0.160	4.800	0.420	6.100	0.860	7.400	1.530

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