RIO GRANDE
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Technical Chart

Premium Alloy, Nickel-free White Color 18k

Alloyed to **18K White**

CEILab Color Coordinates [L: 78.8 a: 1.9 b: 9.0 c: 9.2 YI: 21.2 Standard White]

Product Description

104408 is a nickel-free alloy for white gold. Due to the high palladium content, items produced with this alloy offer excellent white color.

Recommended Applications

104408 is indicated for mechanical working and lost-wax vacuum in closed systems. It is recommended for gemstones setting. Rhodium plating is not required.

Physical-chemical Properties

Approximate Composition of Master Alloy

Zn 6.0% **Ag** 31.0% **Pd** 50.0% **Cu** 13.0%

Values below are for 18K made with this master alloy.

Temperatures (ºC) **Density (g/cm^3)** 15.9

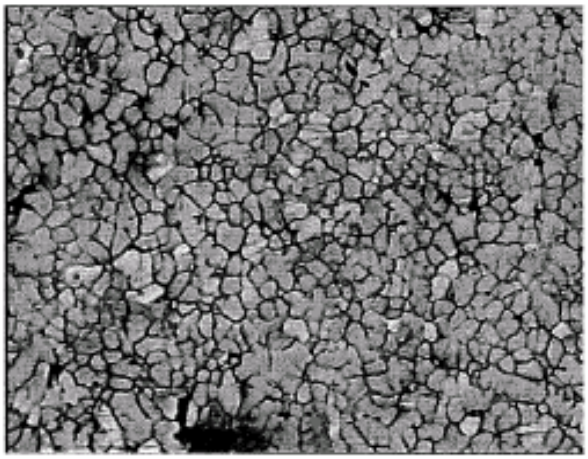
Solidus	1040
Liquidus	1140
Range	100

General Characteristics

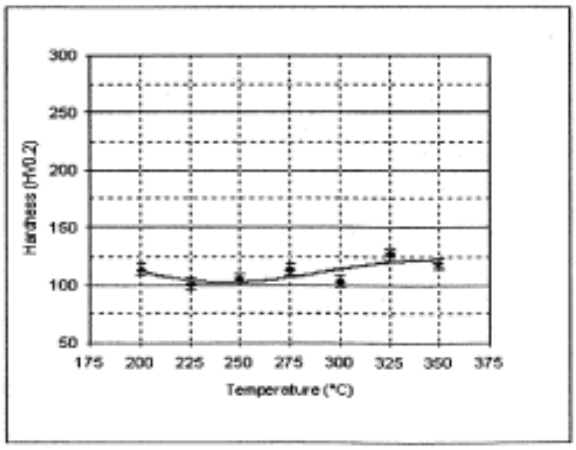
"As cast" grain size [µm]	25

Mechanical Characteristics for 18K

Tensile strength (Rm) [N/mm^2]	394
Yield strength (Rp0.2) [N/mm^2]	225
Elongation (A) [%]	24
"As cast" hardness [HV 0.2]	107
Hardness after 70% red. [HV 0.2]	215
Hardness after annealing [HV 0.2]	124
Hardness after age-hardening [HV 0.2]	
Workability	Good
I1	169
I2	7
I3	43



Crystal grain (200x)



Age-hardening (90 minutes)

Instructions for use

Casting

Graining temperature (ºC) 1260

Casting temperatures

Size of objects	Metal casting (ºC)	Flask (ºC)
Thin from 0.2 to 0.5mm	1270-1240	800-830 (*)
Medium from 0.5 to 1.2mm	1240-1220	760-800 (*)
Thick > 1.2mm	1220-1200	700-760 (*)

Flask quenching

Leave flask to air cool for 10-18 minutes, then quench in warm water.

Pickling

Dip items in Rio Pickle cleaning solution for 20-30 minutes or in a 10% sulfuric acid solution for 10 minutes.

Mechanical Working

Pouring temperature (ºC) 1220-1255 (**)

Recommended thickness reduction 60.0%

Annealing treatment

Sheet thickness	Temperature (ºC)	Minutes
5 – 14mm	720-760	40
1 – 5mm	720-760	35
0.2 – 1mm	720-760	30

Quenching

Quench directly in 50% water and 50% alcohol or only in water.

Notes

(*) We strongly recommend the use of phosphate-bonded investment. This type of investment reduces the reactions between liquid metal and refractory; this will prevent the arising of gas porosity defects. If normal types of investment are used, it is suggested to not exceed temperatures over 730ºC.
(**) For mechanical working, it is recommended to pre-heat the cast-iron frame up to 250-300ºC before pouring.