UNITED® PRECIOUS METAL REFINING, INC.

CASTING INFORMATION

UNITED'S alloys for 8K - 22K gold and Sterling Silver are uniquely different from other available alloys. Combining the highest purity metals available, stringent quality control, special de-oxidizers and grain refiners, make UNITED'S alloys what you need to produce trouble-free, superior quality castings and fabrication or rolling (hand-made).

DE-OXIDIZERS UNITED'S alloys contain either a silicon, or boron, or combination of both de-oxidizers, which gives the alloys a great ability to resist oxidation. What this means to you is low porosity and high re-melting characteristics. The bottom line is less rejects and easier finishing which translates into higher profitability.

PROCEDURE A few simple requirements must be followed in your production procedure, to help insure a perfect cast.

FLOW TEMPERATURE Due to the use of UNITED'S special de-oxidizers, a slightly higher melting temperature is important. Depending on exactly which alloy is being used, a flow temperature of 960 - 1,250 °C is necessary.

FLASK TEMPERATURE Because of the higher flow temperatures necessary for UNITED'S alloys, we suggest a slightly higher flask temperature as well. Please refer to our flask temperature chart for recommendations. There will be exceptions in flask temperatures….if any confusion arises, please call for our opinion.

Representative Office : **UNITED PM (THAILAND) CO., LTD.**

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QUENCHING It is also very important to wait the correct amount of time before quenching your flasks. For sterling silver flask, yellow gold flasks, you must wait at least 15 - 20 minutes (15 minutes for smaller flasks, 20 minutes for larger ones). For white gold wait at least 12 - 15 minutes.

BURNOUT There are basically two different ways to burn out flasks: a rapid burnout or a programmed burnout. Most standard waxes will burn out cleanly either way. When using synthetic waxes or plastics, we recommend a direct burnout for 8 hours. Contrary to many beliefs, the investment itself, will hold up very well with a rapid burnout.

MELTING Gas melting, which is widely used for casting, gives the metal the benefit of a reducing atmosphere. This protects the metal from oxygen penetration during melting. Electric melting is also widely used for casting, and it too has its advantages. The greatest being speed and a cooler working environment. Torch melting is also used and can give good results provided consistent melting procedures are maintained. Please be careful if you use acetylene gas. Use only the highest purity gas available.

FLUXES Proper fluxing is important. We recommend a 50 - 50 mixture of boric Acid and 10 MOL Borax. They can be used individually with excellent results, but we prefer the mix. Use approximately ¼ - ½ teaspoon of flux with each melt. Both Boric Acid and 10 MOL Borax are available form UNITED.

MAINTENANCE As with all casting operations, there is considerable art, as well as technical science, required to produce great casting. Once you have mastered using UNITED'S fabulous alloys, routine equipment maintenance will assure you of consistent superior results.

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RECOMMENDED FLASK TEMPERATURES FOR CASTING

KARAT & COLOR	WEIGHT	CENTRIFUGAL CAST	VACUUM CAST
8 -14 &18 Karat Yellow Gold	Light	524 - 538 ºC (975 - 1,000 ºF)	621 - 677 ºC (1,150 - 1,250 ºF)
	Medium	482 - 510 ºC (900 - 950 ºF)	566 - 593 ºC (1,050 - 1,100 ºF)
	Heavy	455 - 482 ºC (850 - 900 ºF)	482 - 538 ºC (900 - 1,000 ºF)
8 -14 & 18 Karat Ni. White Gold	Light	538 - 566 ºC (1,000 - 1,050 ºF)	677 - 732 ºC (1,250 - 1,350 ºF)
	Medium	510 - 538 ºC (950 - 1,000 ºF)	621 - 649 ºC (1,150 - 1,200 ºF)
	Heavy	482 ºC (900 ºF)	566 - 593 ºC (1,050 - 1,100 ºF)
20, 21 & 22 Karat Yellow Gold	Light	593 ºC (1,100 ºF)	705 - 732 ºC (1,300 - 1,350 ºF)
14 & 18K Pd. White Gold	Medium	566 ºC (1,050 ºF)	677 - 705 ºC (1,250 - 1,300 ºF)
	Heavy	538 ºC (1,000 ºF)	621 - 649 ºC (1,150 - 1,200 ºF)
Sterling Silver	Light	524 - 538 ºC (975 - 1,000 ºF)	621 - 677 ºC (1,150 - 1,250 ºF)
Ni. & Pd. Free White Gold	Medium	482 - 510 ºC (900 - 950 ºF)	566 - 593 ºC (1,050 - 1,100 ºF)
	Heavy	455 - 482 ºC (850 - 900 ºF)	482 - 538 ºC (900 - 1,000 ºF)

Casting Brass & Bronze - Use the same flask temperatures as Nickel White Gold alloys. The perfect flask temperatures for any given design will be determined by experience, the flask temperature guide will normally work for the size, karat and color gold listed.

Wait 15 - 20 minutes before quenching cast flasks of Yellow gold and Sterling. Wait 8 - 12 minutes before quenching cast flasks of Nickel base White gold. Shorter times may be used on small flasks due to faster cooling times.

Avoid using investment remover chemicals that contain Hydrochloric Acid as in can causes stress corrosion cracking on lower karat gold alloys.

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