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TECH SPECS: # 20 Nickel Free White Bronze

Alloy Name: # 20 White Bronze

General Description: White Bronze (nickel free) low cost sterling alternative with significantly different casting properties than Sterling.

Color: White

Casting: Casts excellent in a closed machine running minimum cover gas. An open system machine with a cover flame will be best. Torch casting is not recommended. Proper spruing is crucial to success with #20. The rapid cooling time makes it necessary to have short thick sprues. Jewelry with thick cross sections must be fed with metal or there will be tearing caused by shrinkage.

Casting Temp: 950ºC – 1020ºC works best. If you cast at 1020ºC you risk setting the metal on fire and burning off important alloy elements. The lowest casting temperature that can successfully fill your patterns is preferable to help reduce the black and green scale that forms during casting. This metal is quick to chill so there is a balancing act to get good fill without shrinkage while trying to control the surface scale.

Flask Temp: 400ºC – 650ºC is recommended. To help with fill on smaller pieces try raising your metal casting temperature, before raising flask temperature.

Pickling: This metal will form a heavy black/green scale after casting which can be removed by 2 methods:

Dip Method: To remove scale use a 10% sulfuric acid or sodium bisulphate solution (Sparex). A room temperature solution works best. Hot pickling can cause discoloration.

Tumbling Option: We recommend a vibratory or rotary tumbler with an abrasive cut down media. Cut parts from trees, desprue, remove investment and then tumble in a citric acid/water solution which cleans the scale off and any remaining investment. This brightens the metal without pickling.

Soldering: Best method – Laser welding with argon cover gas or Tig welding with micro pulse welders such as Puk 3 or Orion. This works fast and is clean.

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Torch soldering: Proper procedures must be followed to achieve good results. The #20 white bronze forms an oxide layer that inhibits the flow of solder so flux (a coating that protects and cleans the metal during the soldering operation) is very important. Two types of flux that work well:

- Black Flux (Harris/Lucas brands)
- Aluminum Flux mixed with white flux (Harris/Lucas brands)

Fluxes may be purchased from jewelry supply houses and welding supply companies.
The best choice for solder is easy flow silver solder (ABI 560) or industrial brazing filler (Harris safety Sil45). Use a torch with a bushy reducing flame. Apply flux before heating to minimize oxide formation.

Procedure for Aluminum Flux:

1. mix a small amount of Aluminum flux powder with alcohol or water creating a paste.
2. Prepare joint making sure there is a good, clean fit.
3. Apply aluminum flux to joint before heating.
4. Heat until water is driven off then apply white brazing flux.
5. Heat flux until it is clear then place solder ball or chip on joint.
6. Heat with soft flame until solder flows and draw into joint with torch heat.

Procedure for Black Flux:

Apply a thin coating to the joint and heat with a bushy flame until solder flows just like standard soldering. It is hard to see the joints so plan your work first.

Reusability: Recycle a maximum of 60% new metal/40% recycled metal. Recycled metal must be thoroughly cleaned before re-use. (100% new metal will give best results.)

Antiquing: Can be accomplished very easily and effectively using commercially available blackeners made for brass and bronze (Triple S c-22, Birchwood Casey m-20, Rio Grande bronze black). There are many products used by the decorative metal finishing industry that work very well on #20. The cleaner the metal, the better and more even the adhesion will be.
It is important to electro clean pieces before antiquing for maximum adhesion and dark color.

Technical questions: Please feel free to call at any time if you have questions or comments.