

# White Paper

## Lost wax casting using EC500 with Omega+ and ProHT investment powder.

by Martin Forth and Dave Anderson (GRS Ltd.)

This paper aims to give a step by step guide on how to use EnvisionTEC Perfactory® machines to make master patterns for lost wax or investment casting.



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First the parts need to be prepared in 3D CAD and converted in to a .stl file format. It is helpful if a large 6 mm diameter cone support can be added to the bottom of the shank not only to assist with part building but it is beneficial as this acts as a sprue to allow the metal to flow more easily during the casting process.

The type of perfactory machines commonly used for jewelry pattern production are the Perfactory® Mini machines, Aureus or Perfactory® Micro. These tend to give the best accuracy and surface finish.

### Perfactory® Mini



### Aureus



### Perfactory® Micro



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## EC 500 Instructions

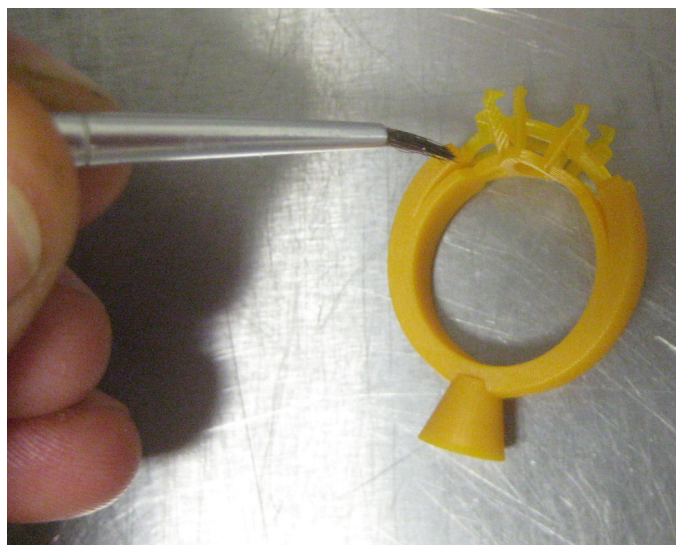
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The recommended material for casting is EC500 as this has a high wax content which allows a clean burnout.

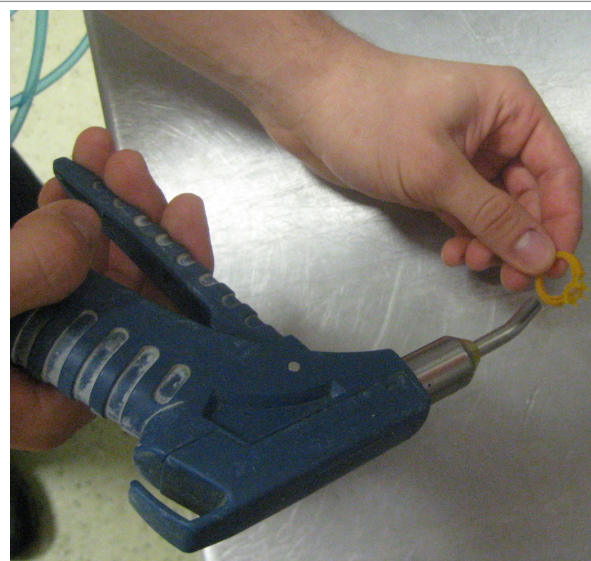
Once the parts are built on the machine and removed from the printer they need cleaning in Isopropanol to remove all uncured resin.



Using a soft brush and alcohol will quickly clean the jobs. Be sure to remove all uncured resin as that will negatively effect the casting process.



Gently blow air on the jobs to fully dry the alcohol.



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Parts must be fully dry before next stage (a warm oven can speed this up if parts are placed at 30-40 °C for 30 minutes). Then the parts can be post cured using the EnvisionTEC Otoflash for 1500 flashes per side. The entire cleanup process should take no more the 15 minutes.



The parts are now ready to be set up for casting. The parts must be coated in GRS PROCAD solution, this is available from GRS (via [www.goldstarpowders.com](http://www.goldstarpowders.com)) or their distributors.

GRS PROCAD was developed to be integrated into the casting process, when used with Omega+ investment powder it helps with the removal of ashes and gases from the flask during burnout.

The parts must be dipped 8-10 times in the solution and allowed to dry for 10-15 seconds between each dip.

Ensure not to allow a build up of excessive solution in fine filigree or stone settings.

The solution will form a barrier between the resin parts and the investment flask.



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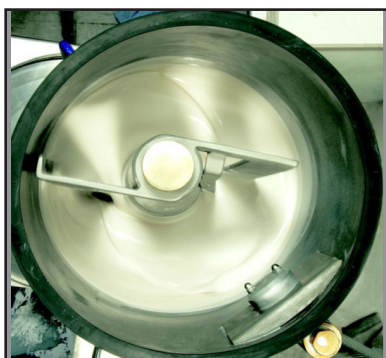
## EC500 Instructions

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Once your designs have been dipped and assembled onto a tree,



Vacuum invest using Omega+ with GRS's recommended investing procedure.



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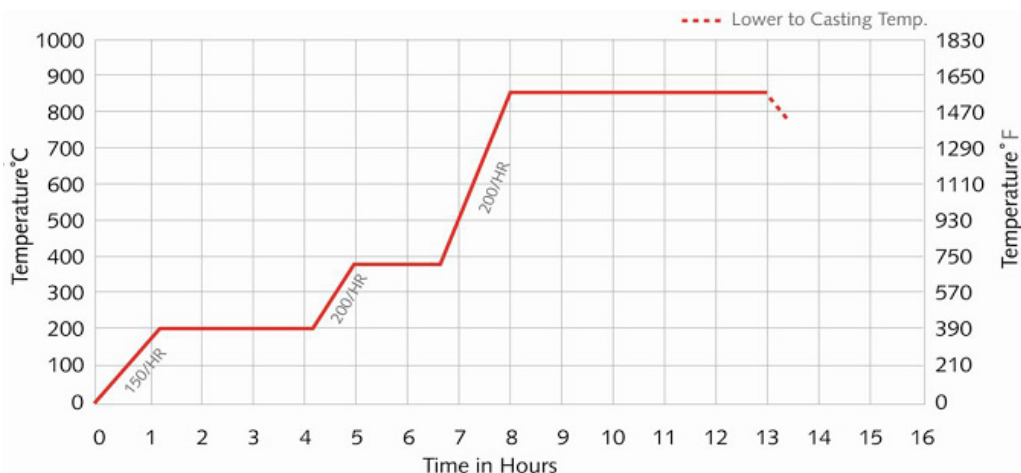
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GRS PROCAD & Omega+ give superior results when used with the recommended burnout cycle.





## OMEGA+

| Water : Powder ratio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Vacuum mixing 38 : 100                                                                                                                                                                                                                                                                                                                          | Conventional mixing 40 : 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| <p><b>Gold Star Omega+ has been developed for the successful casting of...</b></p> <p style="color: red;"><b>RESIN • CARVED • MACHINED<br/>MASTER MODELS</b></p> <p><b>Gold Star Omega+ will produce world class results when casting high carat yellow and white gold including high percentage palladium and nickel white gold.</b></p> <p><b>Gold Star Omega+ has been successfully tried and tested with many makes of resins, carved waxes and machined master models.</b></p> <p><b>NB.</b> For optimum results the Omega+ burn out cycle must be followed.</p> |     | <p><b>WARNING</b><br/>This material contains crystalline silica and shows limited evidence of causing cancer in humans. IARC Group I. Prolonged exposure may cause lung injury (silicosis). Users must comply with all applicable health and safety regulations relating to the safe handling of crystalline silica. See MSDS for detailed information.</p> <p><b>ATTENTION</b><br/>Cetle matière contient de la silice cristalline et présente evidence limitée des risques cancérogènes chez les êtres humains (IARC Group I). Une exposition prolongée peut occasionner des problèmes pulmonaires (Silicose). Les utilisateurs doivent se conformer à toutes les mesures existantes en matière de santé et de sécurité concernant la sécurité de manipulations de la silice cristalline. Se référer à la MSDS pour plus de renseignements.</p> <p><b>PRECAUCION</b><br/>Este material contiene silice cristalina y presenta evidencia limitada de causar cáncer en los seres humanos (IARC Group I). La exposición prolongada puede ocasionar lesiones del pulmón (Silicosis). Los usuarios deben cumplir con todas las normas de salud y seguridad relacionadas con el manejo seguro de la silice cristalina. Para mayor información, véase la MSDS.</p> <p><b>Investment Powder: This product contains silica</b></p> <ul style="list-style-type: none"> <li>- Harmful by inhalation</li> <li>- Danger of cumulative effects</li> <li>- Do not breath dust</li> <li>- Possible risk of irreversible effects</li> </ul> <div style="text-align: center;">  </div> |



**Gold Star  
Powders**

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Web site: [www.goldstarpowders.com](http://www.goldstarpowders.com)  
e-mail: [info@goldstarpowders.com](mailto:info@goldstarpowders.com)

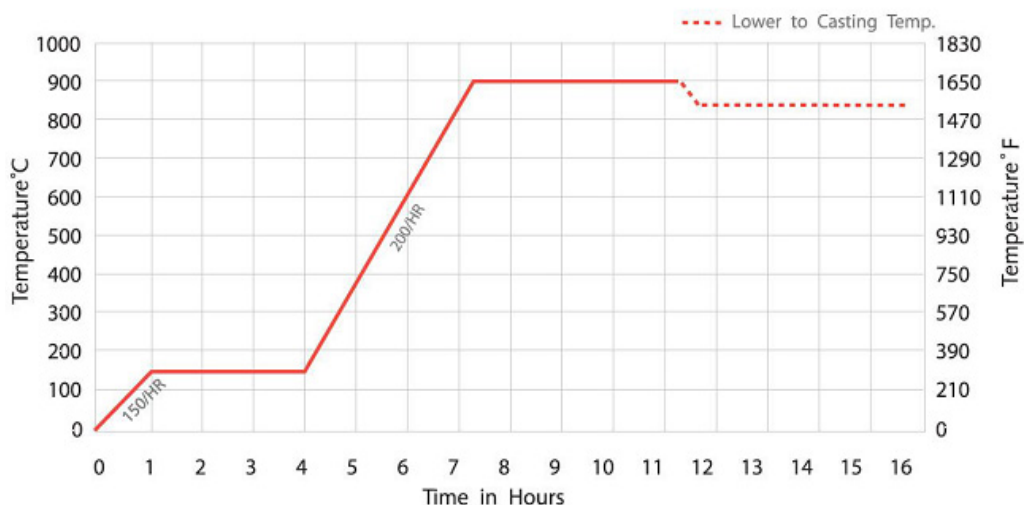
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GRS PROCAD should also be used for High temperature Platinum or Steel casting using ProHT phosphate bonded investment powder.



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For further information on using EnvisionTEC's equipment and resins please contact [info@envisiontec.com](mailto:info@envisiontec.com)

And for use of GRS PROCAD solution, rubbers and waxes contact [info@grs-procad.com](mailto:info@grs-procad.com)