

LEADING THE INDUSTRY IN APPLICATION EXPERIENCE, KNOWLEDGE AND SUCCESS

Mold-Masters recognizes the importance Bio-Resins represent in helping to preserve the environment for future generations. We have invested considerable time and money in understanding these cutting edge materials to ensure we're ready when you are. Trust in Mold-Masters to drive positive results on your next Bio-Resin application. [Contact us at Bio-Resins@moldmasters.com](mailto:Bio-Resins@moldmasters.com)

UNDERSTANDING BIO-RESINS

Bio-Resins can be very challenging to process compared to the common resins they typically aim to replace. This of course can make producing good parts very difficult and sometimes impossible.

IMPORTANT CONSIDERATIONS

Obviously, many Bio-Resin grades differ from one to the other. Some can be easier to process than others but it is common for many to have narrow process windows due to Thermal or Shear sensitivities.

Additionally, if the Hot Runner design is not optimized for Bio-Resins, this can also be a source or even compound the issue. Therefore, taking into consideration Flow Pattern, eliminating hang-up spots and other design requirements are also critical elements that need to be considered.

TYPICAL PROCESSING CHALLENGES

When molding with Bio-Resins, a wide range of visual defects can appear based on the processing characteristics of the material and the hot runner configuration used. These defects include:

- Jetting
- Streaking
- Splay
- Flow Marks
- Knit Lines
- Burn Marks
- Stringing

EXTENSIVE TESTING AND EXPERIENCE

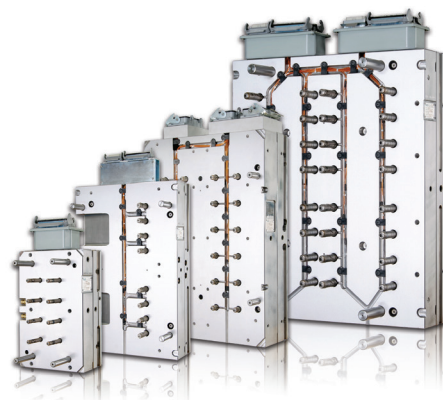
Mold-Masters has spent extensive time testing a wide selection of these materials in our R&D facility and partnered with the University of Massachusetts. This research has allowed us to evaluate and understand their unique properties and effective processing requirements.



Most importantly, Mold-Masters has a variety of real world application experience which includes high cavitation production tools that have been in long term production.

CRITICAL KNOWLEDGE DATABASE

Mold-Masters Bio-Resin application success is directly related to our experience and our ability to pull information from our invaluable Applications Library. This data directs our team to select the correct product line(s) and assists us in designing the most optimum solution given the material at hand.



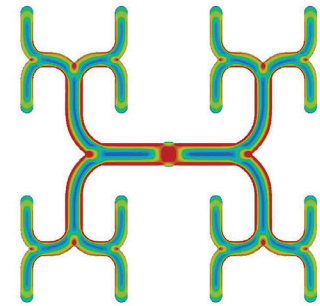
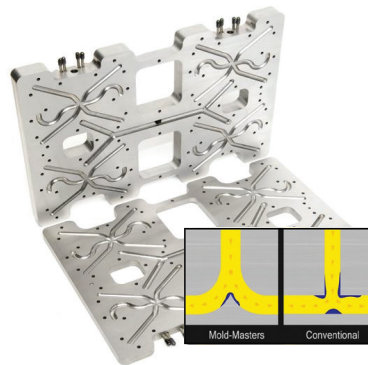
#1 IN PROVEN PROCESSING SOLUTIONS



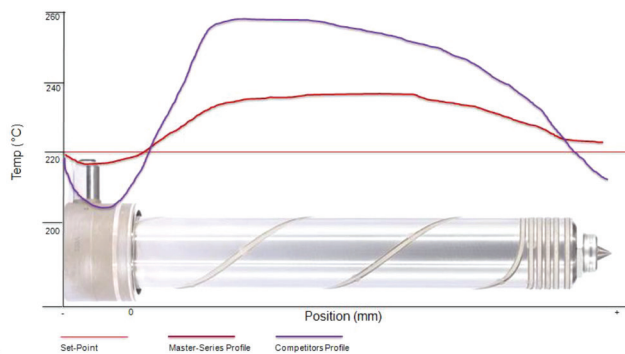
Mold-Masters hot runners, controllers, co-injection and auxiliary equipment have been successfully used to process a range of Bio-Resin applications. Mold-Masters systems incorporate specialized technology that is well suited to overcome the processing challenges associated with Bio-Resins that help ensure application success including shear and temperature sensitive characteristics.

BEST IN-CLASS MELT MANAGEMENT

- A result of iFLOW Manifold Technology
- Superior management of melt characteristics including shear, temperature, pressure drop and more
- Endless design options & flexibility for optimization
- Industry leading mold balance
- Rapid color change performance
- Reduced stack height



Enhanced Shear Control

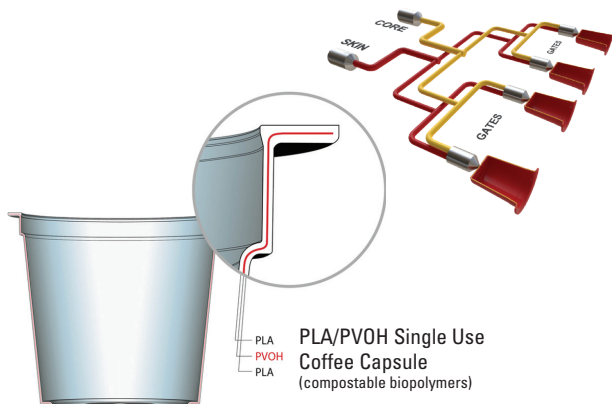


SUPERIOR THERMAL MANAGEMENT

- A result of Brazed Heater Technology
- Especially valuable for Bio-Resins with shear or temperature sensitivities
- Superior thermal profile precision
- Thermal balance across the whole system
- Significantly improves part quality and reduces scrap

PRECISE TEMPERATURE CONTROL

- A result of TempMaster APS Control Technology
- Proprietary Auto-Tuning Algorithm
- Automatically adapts to process variables of each zone
- Control accuracy of 1°F (0.5°C) minimizes variability
- Optimizes performance of any hot runner system



With APS



Without APS



ADVANCED APPLICATIONS

- Co-Injection Technology
- Incorporates high performance barriers that extends shelf life by up to 5x, lowers production costs and offers greater design flexibility
- Co-Injection is compatible with many applications including packaging.
- Conversions and full turn key solutions available