

General Guidelines for Plastic Laser Welding Including Materials to Starting a Project Together

Thank you for your inquiry about plastic welding with Rofin products. I will outline below some basic things that are needed for successful plastic welding. Also I am enclosing some basic information.

- For all laser plastic welding two basic material conditions must be met: The top material must be transparent to the laser light. Many customers use a “natural” for their top part. The bottom part is usually black or dark. This part needs to be absorbent to the laser light. To accomplish this carbon black is added. The % needed is .2 to .5% no more. Your resin supplier should be familiar with this.
- One of the first things we like to do is material testing for the material selected for the project. We start a project with weldability testing of materials to be sure that they are laser weldable. We are paying attention to material types as well as melt flow. Once again your material supplier can assist you in this area.
- The second step of a project is Application Development: This is where we know we have a funded project, materials have been tested and we now need to weld early parts for the customer. There is a need to supply the Engineer with 1st parts or early pre-production prototype parts. These parts are used for testing, prototypes, dimensional testing, etc. To make these parts we need to make a pre-production fixture. If the part is approximately 4” x 6” in size we are able to weld those parts in our lab in Chicago. If the parts are bigger will work with our Dilas Division in Germany to weld the test parts. The Application Development Quote will include the following:
 1. Cost including design for One (1) Pre-Production Lab Tool to be used to weld parts in the lab press
 2. Cost for time to weld parts in the lab. The cost is \$175.00 per hour with an 8 hour minimum.
- The third step is the quoting of a Production welding system with tooling for the project. From the step described above the Application Development we have established the welding parameters and now know how to correctly weld the customer’s part.

These are the basic steps that are involved in a plastic laser welding Project. I have enclosed a PDF on our UW-150 PW Welding System. This is a small rotary to be used for small parts with a size of 4” x 6” I have also sent a short video of this system welding under separate cover.

We like to think of our customers as partners in the work that we do together. Our goal is to supply a cost effective laser solution for the customer’s parts. We look forward to working together in the future.

If you have any questions or concerns, please feel free to contact me. This outline on plastic welding is just a brief overview on what is needed to start a typical laser welding project. Each application is different and customer’s parts all provide different challenges.

Sincerely,
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