



CLEARWELD®



ADAPTING LASER WELDING TO YOUR IDEAS

Dispensing Methodology Selection Guide

The proper dispensing method and equipment is critical to the success of Clearweld's process implementation. Clearweld coatings are specifically designed to optimize the performance of each of these methods.

Clearweld certifies its dispensing partners to ensure that their equipment meets application performance requirements. These partners have the expertise and support capabilities to service Clearweld customers.

Dispensing Methods for Use with Clearweld Materials

Dispense	Principle of Operation	Main Advantages	Limitations
EFD Needle Tip Dispensing	<ul style="list-style-type: none"> Pneumatic valve, with needle tip attached to its outlet orifice, controls the flow of liquid. 	<ul style="list-style-type: none"> Technology is well known. Relatively inexpensive. Provides latitude if a part is slightly bowed in X- or-Y-Axis. 	<ul style="list-style-type: none"> Difficult to control on perfectly flat surfaces. Variations in Z-axis can create problems.
BioDot Microsolenoid	<ul style="list-style-type: none"> Precise volume of fluid is pumped to a miniature valve that opens and closes at a very high rate. 	<ul style="list-style-type: none"> Very precise volume control. Precise location of deposition. Very small volumes can be dispensed accurately. 	<ul style="list-style-type: none"> More expensive because of the precision of the system. Line width is relatively narrow (1-3mm) unless multiple valves are used.
PDI Microsolenoid	<ul style="list-style-type: none"> Pneumatic pressure is used to force fluid through a miniature valve that opens and closes at a very high rate. 	<ul style="list-style-type: none"> Less expensive than precision, microsolenoid system. 	<ul style="list-style-type: none"> Drop size is not as precisely controlled as in precision, microsolenoid system. Line width is relatively narrow (1-3mm).
EFD Spray Nozzle	<ul style="list-style-type: none"> Liquid is fed through an air cap attached to a pneumatic valve to create a spray mist. 	<ul style="list-style-type: none"> Can cover a large area. 	<ul style="list-style-type: none"> Overspray. Masking may be required. Small line size is difficult to achieve.
Ultrasonic Spray	<ul style="list-style-type: none"> Piezoelectric device atomizes a liquid as it flows through a dispense nozzle to create a fine mist. 	<ul style="list-style-type: none"> A wide variety of deposition widths are possible. Low maintenance nozzles, no moving parts. Low velocity, impingement and overspray are minimal. 	<ul style="list-style-type: none"> More expensive than standard spray techniques.



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Suggestions for Coating Application

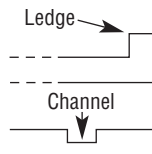
This chart serves as a baseline reference.

Surface	Conditions	EFD Needle Tip	BioDot Microsolenoid	PDI Microsolenoid	EFD Spray Nozzle	Ultrasonic Spray
Ledge	Less than 1mm	Difficult	Difficult	No	No	Yes
	1mm to 3mm	Yes	Yes	Possibly	No	Yes
	Larger than 3mm	Possibly	Possibly	Difficult	No	Yes
Channel	Less than 1mm	Possibly	Possibly	No	No	Yes
	1mm to 3mm	Yes	Yes	Yes	No	Yes
	Larger than 3mm	Yes	Possibly	Difficult	Possibly	Yes
Flat Surface	Line applied to a smooth surface	Possibly	Yes	Yes	Yes	Yes
	Line applied to a rough surface	Possibly	Yes	Yes	Yes	Yes
	Total surface coating for a large area	No	No	No	Yes	Possibly
Tubing	Outside	No	Possibly	No	Possibly	Yes
	Inside	No	Possibly	No	No	Unknown
	Capillary Tubes	No	No	No	No	Yes
Patterns	Circular Patterns	Possibly	Yes	Yes	No	Yes
3D Parts	Uniform Surface	Possibly	Yes	Yes	No	Yes
	Irregular Surface	No	Yes	Yes	No	Yes
Microfluidic	Thin channels	No	No	No	Yes	Unknown
Precision	Accuracy required	No	Yes	No	No	Possibly

Note: "Possibly" indicates that it may be possible to use this technology, however it would be on a case-by-case basis.
"Difficult" indicates that the technology could be used, but there might be some difficulty and may detract from the application.

Explanation of Terms

Ledge: A projection that creates a narrow shelf.



Channel: A groove or trench in a part.

Smooth Surface: A surface that is free of obvious roughness or irregularities. This term is used in describing the application of a single line to the surface, rather than coating the entire surface.

Rough Surface: A surface that contains irregularities, protrusions, or ridges. This term is used in describing the application of a single line to the surface, rather than coating the entire surface.

Tubing: A part that has the shape of a hollow cylinder, such as connectors used in medical devices.

Capillary Tubing: Tubing with a small internal diameter, notably used in medical devices.

Microfluidic: A device containing small, sealed channels that is used for medical assay.

Irregular Shapes: Parts that have 3-dimensional variation in their design, rather than planar parts.

Large Sheets: This generally infers a planar sheet of material that is several square inches in total surface area. This term is used in describing the coating of the entire surface area rather than applying a single line or pattern to the surface.

Circular Patterns: A continuous circle or oval patterns imposed upon a flat surface.



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