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Plastic Working Tools and Industrial Supplies

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Injectiweld Plastic Welding

The Drader Injectiweld is a plastic welding apparatus that thermally bonds plastic together with a strong weld. Drader classifies its welder as an Injection welder because it injects a shot of molten welding rod into the plastic parent material. The quality of the weld is very high even when people do not have a lot of experience. The result approaches 100% weld strength without the use of hot air or gas.

The Injectiweld has an automatic feed system that enables a person to use the welder with one hand. Welding rod is automatically drawn into the gun by a set of rod driver wheels. The rod is fed into the connecting tube where it is nipped off, packed into the barrel, and melted. Allowing the user a free hand to hold the parent material gives Drader an advantage over other welders. In short, Drader is easier to use than other welders.



Benefits: As explained elsewhere, most welders use hot air to preheat the plastic. The Injectiweld is different. It uses radiant heat to melt the plastic. Drader's interchangeable tip is heated to the optimal weld temperature of the parent material. When placed onto the plastic, the tip starts to melt the plastic; preparing it for an injection shot. Since the outlet of the tip submerges into the parent material, scraping off the surface oxidation is normally not necessary and people save time by skipping this time consuming step. Virtually no oxidization takes place during the Drader welding process unlike the processes that use hot air. It is important for the tip to maintain contact with the parent material so that the plastic plasticizes in the proper manner.



Materials that can be welded with the Injectiweld

The following table lists materials commonly welded with the Injectiweld. While many thermoplastics are weldable with the Injectiweld, some resins have not been tested extensively and therefore do not appear on the following list. Note the weld temperatures are specific to the Injectiweld system.

Material	Description	Injectiweld Weld Temp in C	Injectiweld Weld Temp in F
HDPE	High Density Polyethylene	265	510
LLDPE	Linear Low Density Polyethylene	265	510
HMWPE	High Molecular Weight Polyethylene	280	536
PP	Polypropylene	280	530
ABS*	Acrylonitrile Butadiene Styrene	265	510
PS	Polystyrenes	255	490
PVDF*	Poly vinyl difuride	300	572
PA*	Polyamide 6 (nylon)	300	570
PC*	Polycarbonate	300	570
PU	Polyurethane (thermoplastic)	300	570
Santoprene	TPE Thermoplastic Elastomer	280	530
X-Linked PE*	Cross-linked PE (See Special Treatment)	300	572

Materials that cannot be welded with the Injectiweld

Thermoset plastics are not weldable because they do not melt when heat is applied to them. Examples: F.R.P. (Fiberglass), Bakelite, Epoxies, Phenolics, Melamine, etc...

PVC-U / PVC-P – PolyVinylChloride (Rigid / Flexible). The lowest temperature setting of the Injectiweld is too high for PVC-U or PVC-P. The material will burn inside the welder's barrel. This will release chlorine gas, which is harmful to the operator's health and will damage the aluminum parts of the welder.

PMMA – PolyMethyl MethAcrylate. Using this material inside the Injectiweld may cause the Piston Rod to become stuck. When PMMA is sheared, it exhibits very sharp edges around the circumference of the breakage. These sharp edges may prohibit the Piston Rod from moving backwards.

PFA – PerFluoro Alkoxy The weld temperature for this material exceeds the maximum temperature setting.

Features and Benefits of the Injectiweld

Feature	Benefit	Reason
Hot tip and high-pressure injection	You will get a consistent, high quality weld, even if you do not have a lot of expertise.	Drader's hot tip prepares the parent material for a pressurized shot of molten welding rod. The shot of molten rod physically mixes with the melted parent material. The result, when cool, is a high quality weld.
Measured shot & consistent pressure	You can apply the right pressure on the welding rod and have a high quality weld every time.	Welding rod applied at a proper and consistent pressure makes a quality weld. The Injectiweld takes care of these details by reliably delivering a measured shot of molten welding rod.
Heated tip	Save time and save money.	As it melts the plastic, the injection point of the tip sinks below the surface of the plastic and below the layer of oxidation. Therefore, there is no need to take time and scrape away the oxidization layer on top of the plastic unless heavy contamination exists.
Interchangeable tip	Your welder can perform many tasks.	Make fillet welds, spot welds, tack welds and butt welds just by changing Drader's tip. Fill voids; add flanges and fittings; make models, prototypes, and repair plastic. Weld bead sizes range from 1.5 mm (1/16") to about 13 mm (1/2").
Variable temperature setting	You have a versatile welder that can weld a great variety of thermoplastics.	Drader Injectiweld has a temperature range of between 200 and 300 °C (390 - 575 °F). Set the tip temperature to the optimal weld temperature of the plastic material to ensure a proper melt and a high quality weld.
Radiant heat vs. hot air	Weld thin parts with greater ease.	Hot air may deflect over a considerable area and warp thin plastic. Injectiweld has a localized heating area, and therefore welding thin parts is easier.
One hand operation	You can operate the welder with one hand and have a free hand to hold the plastic parts.	The Injectiweld is easy to use and is efficient because it is often necessary to hold two parts while welding them together. Speed up the entire welding process since you may not have to clamp or tack the part before welding.
Compact size	You can weld in confined spaces.	Injectiweld's one-handed operation and compact size allows greater range of movement in confined spaces and areas often inaccessible to other welders.