

TECHNICAL BULLETIN

TARGET MARKET ROOFING

BUILDING TRUST



Subject: Pro-Weld™ Visual Welding Temperature Indicator

24-02

The Pro-Weld™ visual indicator assists the Sika Authorized Applicator by providing real-time visual feedback that the proper welding temperature and speed settings are being used while welding Sika PVC membranes. This unique quality control feature utilizes thermochromic ink technology and rapidly identifies improper welding settings and helps eliminate false welds.

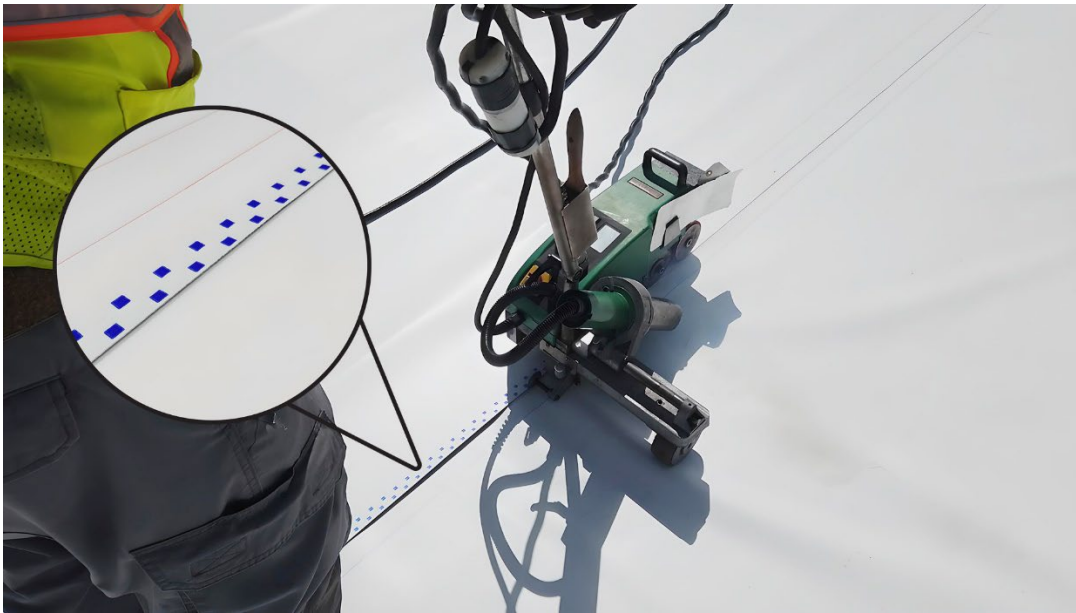


Figure 1: Pro-Weld in Use

DESCRIPTION

- Pro-Weld is an indicator ink that changes color when exposed to certain temperature ranges that correlate to the correct welding window.
- Pro-Weld is blue in color and changes color to a clear or light gray color when the membrane reaches a sufficiently high temperature during machine welding. In cold weather applications, the color change may be from blue to a very faint blue.
- Pro-Weld is applied during production in two ¼" wide dashed lines running parallel to the left edge of the membrane approximately ¼" and ¾" from the edge (see Figure 1). This helps to establish the depth of a quality weld.
- The Pro-Weld color change indicates that the welding speed and temperature settings are sufficient to cause the membrane to reach a temperature that typically correlates to the presence

of a good weld. However, it is still necessary to confirm the presence of a good weld by established techniques.

- **Pro-Weld does NOT replace the need to probe all seams or make daily cross-section weld test cuts.**
- Other variables such as ambient temperature, wind, pressure/weight applied to the welding wheels, and power fluctuations can also impact the weld quality and width.
- Pro-Weld is not permanent. Eventually, exposure to sunlight and the environment will cause Pro-Weld to degrade and disappear.

APPLICATION GUIDELINES

- Pro-Weld provides a real-time, supplemental quality control feature.
- Pro-Weld works with either the Sarnamatic or Leister automatic hot-air seam welders.
- Pro-Weld works best when used to monitor the quality of the machine welds. It can be used to monitor hand welds, but the degree of accuracy is reduced due to the inconsistency inherent in the hand-welding process.
- Under some conditions, Pro-Weld will become slightly less accurate when welding with a Sarnamatic equipped with a speed nozzle attachment.
- Pro-Weld works best when used at ambient temperatures between 15°F and 100°F (-9°C and 38°C). Pro-Weld should not be exposed to temperatures above 150°F (66°C) as this will cause Pro-Weld to change color.
- On very warm and sunny days, prolonged exposure to sunlight may cause Pro-Weld to fade after several hours. Under these conditions, it is recommended to complete welding within one hour of rolling out the membrane.
- Prolonged exposure of the back side of the membrane (dark gray) to the sun during warm days may cause areas of the membrane to reach temperatures over 150°F (66°C). This will cause Pro-Weld to change color prematurely.
- During application at ambient temperatures at or below 15°F (-9°C), the blue color of the Pro-Weld may return hours or days after welding was completed and sustained color change was observed. At ambient temperatures below 0°F (-18°C) the color may return more rapidly. The blue color will permanently disappear after sufficient solar exposure.
- If concentrated pressure is exerted on Pro-Weld after welding (with a metal tool or other such implement) the blue color may return. The blue color will permanently disappear after sufficient solar and environmental exposure.

- Pro-Weld is a tool provided for the benefit of the Sika Authorized Applicator. Pro-Weld will not be used to assess the quality of the installation. If the Applicator decides not to use Pro-Weld, then they can install the membrane using the established Sika guidelines.

INSTRUCTIONS FOR USE

Conduct a welding trial at the beginning and afternoon of each workday to determine the proper welding temperature and speed. Visible evidence that a sufficient weld is being achieved is smoke during the welding operation, shiny membrane surfaces, an uninterrupted flow of gray material from the edge of the completed welds, and the Pro-Weld color change from blue to clear/light gray. Peel the seam to determine the quality of the weld. A quality weld is attained when the membrane ruptures before the weld separates. Once the welding parameters have been determined, begin the membrane installation.

1. Position the roll of membrane so that the side with Pro-Weld is on the top side of the seam.
2. Unroll the membrane with the proper overlap. Pro-Weld should be visible.
3. Perform the first weld of the welding session using the speed and temperature settings that were established in the welding trial. Adjust welding techniques, as needed, on the roof to achieve proper seam welds.
4. During welding look for Pro-Weld to change color from blue to clear/light gray as the hot air welder travels along the seam. Typically, Pro-Weld will change color within a couple lineal feet after the weld is completed.
5. If Pro-Weld does not change color within 5-10 seconds of being exposed to the hot air welder, then stop welding and increase the welding temperature or decrease the welding speed until sustained color change is observed. Once the adjustment has been made continue welding. Check the quality of the weld in the area where the color did not change and repair, if necessary.
6. If the color returns after the completed seam weld, then increase the welding temperature or decrease the welding speed until a sustained color change is observed. Check the quality of the weld in the area where the color returned and repair, if necessary.
7. Once sustained color change of Pro-Weld has been achieved (no return of color after 60 seconds), cut a seam sample and peel test the quality of the seam. A quality weld is attained when the membrane ruptures before the seam separates. If the weld quality is poor or borderline, repair the area and increase the welding temperature or decrease the welding speed until the weld quality improves.
8. Once the settings have been determined which yield sustained color change and good weld quality, the rest of the welding session can be completed according to standard machine welding procedures. Continue to watch the welding for any return of the blue color.
9. If for any reason Pro-Weld needs to be removed, it can be removed using one of the following three techniques:
 - I. Apply high tack duct tape perpendicular to Pro-Weld and pull aggressively to remove.

- II. Bend the membrane by hand until Pro-Weld cracks and peel it away with a fingernail.
- III. Use a putty knife (metal or plastic blade but not sharp) and gently scrape away Pro-Weld.

STORAGE

- Rolls of membrane with Pro-Weld should not be exposed to temperatures above 150°F (66°C) during shipment or rooftop storage. Such temperatures will trigger the color change. If the color change has been triggered, the rolls can be installed but the Pro-Weld color-changing feature will not work.
- Rolls of membrane stored on the roof should remain in the factory packaging with insulation boards placed on top of the rolls then covered with light-colored tarps to keep the membrane as cool as possible. If the rolls are exposed to direct sunlight, then it is possible that Pro-Weld could reach its color-changing trigger point on the outer layers of the portion of the roll in direct sunlight. Therefore, a portion of the roll will have Pro-Weld that has prematurely changed color. The rolls can be installed but the color-changing feature may be intermittent.