

Silicone sealant for solar frame attachment



CASE STUDY

Challenge

A solar panel manufacturer was looking for an effective way to apply silicone sealant to the channels of solar frames, and maintain ratios for best material performance. The customer needed to improve the bead profile consistency and automatically dispense the silicone in the different channel lengths.

Solution

The Graco HFR™ Metering System was chosen for the frame sealant application to provide a consistent and continuous flow of mixed material. The HFR's consistent flow rate dispensed the proper amount of material throughout the frames' channel and met the customer requirements for multiple channel lengths.

The system was equipped with an MD2 Dispense Valve with static mixer, shroud and SS needle. Since the frame's channel is smaller than the static mixer outlet, a SS needle was required to properly place the material into the channel. The MD2 Valve's snuff back feature provided a clean start and stop. To meet the material's ratio range, a 55-gallon drum system was provided for the blue side and a five-gallon supply system was provided for the red side.

Results

With the Graco HFR Metering System, the manufacturer could extrude a bead of two-component silicone into the frame's channel consistently from end to end. Since the HFR is a continuous flow system, the varying frame lengths are not an issue.



The Graco HFR Metering System accurately dispenses two-component silicone and sealants for solar panel frame and rail application



Solar panel with sealed frame

SPECIFICATIONS

MATERIAL SUPPLIER

Dow Corning Corporation

INDUSTRY

Solar Photovoltaic

APPLICATION

- Bonding and sealing photovoltaic module components
- Used for rail bonding, frame sealing and junction box adhesion

MATERIAL SPECS

- *Dow Corning*[®] PV-8303 Ultra Fast Cure Sealant
- Two-part, ultra fast cure silicone sealant for fully automated processes

Typical Properties

- Ratio: (A:B) 100:14 parts by weight
- Viscosity:
 - PV-8300 Base – Extrusion rate: 190 grams/min
 - PV-8303 UF Catalyst Black – 350,000 cP
- Chemistry: Two-component silicone
- Snap Time (working life): 8-10 minute range
- Mixed specific gravity: 1.31
- Color: Black

GRACO EQUIPMENT*

HFR Metering System

CONFIGURATION:

- Part Number: HFRB-21AJABANN
 - Blue Side Pump: 80 cc pump
 - Red Side Pump: 15 cc pump
 - Heat Zones: (None)
- Hoses:
 - Blue side 1/2 in x 10 ft SS braid material hose
 - Red side 3/16 in x 10 ft SS braid material hose
- Accessories:
 - MD2 dispense valve
 - 1/2 in x 36 element disposable mixer, shroud and cap
 - 10 gauge dispense needle

Delivery Method:

- C58318 SS fluid pressure regulators
- CM7C58 55-gal SS Check-Mate[®] supply pump with 3/4 in x 15 ft material hose
- CM7C3F 20:1 5-gal SS Check-Mate supply pump with 3/4 in x 15 ft material hose

**Exact equipment configuration will vary and depend on factors such as rate of output, length and size of hoses, bead size desired, and container sizes.
Graco Material Test: DR314*

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