TechTips
VOLUME 13

Water-Based Adhesives (Only The Tacks)

Water-based adhesives are a key product in HVAC manufacturing. It is important to utilize products that are low VOC content, non-flammable, and solvent free. When it comes to selecting a water-based adhesive there are key things to keep in mind.

- Initial bonding time (when the adhesive will hold the insulation to the metal substrate)
- Dry time (time when the adhesive is fully cured)
- Viscosity (how thick or thin the product is)
- Non-flammable (especially key when using weld pins)
- Application method (brush, roller, spray)
- Specific equipment requirements (coil line, roto-bonder, etc.)

Adhesive Bond

First, it is key to understand that a water-based adhesive is providing a mechanical bond of the insulation to the metal substrate. Once the adhesive cures, the water evaporates and results in a strong bond between the fiberglass fibers and the duct. Therefore a water-based adhesive will not have a residual tack to the surface which is beneficial for not attracting or collecting dust and debris inside the completed duct system.

Hardcast® Product Offering

Hardcast offers 4 different water-based adhesives. These products are called COIL-TACK™, ROTO-TACK™, BOOTH-TACK™, and SPEED-TACK™. We receive questions about the names of the products and if that requires you to use them as named. For example, "ROTO-TACK must only be used in a roll-coating application, such as a Roto-Bonder?". The purpose of this Tech Tip is to share how the products were engineered for specific applications. But more importantly that they can be used in **any application you so choose whether its brush, roller, or spray applied.**

COIL-TACK was engineered for spray or extruding in a coil line manufacturing operation.

ROTO-TACK was engineered to be used in roll coating systems.

BOOTH-TACK was engineered for spray booth applications.

SPEED-TACK was engineered for fast-tacking spray applications.

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Water-Based Tack	Initial Bonding Time (applied 5 mils @ RT)	Dry Time (applied 5 mils @ RT)	Viscosity (cps)	VOC (g/l less water)	Solids Content	Color (wet)	Color (dry)	Weight per Gallon	ASTM E84	ASTM C916 Thermal Insulation	Packaging Sizes
COIL-TACK	30 min	45 min to 1 hour	11-000 - 12,000	71	36% +/- 2%	White/Grey	White/Black	10 lbs +/- 0.2	0/0	Pass	4-1 gal, 5-gal, 50-gal
ROTO-TACK	25 min	40 min	3,500 - 4,500	73	38% +/- 2%	White	Clear	8.7 lbs +/- 0.2	0/0	Pass	5-gal, 50-gal
BOOTH-TACK	10 min	20 min	8,500 - 9,500	72	53% +/- 2%	Grey	Black	10 lbs +/- 0.2	0/0	Pass	5-gal, 50-gal
SPEED-TACK	2 min	20 min	15,000 - 17,000	70	45% +/- 2%	Cream	Cream	8.7 lbs +/- 0.2	0/0	Pass	5-gal, 50-gal

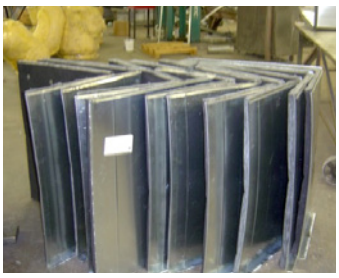
NOTE: All 4 products have flame and smoke spread values of 0/0 and pass ASTM C916 test requirements for thermal insulation. The list is shown in decreasing order of initial bonding time – COIL-TACK taking the longest at 30 minutes and SPEED-TACK taking the least at 2 minutes. However, note that all products have a dry time of 45 minutes or less.

Bonding Time – Choosing the Right Product

When choosing a product based on initial bonding time, you must take into account the application orientation and when the insulation will be pinned to the substrate.

When pinning immediately

- If you are pinning immediately, the initial bonding time is of less importance as the insulation pins will hold the insulation in contact to the substrate whether you stack horizontally or vertically.

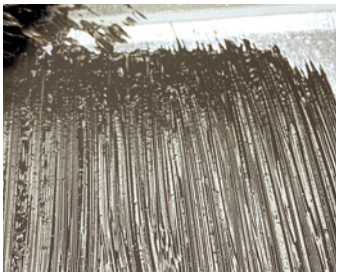


Pinning later

- Horizontal Orientation stacking – the initial bonding time is of less importance. Gravity will do the job to hold the insulation to the substrate.
- Vertical Orientation stacking – the initial bonding time must be minimized in order to hold the insulation to the substrate.

Note: If you must pin later and need to stack the insulated panels in the vertical orientation, then we suggest utilizing an aerosol or solvent-based adhesive for the immediate tack they supply.

Application Methods and Expected Results



When applying any of the Tacks make sure you are getting “hills and valleys” versus a perfectly flat surface. These “hills and valleys” allow the adhesive to soak further into the fiberglass fibers to achieve a better bond. If you have a smooth surface, you will get minimal contact with the insulation fibers. When using a brush application you naturally get the “hills and valleys".

If utilizing a roller, use a medium to thick knap roller, typically ¾" or taller.

If you are spray applying the Tacks, then adjust the aerosolization pressure to get a good splatter pattern.

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HVAC-4840 - “Tech Tips Newsletter-Volume 13” - 06.14.21