Tack Panel Adhesive System

For the Secret Fixing of Rainscreen Cladding Systems

LA POSA PER ECCELLENZA

TECHNORIUNITE

Via Guido Reni 2/r - 42014 Castellarano (RE) Italy - e-mail: info@technoriunite.it tel. 0039 0536 857514 Fax 0039 0536 857524

Rainscreen cladding principles

Water penetration may occur through a building façade even after considerable effort has been made to ensure the walls are fully sealed by the use of barriers, joints and sealants. Rain can be forced through the joints and openings of a typical building façade through the action of wind or via external and internal pressure differences.

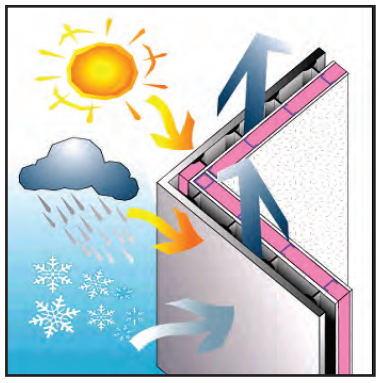
Ventilated rainscreen cladding overcomes these potential problems by utilising the phenomena of pressure equalisation. The principle of pressure equalisation offered by a rainscreen cladding system ensures the weathertightness of the building structure by eliminating the methods of which rain may enter the façade.

Ventilated rainscreen cladding prevents water from penetrating into the buildings skin due to pressure

Rainscreen cladding benefits

Developed as early as the 1940's rainscreen overcladding came into widespread use in Europe and Canada in the 1970's. It is a tried and tested concept backed up with many years experience in the development of relatively easily installed lightweight systems that are currently available. The main benefits of a fully integrated rainscreen cladding system for both new build and refurbishment include:

- Aesthetic improvement of the building façade with a wide choice of external finishes available
- Building structure protected from weathering yet remaining vapour permeable
- Increased thermal performance
- Extremely cost effective
- Ease of construction with none of the inconvenience associated with 'wet' render trades



Rainscreen cladding protects a building against any weather condition.

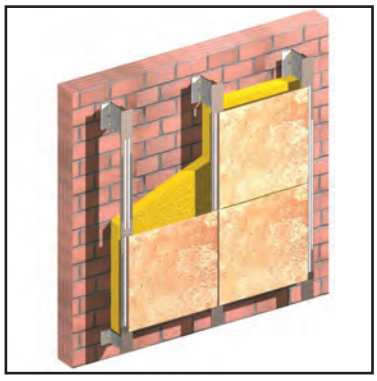
Rainscreen cladding construction

A ventilated rainscreen cladding system based upon pressure equalisation usually comprises of the following:

- The outer rainscreen which:
  - provides the 'finished look' of the building
  - deflects rain and diverts water away from the cavity
  - transfers wind loading to the wall via a carrier rail system
- The inner cavity where:
  - any penetrating rain is drained away
  - insulation may be incorporated
- The primary airtight wall structure to which the appropriate carrier rail system is mechanically fixed transferring wind loadings

There are numerous ways to which cladding finishes can be fixed to a carrier frame. This **Tack Panel Adhesive System** was developed to allow the designer the freedom to design façades without any unsightly fixings.

The permanent elastic nature of our **Tack Panel Adhesive System** combined with a tenacious adhesion to a variety of panel substrate types, accommodates the natural differential movements of varying building materials for the life of most panel types.



Typical rainscreen cladding components.

The Tack Panel Structural Fixing System

This ingenious and simple system offers both the designer and installer alike many advantages over comparable rigid mechanical secret fixing systems

Tack Panel Adhesive System is suitable for the fixing of:

- Composite
- Ceramic
- High pressure laminate
- Cement based cladding panels

as well as most metal and powder coated substrates.

System components are:

- **Cleaner 205**
  A surface conditioner, adhesion promoter and general degreaser for all non-porous substrates and cladding panels.

- **Tack Panel Primer**
  A unique single part epoxy polyurethane formulation. It provides a black UV stable surface, promotes adhesion and is suitable for use on porous and non-porous substrates.

- **Tack Double Sided Adhesive Tape**
  A 3mm thick charcoal black closed cell polyethylene tape. It is used for the temporary support for cladding panels while the **Tack Panel Adhesive** cures. It also ensures the finished thickness of adhesive is at the optimum required to accommodate differential movement of cladding elements, whilst preventing adhesive being exposed through the shadow gap.

- **Tack Panel Adhesive**
  A moisture curing single component polyurethane resin based adhesive, capable of withstanding extreme dynamic loads and climatic conditions. It is supplied in 310cc cartridges or 600cc foil bags. Once cured the adhesive remains permanently elastic to accommodate differing thermal expansion of various building substrates. It eliminates stress fatigue at corners of panels and prevents cold bridging.

Testing and Durability

Stress Patterns
(side elevation)

Mechanical fixing
eg rivet (nailed, screwed)

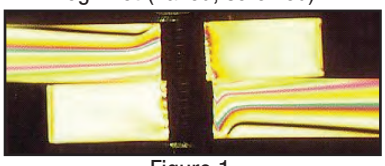


Figure 1
Elastic bonding

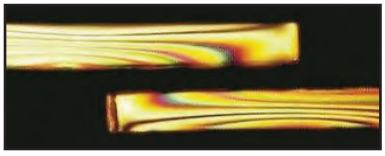


Figure 2

Elastic Bonding Technology

In figure 1 the mechanically fixed jointed elements are shown under load. Stress peaks are clearly concentrated around the bolts leading to excessive strain eventual bond failure. In figure 2 the jointed elements have been bonded with a elastic adhesive. Under similar loading the stresses are evenly distributed along the lap joint creating optimal bond performance over the total contact surface.

Durability Testing - Wind and Static loading

The system properties including ultimate bond strength and stress distribution have been clearly established using independent testing authorities (Oxford Brookes University).

The performance of the **Tack Panel Adhesive System** utilising wind loading testing procedures has produced results up to five times the maximum design load (Taylor Woodrow testing facilities).

The **Tack Panel Adhesive System** is BBA certificated (No. 05/4218) and deemed suitable for the fixing composite, ceramic, high pressure laminate or cements based rainscreen cladding panels.

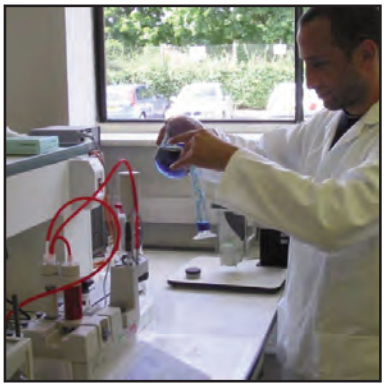
BBA BRITISH BOARD OF AGRÉMENT
CERTIFICATE No 05/4218

Durability Testing - Weathering

A durability study carried out by Bouwcentrum Technology Limited in Holland in September, tested panels bonded with **Tack Panel Adhesive System** under a recognised accelerated testing regime. The adhesion of the **Tack Panel Adhesive System** was scrutinised before and after the testing period and concluded even after 60 days testing (simulating 40 years in service) no appreciable reduction in performance was noted.

Durability Testing - Fire Performance

Critical rainscreen cladding systems incorporate intumescent fire breaks effectively eliminating the spread of flame across the façade. When incorporated within such a system the **Tack Panel Adhesive System** has been tested and awarded a class ‘O’ fire rating.



Quality Assurance

As part of ISO 9001/EN29001, the quality of the **Tack Panel Adhesive System** is constantly checked and monitored. Adhesion and durability testing may be carried out upon request for varying types of cladding materials.

Installation

The carrier frame and other non-porous substrates are thoroughly cleaned and degreased using **Cleaner 205** and allowed to dry (approx 30 seconds).

Both the back of the rainscreen panels and the carrier frame are primed with **Tack Panel Primer**. Subsequent materials must be applied within 8 hours.

Next a 3mm thick charcoal black double-sided tape is applied to the primed carrier rail. This tape provides temporary support whilst the adhesive cures, controls adhesive flow and final adhesive thickness to optimise achieved performance.

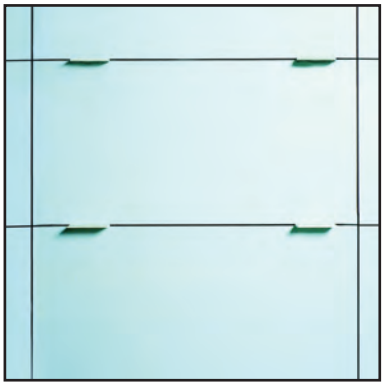
A triangular bead of **Tack Panel Adhesive** is applied by caulking gun through a pre-cut nozzle to the inner most edge of the double-sided tape. A minimum distance of 10mm should be maintained from the tape.

The protection strip on the double-sided tape is then removed.

Position horizontal shadow gap trims if specified taking care to remove the double-sided tape from behind the trim.

Without delay, place the cladding panels onto freshly applied **Tack Panel Adhesive**. Once slight adjustments on position have been effected, press firmly ensuring full contact with the double-sided tape is achieved.

Ensure all panels are positioned within the time specified for bonding. Where necessary use packers to achieve the correct line and level. (Note: with heavy elements, additional temporary support may be required).



Once initial set has occurred, remove all temporary support and installation packers.