

ROBOND™ Prohesion

New Water-Based Acrylic PSA Grabs Higher Performance Applications

Environmentally Advanced
Technology on Par with
Solvent-Based Adhesives

If you could sneak a peek into literally thousands of innovative, new industrial and consumer products, you'd witness one very surprising finding. It's this: these goods owe their slimmer profile, lighter weight and lasting performance to pressure-sensitive adhesives (PSAs) that tightly bond together their inner workings.

These highly engineered adhesives secure essential parts within our homes, appliances and electronic equipment. They dependably assemble an array of automotive parts that enhance styling and comfort. In all, they perform many modern wonders that make our present day lifestyle possible and pleasurable. PSAs play an important undercover role in so much of our surroundings as they seal, support and secure the thousands of possessions we use every day.

The Sensible Solution for Performance, Cost and Environmental Responsibility

In more and more cases, PSAs produced with water-based acrylics are the smarter, sensible, environmentally advanced solution. By proving their mettle on tough bonding applications in harsh conditions, these increasingly capable adhesives are the rising stars that are fast winning fans in solvent-based adhesive strongholds like automotive and industrial tapes.

Rohm and Haas, the world's leader in aqueous acrylic technology, invests substantial research and development dollars to extend the performance of this versatile chemistry. ROBOND Prohesion is their newest water-based acrylic PSA. It promises producers of pressure-sensitive tape and material an outstanding new tool to drive profitable growth in an increasingly competitive marketplace.

ROBOND Prohesion: Water-Based with Solvent-Like Capabilities

With their world-class acrylic polymer expertise, Rohm and Haas scientists have become adept at reducing the long-standing gaps between water-based and solvent-based PSAs.

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The proprietary technology in ROBOND Prohesion closes many of those gaps. With excellent initial tack and quick peel build, ROBOND Prohesion adheres aggressively to a variety of surfaces. It also exhibits exceptionally high levels of cohesive strength and resistance properties that are critical for specialty tapes and materials. Rigorous testing proves that the performance necessary for demanding applications can indeed be delivered.

Here are just some of the results for ROBOND Prohesion:

» **Shear resistance:** holds for more than 100 hours with 2kg per square inch on stainless steel. This is the first and only emulsion PSA to exhibit such impressive values in combination with high adhesion.



- » **Heat resistance:** withstands punishing hot shear tests of 1kg on stainless steel at 150°F for more than 50 hours – a result that exceeds some standard solvent-based choices. No other emulsion PSA has come close to such outstanding heat resistance while retaining this level of excellent adhesion – a stunning achievement for any water-based acrylic PSA.
- » **Plasticizer migration resistance (PMR):** delivers peel retentions topping 50% on polymeric vinyl after heat exposure.
- » **Moisture resistance:** retains more than 80% adhesion after prolonged exposure under severe conditions of 90% humidity at 95°F.
- » **Anchorage:** exhibits superior anchorage to a variety of substrates ranging from stainless steel to low surface energy polyolefin foams.

Emulsion PSAs Continue to Gain Devoted Fans

Beyond superior performance, customers cite a number of reasons for switching from solvents to ROBOND™ emulsions. “Solvent-borne choices are increasingly expensive and more tightly regulated,” says Chris Urheim, Rohm and Haas PSA marketing manager. “And tape companies sense that solvent-borne producers are pulling back on research, which will limit future solvent adhesive options. On the other hand,” says Urheim, “aqueous producers are offering innovative, new PSA products with better performance.” Recent statistics from Skeist Incorporated, an independent market research firm, confirm the widespread trend. During the last seven years, emulsion acrylic PSAs have grown at greater than 4% per year and will continue to outpace rivals. Emulsion acrylic technology now claims a 30% market share, making it the most popular choice for pressure-sensitive applications.



» **Environmental Benefits:** contains no solvents, therefore no solvent emissions or expensive solvent recovery or disposal. Finished products will be lower in odor, fogging and VOCs. Such a profile dovetails with tightening legislation in many regions and downstream markets.

New Opportunities: Good Coatability and Consistency Open the Door

Rohm and Haas's formulating know-how means that the many companies who switch to ROBOND Prohesion from their previous solvent-based

adhesives can use existing equipment with only minor adjustments. ROBOND Prohesion can be tailored to nearly any coating method.

"If you are a predominantly solvent-based house with high viscosity and thick coat weights, we can custom formulate

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The Very First Emulsion PSA to Meet GM Automotive Specifications?

Historically, aqueous PSAs haven't qualified for stringent automotive interior trim assembly requirements. The harsh conditions of extreme temperature swings, aggressive plasticizers in foam substrates and tough-to-bond surfaces like ABS and painted metal made solvent-borne adhesives standard for these uses.

ROBOND™ Prohesion may become the very first emulsion PSA to supplant solvent adhesives for selected applications. Tests indicate that ROBOND Prohesion meets the GM3607M adhesion requirements for closed cell foam tape often used to secure seals and mitigate NVH (noise, vibration, harshness) in car interiors. Requirements include demanding standards such as peel with a minimum of 875 N/m width or foam tear when bonded to cleaned or painted metal and peeled at a 180-degree angle.

Manufacturers like Toyota are challenging suppliers to reduce VOCs. ROBOND Prohesion could provide them with a groundbreaking new route to top tape performance and a dependable method for meeting OEM cost objectives while better safeguarding workers and the environment.

Customer Trials Substantiate Performance

ROBOND™ Prohesion Beats Solvent Choices for Heat Resistance

One specialty tape manufacturer tested ROBOND Prohesion as an economical replacement for a workhorse solvent-borne adhesive it currently uses. Customers employ the company's products in automotive, graphic arts, electronics and sound damping applications.

A company representative described the excellent performance of ROBOND Prohesion as "good as or better than the solvent-based choice," with a high SAFT and particularly good peel strength on stainless steel, talc-filled polypropylene, hard-to-bond painted surfaces and ABS. "During heat testing, the shear exceeded that of our solvent system," he notes, adding that ROBOND Prohesion also exhibited outstanding anchorage to low surface energy substrates.

Exceptional Performance Revealed Through Collaborative Testing Procedures

Another leading specialty tape manufacturer tested ROBOND Prohesion and found its performance to be very close to a key solvent acrylic adhesive they now use. The company favors the environmentally advanced composition of ROBOND Prohesion and is investigating future applications. According to the company, Rohm and Haas greatly facilitated their testing procedures.

A company spokesperson said, "Normally we run trials right on our manufacturing equipment, but when we're busy, trials necessarily become lower priority. Rohm and Haas saved us considerable time by using their own pilot coater to produce a short-run with ROBOND Prohesion that we could send directly to our customers for feedback."

Other leading tape producers also praise the high level of supplier support. "Rohm and Haas retains a superior technical staff," says a representative from another tape producer involved in the joint testing process. "Their openness and ability to collaborate are on par with the best."

Beyond Tape: ROBOND Prohesion Spreads Its Good News

With so many exceptional characteristics, ROBOND Prohesion impresses companies that develop products other than tapes. One specialty pressure-sensitive emulsion coater evaluated it for diverse applications in premium labels, custom PSA constructions and graphic arts.

The company's research and development representative praised the bonding agent's firm adhesion to plastic surfaces like vinyls, olefins and polyesters, plus more unusual substrates. "For our specialty construction customers, this adhesive has to handle varying substrate compositions," he notes, adding that the adhesive's shear properties impressed him. "Our trials showed that it performed very well on textiles and woven products, for example."

The environmentally advanced composition of ROBOND Prohesion dovetails with the company's environmental and safety commitments, too. "We choose to coat with emulsion technology because it delivers economic, environmental and safety advantages. Having the performance of solvent systems without the need for flammable solvents and incinerators is a huge advantage," he concludes. "Rohm and Haas led the way to safer, better water-based coatings and paints, and it's doing the same for adhesives. It's the innovation leader for advanced emulsions."



ROBOND Prohesion to the same viscosity you are used to,” says Don Pierson, Rohm and Haas PSA technical service manager, who adds that ROBOND Prohesion is specifically formulated for good coatability when applying heavier coat weights. “Conversely, if you usually run water-based adhesives with low viscosity, we can adjust to that viscosity precisely as well,” adds Pierson. Customers may find that line speeds increase as the solvent-free nature of ROBOND Prohesion exhibits good drying characteristics and eliminates constraints on solvent drying rates.

With low initial investment required to adopt ROBOND Prohesion, PSA tape and material producers can expand their product range quickly and gain access to markets and applications they may not have considered previously.

Thinking Outside the Box

What might those markets and applications be? As early adopters of

ROBOND Prohesion are discovering, the real question is, ‘What can’t it do?’

ROBOND Prohesion performs in countless applications previously dependent on general-purpose solvent acrylic PSAs. It really excels in foam, film, non-woven and transfer tapes (no backing) using either double-sided or single-sided construction for:

- » **Building and construction:** window muntins, glazing, mirror backing and more.
- » **White goods:** sound and vibration dampening and more.
- » **Graphics:** end caps, temporary displays, signage mounting and more.
- » **Automotive:** gasketing, NVH (noise, vibration, harshness), interior trim, mirror backing and more.
- » **General assembly:** wire harnessing, nameplate mounting and more.

ROBOND™ Prohesion Performance at a Glance

- » Economical substitute for general-purpose solvent-borne acrylic adhesives
- » Environmentally advanced composition with very low VOC emissions
- » Excellent initial tack, quick peel build
- » Aggressive adhesion to a wide variety of low and high energy surfaces
- » Exceptional shear resistance
- » Superior heat resistance that exceeds some solvent-based choices
- » Superb plasticizer migration resistance
- » Water resistance that retains more than 80 percent of peel
- » Unyielding anchorage to both low and high surface energy substrates
- » Cutting-edge property balance that combines high adhesion with high cohesion
- » Good coatability and drying characteristics