WHITE PAPER

NECAL 8292 Pressure-Sensitive Adhesive Foam Tape

High-Performance Bonding Solution for Low-Surface-Energy Materials

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Executive Summary

NECAL 8292 is a double-coated pressure-sensitive adhesive (PSA) tape engineered specifically for bonding low-surface-energy (LSE) materials such as polyethylene and polypropylene. Featuring a modified acrylic adhesive and a durable closed-cell polyolefin foam carrier, NECAL 8292 provides excellent initial tack, long-term creep resistance, and reliable performance across a broad temperature range.

Industries such as automotive, appliance, transportation, marine, agricultural equipment, RV, and electronics increasingly require adhesives that offer strength, versatility, and durability. **NECAL 8292** delivers on all fronts, making it a preferred bonding solution for components, panels, foams, gaskets, graphics, and assemblies.

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1. Introduction

Modern manufacturing is increasingly reliant on **LSE substrates** due to their durability, lightweight nature, and cost-effectiveness. However, these materials present bonding challenges: traditional adhesives struggle to achieve proper wet-out and long-term adhesion.

NECAL 8292 was developed to address these challenges by offering a high-performance PSA tape formulated to bond reliably to LSE surfaces, withstand environmental demands, and support a wide range of industrial applications.

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2. Industry Challenge: Bonding Low-Surface-Energy Substrates

LSE materials are commonly used across industries including transportation, RV, marine, agricultural equipment, and electronics. Their chemical structure resists bonding, especially under stress, vibration, or environmental exposure.

Key challenges include:

- Poor wet-out of traditional adhesives
- Creep under sustained load
- Temperature-related bond failures
- Surface irregularities
- Vibration or dynamic movement in end-use environments

Manufacturers need adhesives that can bond securely under these conditions—without primers or mechanical fasteners.

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3. Product Overview: NECAL 8292

NECAL 8292 is a **two-side coated foam transfer tape** designed for reliable adhesion to LSE substrates. Its **modified acrylic adhesive** provides strong tack and holding power, while the foam carrier conforms to irregular surfaces and distributes stress evenly across the bond line.

Key Attributes

- Engineered specifically for **LSE bonding**
- Excellent initial **tack and creep resistance**
- Foam carrier **absorbs movement and surface variation**
- Performs in **extreme environments**
- Compatible with a **wide variety of manufacturing processes**

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4. Technical Construction & Physical Properties

Construction

- **Total Thickness (without liner):** 35 mil
- **Foam Carrier:** ~31 mil black polyolefin blend closed-cell foam
- **Adhesive:** 2 mil modified acrylic LSE adhesive on each side
- **Available is roll or sheet format:** Converted to your preferred press ready format

Performance Properties

- **180° Peel from Stainless Steel (both passes):** > 5 lbs after 16-hour dwell (PSTC-101)
- **Loop Tack:** > 5 lbs (PSTC-16)
- **Shear Adhesion:** > 7 days (1" × 1" × 227 g @ 72°F)
- **Application Temperature:** 50°F minimum
- **Service Temperature Range:** –40°F to 300°F
- *All tests conducted with 2 mil PET backing.*

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5. Advantages of NECAL 8292

Optimized for Low-Surface-Energy Materials

The **modified acrylic adhesive system** is formulated to bond reliably to plastics like polyethylene and polypropylene without primers.

Durable in Demanding Environments

The tape maintains integrity under:

- Heat and cold extremes
- Humidity and moisture exposure
- Vibration and dynamic load
- Outdoor conditions

Conformable Foam Carrier

- Absorbs mechanical stress
- Bridges uneven surfaces
- Improves long-term bonding reliability

High Initial Tack & Fast Application

Ideal for high-speed assembly lines and pressure-sensitive bonding processes.

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6. Industry Applications & Use Cases

Automotive & Transportation

- **Interior trim** bonding
- **Wire harness** management
- Insulation and **Noise, Vibration, and Harshness**
- **Plastic** component attachment

Appliance & Consumer Goods

- **LSE plastic** housings
- Control **panels and nameplates**
- Vibration-damping foam bonding

Industrial & Electronics

- **Gasket and foam** assembly
- **Acoustic** materials
- Lightweight structural components

Marine & Recreational Vehicles

- **Moisture-resistant** bonding
- **Exterior and interior** component attachment

Dimensional Graphics

NECAL 8292 is **perfect for dimensional graphics** used across:

- **RVs**
- **Boats**
- **Agricultural Equipment**
- **ATVs and Powersports**

Its high-tack LSE adhesive and compressible foam carrier deliver a strong, durable bond for emblems, molded badges, raised graphics, and branding plates—even on textured or contoured surfaces.

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7. Bonding Instructions

To ensure optimal bond strength:

1. **Prepare the surface**
    - Clean and dry the substrate to remove dust, oil, and contaminants.
2. **Apply firm, uniform pressure**
    - Improves wet-out and maximizes adhesive contact.
3. **Allow full-dwell time**
    - NECAL 8292 reaches maximum bond strength after **72 hours**.

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8. Storage & Shelf Life

- Store at **72°F** at **50% relative humidity**
- Shelf life: **Minimum 2 years** under recommended conditions
- Higher temperatures and humidity may affect performance

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9. Conclusion

NECAL 8292 delivers a reliable, high-performance solution for bonding low-surface-energy materials across a wide array of industries. Its combination of high tack, excellent environmental resistance, and conformable foam construction makes it ideal for challenging applications—from structural components to dimensional graphics in RV, marine, agricultural, and powersports markets.

Whether used in manufacturing, assembly, or decorative branding applications, **NECAL 8292** provides consistent performance and long-term durability.

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10. Notice

The values presented in this document represent typical performance characteristics. Users should confirm suitability in their specific applications and conditions. These values are not intended for specification development or performance guarantees.
