**Description**

THIXON™ OSN-2-EF is a general-purpose one-coat adhesive for bonding various elastomers to metals, such as hot and cold rolled steel, stainless steel alloys, brass, aluminum, and zinc plated metals. THIXON OSN-2-EF is formulated without reportable levels of lead (or other heavy metals), chlorinated solvents and ozone-depleting chemicals.

THIXON OSN-2-EF bonds Natural Rubber (NR), Polybutadiene (BR), Polyisoprene (IR), Hypalon 1 (CSM), Styrene Butadiene Rubber (SBR), Chloroprene (CR), and Polyacrylate (ACM).

1 Hypalon, E.I. DuPont de Nemours & Co.

THIXON OSN-2-EF is also used for post-vulcanization bonding. In addition, THIXON OSN-2-EF bonds rubber to synthetic fibers such as rayon and polyester.

**Typical Physical Properties**

These properties are typical but do not constitute specifications.

<table>
<thead>
<tr>
<th>Property</th>
<th>ASTM Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Black</td>
</tr>
<tr>
<td>Viscosity, #3 G.E. Zahn cup</td>
<td>24 seconds</td>
</tr>
<tr>
<td>Viscosity, Brookfield #3 spindle at 100 RPM</td>
<td>230 cps</td>
</tr>
<tr>
<td>Non-volatile solids by weight</td>
<td>25%</td>
</tr>
<tr>
<td>Volume solids</td>
<td>16.25%</td>
</tr>
<tr>
<td>Spec. Gravity</td>
<td>0.97</td>
</tr>
<tr>
<td>VOC content per gal</td>
<td>5.95 lbs</td>
</tr>
<tr>
<td>Weight per gal</td>
<td>8.1 lb</td>
</tr>
<tr>
<td>Flash Point (Seta)</td>
<td>25°F</td>
</tr>
<tr>
<td>Cure temp range</td>
<td>250-450°F</td>
</tr>
<tr>
<td>Sugg. film thickness</td>
<td>0.6 - 1.5 mil</td>
</tr>
<tr>
<td>Shelf life unopened</td>
<td>6 months</td>
</tr>
</tbody>
</table>

**Environmental Resistance:** Properly prepared bonds will resist heat, salt fog, oil, and water immersion.

**Directions For Use:** Preparing the Surfaces: First, remove contaminants by alkaline cleaning or solvent degreasing. Then gritblast the metal surfaces with #40 or #50 grit, and solvent degrease them. The metal surfaces can also be pretreated with iron or zinc phosphate, chromate conversion, and acid etching procedures.

Keep the treatment solutions clean. Often, poor bonds can be traced to using contaminated treatment solutions. Follow the manufacturer’s treatment instructions carefully. **Change the cleaning solutions when they are contaminated.** Keep the cleaning solutions at the concentration and temperature specified. Likewise, keep the metal immersed for the length of time specified.
Applying the Adhesive:

Mixing and Diluting:

Thoroughly mix THIXON OSN-2-EF with a high speed propeller-type agitator before using. If diluting, slowly add the diluent while continuously agitating. Otherwise, the polymer base may precipitate from solution.

Diluent - Use toluene or xylene as the diluent, or use a blend of 1 part aromatic solvent and 1 part MEK or MIBK.

THIXON OSN-2-EF can be applied by brushing, dipping or spraying.

Continue mixing while dipping or spraying to keep the dispersed solids from settling to the bottom of the tank. The lower the viscosity, the more the solids tend to settle.

Brush - For brush applications, apply THIXON OSN-2-EF undiluted. Brush on a heavy wet film without excessively brushing the film.

Conventional Air Spray - For spray applications, dilute two parts THIXON OSN-2-EF with one part diluent for a viscosity of 18 to 22 seconds, #2 G.E. Zahn cup.

Dip - For dip applications, use a blend of 1 part aromatic solvent and 1 part ketone as the diluent. Dilute 6 to 8 parts of THIXON OSN-2-EF with 1 part of this diluent blend. This will give a dry film thickness of 0.6 to 0.8 mil.

Drying the Film:

Thoroughly dry the film of THIXON OSN-2-EF before continuing, approximately 30 to 45 minutes at 60°-80°F. At lower temperatures, dry longer. The drying time can be shortened by force drying or increasing the air flow, or both. Typical force-drying conditions are 5 minutes at 180°F or 2 minutes at 220°F. Do not dry at temperatures above 250°F.

Theoretical Coverage:

One gallon of THIXON OSN-2-EF applied at a dry film thickness of 0.6 mil will cover approximately 434 square feet.

Dry Film Stability:

The dry film of THIXON OSN-2-EF is very stable. Inserts coated with THIXON OSN-2-EF can be stored for several months before use, if they are protected from airborne contaminants.

Molding and Curing:

THIXON OSN-2-EF can be used with all common molding and curing methods. Use a cure temperature between 212 and 450°F.

Oven Prebaking:

The coated inserts can be prebaked for up to five minutes at 325°F without affecting the bond quality. The dried film of THIXON OSN-2-EF shows no tendency to sweep during transfer and injection molding.

Post Vulcanization Bonding:

First, gritblast the metals and degrease them, or use iron or zinc phosphatizing. Apply THIXON OSN-2-EF at a thickness of at least 1 mil. Allow the adhesive film to dry for one hour, or force dry for 5 minutes at 180°F.

Prepare the rubber surfaces by first, solvent cleaning or alkaline cleaning. Then, use a mechanical action on the rubber such as brushing or ultrasonic tank cleaning. Allow the surfaces to dry thoroughly before bonding.
Mineral oil, such as CoChem 560-H, can be applied to the cleaned rubber just before curing to reduce friction and to promote even expansion between the cured rubber and the adhesive-coated metal.

For post vulcanization bonding of rubber to rubber, apply THIXON OSN-2-EF at a dry film thickness of 0.6 mil on both rubber surfaces.

Apply heat and pressure to achieve a bond. Compress the rubber 7 to 15%. The cure time and temperature required depends on the size of the assembled parts and the method used. Typically, for components weighing less than 2 lb, cure between 90 minutes at 280°F and 45 minutes at 320°F.

The bondline temperature must reach 250°F for 30 minutes.

For autoclaving parts less than 2 lb, process 10 minutes at 75 psi. Regardless of the cure method, hold the assemblies in compression during the entire cure cycle and while cooling down. The bonded assemblies can be forced cooled by immersing them in water.

**Toxicity and Safety Information**

Read the Material Safety Data Sheet before using this material. Toxicity and safety information is included on MSDS.

Various raw materials used in this product formulation may contain non-reportable levels of some heavy metals. Additionally, minimal amounts of lead may be present in this product due to the manufacture of other products at our facility. Therefore, a typical analysis of this product may detect nominal quantities of lead.

**Storage & Handling Information:**

Read the Material Safety Data Sheet, Section 7, for the safe handling and storage of the product. Store in a cool, dry, well-ventilated area away from heat, ignition sources, and direct sunlight.

Keep containers tightly closed. Containers should be supported and grounded before opening, dispensing, mixing, pouring and emptying.

For questions regarding the handling of empty containers or dry film with respect to the hazardous waste regulations, we suggest you contact the RCRA Hotline sponsored by US EPA at 1-800-424-9346 or your local/state environmental agencies.

*Note: THIXON OSN-2-EF was formerly identified as THIXON D-21819.*
THIXON is a registered trademark of Rohm and Haas Company.

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