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Anaerobic Sealant Technical Data Sheet

Product Description

Anaerobic Sealant is a specialized adhesive and sealant designed for high-performance applications that require a strong, durable bond in environments with limited oxygen. This sealant is formulated to cure and harden in the absence of air, making it ideal for sealing threaded metal parts, flanges, and joints. When exposed to the confined space between metal surfaces, the anaerobic sealant begins to cure, forming a tough, chemical-resistant, and waterproof seal.

Anaerobic Sealant is widely used in mechanical and industrial applications where fluid and gas leakage prevention is essential. It is particularly suitable for sealing threaded fittings, hydraulic systems, pumps, valves, and any other metal-to-metal connections that require a robust seal against pressure, vibration, and high temperatures. The sealant's ability to cure in the absence of air makes it an excellent choice for use in enclosed spaces or tight joints where conventional sealants would not perform as effectively.

The anaerobic technology offers superior performance by preventing the need for external curing methods such as heat or light. The sealant remains liquid and easy to apply until it comes into contact with metal surfaces in the absence of oxygen. Once cured, the sealant forms a firm, bonded layer that prevents fluid and gas leaks, protects against corrosion, and increases the reliability and longevity of the assembled components.

Anaerobic Sealant is available in various viscosities, ranging from liquid to paste, and is designed to be used in a wide range of industries including automotive, aerospace, plumbing, and general manufacturing. It is resistant to most oils, fuels, solvents, and cleaning agents, making it suitable for use in harsh environments.

Recommended Use

1. **Thread Sealing**:
   - **Pipe Fittings and Joints**: Anaerobic Sealant is ideal for sealing pipe threads in plumbing, industrial, and construction applications. It provides a leak-proof seal that can withstand high-pressure environments.
   - **Hydraulic Systems**: It is commonly used to seal hydraulic systems and prevent fluid leakage between joints and threaded connections. Anaerobic sealants can withstand the high pressures and stresses often found in hydraulic machinery.
2. **Flange Sealing**:
   - **Flanges and Manifolds**: It is widely used in sealing flanged connections in manufacturing, automotive, and industrial equipment. Anaerobic Sealant forms a strong bond between metal flanges, preventing leakage of water, gas, and chemicals.
   - **Heat Exchangers**: Used for sealing the joints of heat exchangers, where high temperatures and pressure can cause traditional sealing methods to fail. Anaerobic sealants provide excellent resistance to thermal cycling.
3. **Automotive Applications**:
   - **Gaskets and Seals**: In automotive applications, Anaerobic Sealant is used to seal gaskets, timing covers, and valve covers. It ensures a secure, long-lasting seal against engine fluids and exhaust gases.
   - **Differential Covers and Transmission**: It is also used to seal differentials, transmission covers, and other automotive parts requiring robust sealing to prevent fluid leakage.
4. **Industrial and Manufacturing Applications**:

- **Metal Bonding**: Ideal for bonding metal components in the manufacturing and construction industries. It is frequently used for sealing fasteners, bolts, and nuts in assemblies to ensure they remain securely fastened under pressure and vibration.
- **Electrical Equipment**: The sealant is used in electrical equipment to prevent moisture ingress and improve the electrical insulation properties of components.

5. **Aerospace and Marine**:
   - **Aerospace Components**: Anaerobic Sealant is used to seal threaded parts and joints in aerospace applications, offering resistance to high vibration, temperature fluctuations, and aggressive fluids.
   - **Marine Equipment**: Used for sealing marine engine components, boat fittings, and other metallic joints exposed to seawater and other harsh environmental conditions.

Technical Data Specification

- **Colour**: Green, Blue, Red, or Purple (varies by product type)
- **Appearance**: Paste or liquid
- **Viscosity**: Medium to high (depending on the product variant)
- **Specific Gravity**: 1.0–1.2 g/cm³
- **Flash Point**: >100°C
- **Temperature Resistance**: -50°C to +150°C
- **Curing Time**: 24–48 hours (depending on temperature and material)
- **Tensile Strength**: 5–8 MPa
- **Shear Strength**: 5–6 MPa
- **Water Resistance**: Excellent
- **Oil and Chemical Resistance**: Excellent
- **VOC Content**: Low
- **Shelf Life**: 12–18 months (unopened container)

Dosage, Addition, and Method of Application

1. **Dosage**: The amount of Anaerobic Sealant required will depend on the application, particularly the size of the threaded or bonded joint. For threaded fasteners, a thin bead of sealant should be applied around the threads, typically covering 1-2 threads at most. For larger or more complex assemblies, more sealant may be needed to ensure complete coverage and a secure seal.
2. **Addition**: Anaerobic Sealant is supplied ready for use and does not require any mixing with hardeners or other additives. However, some specific applications may benefit from surface preparation or primers to enhance adhesion, particularly in the case of high-stress environments.
3. **Surface Preparation**:
   - **Cleaning**: Clean the surfaces to be sealed thoroughly to remove dirt, oils, grease, or rust. Use an appropriate degreaser or solvent for metal surfaces.
   - **Drying**: Ensure that the surfaces are completely dry before applying the sealant.
   - **Pre-application Primer**: In some cases, particularly in high-stress applications, a primer may be used to enhance the sealant's adhesion to the metal surfaces.
4. **Application Method**:
   - **Step 1**: Apply a thin, even bead of Anaerobic Sealant to the threads or surfaces to be sealed. For threaded components, apply along the threads, avoiding excess material that may seep out during assembly.
   - **Step 2**: Assemble the components as per the application guidelines. Tighten the fasteners or parts to the specified torque to ensure that the sealant forms an even bond.

- **Step 3**: Allow the assembly to cure in place for 24–48 hours. The curing time will depend on the specific sealant and environmental factors such as temperature and humidity. In some cases, the sealant may begin curing immediately after contact with metal surfaces.
- **Step 4**: Once cured, check the seal for leaks or any potential defects. Anaerobic sealants form a strong, durable bond and should not be disturbed during the curing process.

5. **Post-application**:
   - Any excess sealant can be wiped off using a cloth soaked in a suitable solvent.
   - For additional strength, the sealant may be cured with heat if recommended by the manufacturer.

Safety Instructions

1. **Handling**:
   - Always wear appropriate personal protective equipment (PPE), such as gloves, goggles, and protective clothing, to prevent skin and eye contact.
   - Work in a well-ventilated area to avoid inhalation of fumes from the sealant during application and curing.
   - Ensure that the work surface is free of any flame or heat sources, as the sealant contains flammable solvents.
2. **Storage**:
   - Store the Anaerobic Sealant in a cool, dry place away from direct sunlight, heat, and open flames.
   - Ensure containers are tightly sealed when not in use to prevent the evaporation of solvents.
   - Store away from incompatible materials, such as strong oxidizing agents.
3. **First Aid**:
   - **Skin Contact**: Wash the affected area with soap and water immediately. If irritation persists, seek medical attention.
   - **Eye Contact**: Rinse eyes thoroughly with water for at least 15 minutes. Seek medical attention if irritation persists.
   - **Inhalation**: If inhaled, move to fresh air immediately. Seek medical attention if symptoms such as dizziness, headache, or shortness of breath occur.
   - **Ingestion**: Do not induce vomiting. Rinse mouth with water and seek medical assistance immediately.
4. **Disposal**:
   - Dispose of unused or expired Anaerobic Sealant in accordance with local regulations for hazardous waste.
   - Clean tools and applicators promptly with an appropriate solvent to avoid cured residue.
   - Avoid releasing any residual sealant into drains or water systems.

Anaerobic Sealant provides a reliable and efficient sealing solution for a wide variety of industrial, automotive, and construction applications. Proper handling and application ensure long-lasting and effective results.