**Isolation Gasket Technical Spec**

The gasket and its components for use on pipes containing water, aqueous fluids, oil, or natural gas, shall be manufactured as follows.

The gasket shall provide isolating and sealing between two flanged connections. The gasket, Integra II SSAFS, .334” uncompressed thickness and between two flanged connections. The gasket, when compressed, shall provide a pressure of 800 psi (G-11: 750 psi) and a maximum compressive strength of 66,000 psi (G-11: 55,000 psi). The gasket shall have a diameter that matches the flange ID in which it is installed. The gasket shall have free cooling temperatures of 40°C to 32°F with G-10 laminate (400°F with G-11).

**Mechanical Properties**

1. Steel Washer:
   - a. Durable, proprietary blend to provide excellent corrosion resistance along with exceptional abrasion resistance.
   - b. Low Coefficient of Friction
   - c. Load Capacity: 40ksi
   - d. Minimum Operating Temperature: -100°F

2. Coating:
   - a. Hardness: HRC 38 – 45
   - b. Flange – Bolt Resistance:
     - i. Initial: 137 GOhms
     - ii. 1st Bolt-up: 640 MOhms
     - iii. 2nd Bolt-up: 550 MOhms
     - iv. 3rd Bolt-up: 605 MOhms
   - c. Flange – Flange Resistance:
     - i. Initial: 28 GOhms
     - ii. 1st Bolt-up: 550 MOhms
     - iii. 2nd Bolt-up: 550 MOhms
     - iv. 3rd Bolt-up: 605 MOhms
   - d. Nominal Pipe Size, Pressure Rating and Bore Size

**Gasket Isolation Kit**

Coated, Stainless Steel Washers

The “FS” or “Fire Safe” designation denotes only that this gasket has successfully passed the API 6FB fire test. Due to the fact that every fire is unique and many uncontrolled variables are present, no other claims regarding suitability or performance in a fire are made. Each designer, user and/or operator will need to assess their individual situation when deciding to install FS style gaskets. **PATENT PENDING**

The advanced products & systems, llc...
**WHAT IS INTEGRA II SSFS® GASKET & WHY IT IS USED?**

The Patent Pending Integra II SSFS isolation gasket was created to meet the demands of customers for a non-metallic isolating gasket that could also withstand some of the more severe operating conditions.

The new Integra II SSFS gasket not only meets, but exceeds the requirements of the API 6FB and ANSI standard, ensuring the most dependable sealing characteristics of a kammprofile design with a highly durable, proprietary coating.

The Integra II SSFS gasket is an isolating and sealing gasket suitable for use in all services up to and including ANSI 2500# and API 10,000# classes. With a non-metallic isolating material and glass laminate adhered to both faces, the Integra II SSFS gasket is suitable for use in all services up to and including ANSI 2500# and API 10,000# classes. Isolation Kits are available, which include the Fire Safe gasket along with hardened-steel isolating washers coated with our unique highly durable, proprietary coating.

**FEATURES & BENEFITS:**

1. Exceptionally dependable for sealing applications where intense modes of hostile chemicals may be present.
2. Critical Fire Safe Applications
3. Nomex - Designed for general oil and gas applications: This sealing material is used for maintaining a durable seal in the event of a fire or open off-shore fire test, the SSFS Gasket Kit was able to maintain a Fire Safe connection throughout the entire test. The measured leakage rate during the burn and cooldown periods was zero. Isotherm testing was performed and an affordable leakage rate during the repressurization period was 0.05 ml/min.
4. Spiral wound Nomex tubing is suitable for continuous exposure to 450 °F. This material has excellent resistance to crushing, cracking, and breaking. The steel washer is made from Grade 1050 and heat treated per ASTM F436.
5. G-11 - Glass Reinforced Epoxy tubing is suitable for continuous exposure to 400 °F. This material is an excellent choice for maintaining an isolating and sealing gasket in the seal groove eliminates creep or cold flow. This PTFE spring energized sealing element is designed for multiple applications and to withstand torque and dielectric requirements. Coating offers excellent resistance to crushing, cracking, and breaking.
6. Water Absorption: 0.04%
7. Tensile Strength: 20,300 psi
8. Dielectric Strength: 635 V/mil
9. Maximum Temperature: 1292°F
10. Water Absorption: 0.08%
11. Tensile Strength: 51,000 PSI
12. Flexural Strength: 58,000 PSI

**APPLICATIONS:**

1. Critical Fire Safe Applications
2. Flange Isolation with true cathodic protection.
3. Isolating between flanges of dissimilar metals to prevent galvanic corrosion.
4. Wellbore insulation from inter-connected flow lines.
5. Minimizing mihrkilled dismair flanges.
7. Protect against corrosion on uncoated or scarred flange faces.
8. To seal between flanges subjected to vibration/cavitations.
9. Protect against corrosion on uncoated or scarred flange faces.
10. Tension between flanges subjected to vibration/cavitations.
11. Eliminate corrosion from forming in the cavity between RTJ flanges where internal streams of hostile chemicals may be present.

**Fire Test Report**

**API 6FB Test Procedures**

The API 6FB test is designed to measure the total leakage from a flanged connection over the duration of burn and cool down periods, and when repressurized. The assembly is monitored continuously throughout these phases, and the test must exceed an API prescribed leakage rate.

During the test, a fire is applied by a series of burners directing fire into the assembly while it is pressurized to 75% of operating pressure. The flame temperature is monitored by a series of thermocouples inside the flange and the flame temperature is monitored by a series of thermocouples inside the flange. The test requires that the fire be applied to the gasket and the flange bolts to the point where the temperature of the gasket is at least 120°F higher than the specified temperature for the gasket. The gasket material is allowed to cool until the temperature is maintained above this point for the remainder of the burn period.

At the end of the 30 minute burn period, the fire is shut off, and the assembly is allowed to cool while monitoring pressure. Once the assembly has cooled to 212°F or less, it is then repressurized for a minimum of 3 minutes.

**Gasket Test Results**

The test was performed with a 6” 304SS Integra II SSFS Gasket Isolation Kit with G10 sleeves and coated hardened-steel washers. The gaskets were standard 8” 304SS made of carbon steel, and the hardware was standard B7 stud with 2H nuts.

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength</td>
<td>20,300 psi</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>55,000 PSI</td>
</tr>
<tr>
<td>Water Absorption</td>
<td>0.08%</td>
</tr>
<tr>
<td>Bond Strength</td>
<td>2,600 lb</td>
</tr>
<tr>
<td>Shear Strength</td>
<td>22,000 lb</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>65,000 PSI</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>635 V/mil</td>
</tr>
<tr>
<td>Maximum Temperature</td>
<td>1292°F</td>
</tr>
<tr>
<td>Nut</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>Steel Washers</td>
<td>Coated, Hardened Steel</td>
</tr>
</tbody>
</table>

**Nut and Bolt Specifications**

Nut: Stainless Steel, Coated, Hardened Steel Washers

**Gasket Specifications**

Integra II SSFS Gasket:

- Composition: Glass-Reinforced Epoxy Laminate Material
- Compression Strength: 65,000 PSI
- Tensile Strength: 51,000 PSI
- Flexural Strength: 58,000 PSI
- Water Absorption: 0.08%
- Tensile Strength: 20,300 psi
- Dielectric Strength: 635 V/mil
- Maximum Temperature: 1292°F

**Glass Reinforced Epoxy Laminate Material Specifications**

- Shear Strength: 22,000 lb
- Bond Strength: 2,600 lb
- Tensile Strength: 51,000 PSI
- Flexural Strength: 65,000 PSI
- Water Absorption: 0.04%
- Tensile Strength: 20,300 psi
- Dielectric Strength: 635 V/mil
- Maximum Temperature: 1292°F

**Integra II SSFS® Cathodic Isolation Gaskets**

- Nut: Stainless Steel, Coated, Hardened Steel Washers
- Bolt: Stainless Steel, Coated, Hardened Steel Washers

**Fire Safe Isolation Gasket**

- Designed for severe service and fire testing.
- Meets the requirements of ASTM F 436 for a non-penetrating barrier through which no restricted retained matter or other substance can pass; as a result, the glass composite material permanently holds the fire inside the test cell. Special PTFE SPR washers are available for use in very high-pressure or large diameter flanges.

**Standard PTFE Wash Material**

- SPR (Spring Energized)

**Annular Gasket**

- Designed for various applications. The sealing element is intended to provide a non-penetrating barrier through which no restricted retained matter or other substance can pass; as a result, the glass composite material permanently holds the fire inside the test cell. Special PTFE SPR washers are available for use in very high-pressure or large diameter flanges.

**Cathodic Isolation Gasket**

- Designed for general oil and gas applications.

**Seal Material/Phyllosilicate**

- Designed for general oil and gas applications. The sealing element is intended to provide a non-penetrating barrier through which no restricted retained matter or other substance can pass; as a result, the glass composite material permanently holds the fire inside the test cell. Special PTFE SPR washers are available for use in very high-pressure or large diameter flanges.
**WHAT IS INTEGRA II SSAFS® GASKET & WHY IS IT USED?**

The Patent Pending Integra II SSAFS isolation gasket was designed to meet the demands of new service for a non-intrusive isolating gasket that could also withstand the rigorous effects of a fire. The SSAFS gasket was built to ensure the most dependable existing isolating material on the market. This design is available for in-situ services up to and including ANSI 1500# and API TMA 10,000# classes, and has been successfully tested at high-temperature mineral seal as the secondary seal. The core of the gasket is 316SS with permanently bonded insulating glass laminate adhered to both faces.

**API 6FB Test Procedures**

The API 6FB test is designed to measure the leakage from a flanged connection over the duration of burn and cool down periods, and when re-pressurized. The assembly is monitored for leakage throughout the test, and it must not exceed an API prescribed leakage rate.

- **During the test,** a fire is applied by a series of burners directed fire onto the assembly while it is pressurized, and the flame temperature is monitored by a series of thermocouples inside the flame. The flame temperature is monitored by a series of thermocouples inside the flame. After 15 minutes, the temperature must be maintained above this point for the remainder of the burn period. At the end of the 30 minute burn period, the fire is shut off, and the assembly is allowed to cool while monitoring pressure. Once the assembly has cooled to 212°F or less, it is then re-pressurized for a minimum of 5 minutes.

**SSAFS API 6FB Test Results**

According to the API 6FB test, the Integra II SSAFS Gasket Kit is able to maintain a Fire Safe connection throughout the entire test. The measured leakage rate during the burn and cooldown periods was 0 ml/min, which was an allowable leakage rate under API 6FB. The measured leakage rate during the re-pressurization period was 0 ml/min.

The test was performed with an 8” 300# Integra II SSAFS Gasket Isolation Kit with G-10 sleeves and coated hardened-steel washers. The flanges were standard 8” 300# made of carbon steel, and the hardware was standard ST stud with high-strength nut.

**Test Fire Report**

**API Standard Test Report**

<table>
<thead>
<tr>
<th>Pressure: Time</th>
<th>Temperature on time</th>
<th>Isolation Gasket</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10°C to 40°C</td>
<td>-10°C to 40°C</td>
<td>-10°C to 40°C</td>
</tr>
</tbody>
</table>

**Shear Strength**

<table>
<thead>
<tr>
<th>Nut Coated Hardened Steel Washers</th>
</tr>
</thead>
</table>

**Bond Strength**

<table>
<thead>
<tr>
<th>Bolt - Stud</th>
</tr>
</thead>
</table>

**Tensile Strength**

<table>
<thead>
<tr>
<th>Isolating Sleeve</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Compressive Strength</th>
<th>58,000 PSI</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Nut Coated Hardened Steel Washers</th>
</tr>
</thead>
</table>

**Water Absorption**

<table>
<thead>
<tr>
<th>Flange Seal</th>
</tr>
</thead>
</table>

| 0.08%       |
|            |

**Max. Continuous Operating Temp.**

<table>
<thead>
<tr>
<th>Stainless Steel Nut &amp; Bolts: 212°F (100°C)</th>
</tr>
</thead>
</table>

**Dielectric Strength**

<table>
<thead>
<tr>
<th>Nut Coated Hardened Steel Washers</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>550 V/mil</th>
<th>800 V/mil</th>
</tr>
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</table>

**Compressive Strength**

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**Glass-Reinforced Epoxy Material:**

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<thead>
<tr>
<th>Nut Coated Hardened Steel Washers</th>
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<table>
<thead>
<tr>
<th>22,000 lb.</th>
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**Flexural Strength**

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**Water Absorption**

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| 0.04% |

**Tensile Strength**

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| 20,300 psi |

**Shear Strength**

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| 21,200 lb. |

**Bond Strength**

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| 2,200 lb. |

**Dielectric Strength**

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| 550 VPM | 800 VPM |

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| 550 VPM | 800 VPM |
**WHAT IS INTEGRA II SSaFS® GASKET & WHY IS IT USED?**

The patented Integra II SSaFS® isolation gasket was created to meet the demands of today’s high-temperature, high-pressure, and high-stress applications where intense modes of hostile chemicals may be present.

**INTRODUCTION**

The Integra II SSaFS® gasket combines the proven dependability of a PTFE pressure-energized spring seal, as the primary seal, with the high-temperature, high-stress insulating and sealing properties of a highly-dielectric mineral seal as the secondary seal. The core of the gasket is 316SS with permanently bonded insulating glass laminates adhered to both faces. The nut is Coated Hardened Stainless Washer.

**FEATURES & BENEFITS:**

1. Exceptionally dependable for insulating and sealing purposes for severe service and fire applications.
2. High-strength materials for all severe service applications up to 1,000°F and including ANSI 2500# and API 10,000# classes.
3. High-strength materials for high-temperature, high-stress applications.
4. Incorporates high-temperature sealing characteristics of laminate with a highly dielectric mineral secondary seal.

**APPLICATIONS:**

1. Critical Fire Safe Applications
2. Flange Isolation with true cathodic protection.
3. Isolating between flanges of dissimilar metals to prevent galvanic corrosion.
4. Wellhead isolation from interconnected flow lines.
5. Mixing metallic dissimilar flanges.
7. Protect against corrosion on uncoated or scarred flange faces.
8. To seal between flanges subjected to vibration/cavitations.
9. Eliminate corrosion from forming in the cavities between RTJ flanges.

**APLICATIONS:**

1. G-10
2. Spiral wound Mylar tubing is suitable for continuous exposure to 350°F. This material is typically used to maintain the maximum temperature requirement of the sealing element, in the event of a fire.
3. Spiral wound Nomex tubing is suitable for continuous exposure to 450°F. This material has excellent resistance to crushing, cracking, breaking, and thread pinch.

**APPROVED RETAINER MATERIALS:**

**NEMA G-10:**

- Temperature Range: -425°F to 1292°F
- Maximum Temperature: 1292°F
- Dielectric Strength: 635 V/mil
- Water Absorption: 0.04%
- Maximum Temperature: 1292°F

**NEMA G-11:**

- Temperature Range: -425°F to 450°F
- Maximum Temperature: 450°F
- Dielectric Strength: 635 V/mil
- Water Absorption: 0.04%
- Maximum Temperature: 450°F

**APPROVED RETAINER MATERIALS:**

**NEMA Grade:**

1. Graphite-Coated, Hardened Stainless Washers
2. Spiral wound Mylar tubing is suitable for continuous exposure to 350°F. This material is typically used to maintain the maximum temperature requirement of the sealing element, in the event of a fire.
3. Spiral wound Nomex tubing is suitable for continuous exposure to 450°F. This material has excellent resistance to crushing, cracking, breaking, and thread pinch.

**NEMA Grade:**

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2. Spiral wound Mylar tubing is suitable for continuous exposure to 350°F. This material is typically used to maintain the maximum temperature requirement of the sealing element, in the event of a fire.
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Isolation Gasket technical spec

The gasket and its components for use on pipes containing water, aqueous fluids, oil, or sour or natural gas, shall be manufactured as follows.

1. Flange Specification
   - ANSI, API, MSS SP44, BS or Din Standard
   - RTJ or Raised Face
   - Nominal Pipe Size, Pressure Rating and Bore Size
   - Nominal Pipe Size, Pressure Rating and Bore Size
   - ANSI/ASME, API, MSS SP44, BS or DIN Standard

2. Operating Pressure, Temperature and Media
   - Nominal Pipe Size, Pressure Rating and Bore Size
   - ANSI/ASME, API, MSS SP44, BS or DIN Standard

3. Gasket Kits
   - Please specify the following:
   - Integra II SSAFS
   - CATHODIC ISOLATION GASKETS

4. Operating conditions
   - Pressure and spring energized. The gasket shall provide isolating and sealing gas, shall be manufactured as follows.

5. Flat, raised or RTJ face flanges, and also shall be pressure and spring energized. The gasket shall also contain serrations machined and the PTFE coated kammprofile serrations on both sides, with a view to the seal. The serrations are arranged on the kammprofile serrations shall provide Fire Safe protection for either flat, raised or RTJ face flanges. The kammprofile serrations shall provide a desired strength of 800 V/mil (G-10: 550 V/mil) and a maximum compressive strength of 90,000 psi (G-11: 55,000 psi). The gasket ID shall have a diameter that matches the flange ID in which it is installed. The gasket shall have a minimum compressive strength of 10,525 psi with G-10 laminate (400°F with G-11).

6. Isolation Test Results
   - The Integra II SSAFS Isolation Gasket is made in an uncoated flange.
   - The Integra II SSAFS Isolation Gasket is made in an uncoated flange.
   - The Integra II SSAFS Isolation Gasket is made in an uncoated flange.

7. Mechanical Properties
   - Steel Washer
   - Hardness: HRC 38 – 45
   - Dielectric Strength: 875 V/mil
   - Low Coefficient of Friction
   - Abrasion Resistance

8. Gasket Isolation Kit
   - Coated, Hardened Steel Washers
   - Accompanying the Integra II SSAFS Isolation Gasket are our hardened-steel isolation washers coated with our unique and highly durable, proprietary coating. This coating exhibits exceptional dielectric strength and is tough enough to withstand the required high temperatures. These washers also contain precision machined and PTFE coated serrations on both sides, with a view to the seal. These washers also contain precision machined and PTFE coated serrations on both sides, with a view to the seal.

9. Other Products Available
   - Standard Isolating Gasket Kits
   - Modular, Flange Protectors
   - R釵on® Nut & Bolt Protector Caps
   - Casing Spacers and End Seals
   - Integra II SSAFS Isolation Gaskets
   - Monolithic Isolators
   - Fireman Hose Caps - temporary pipe plugs
   - Outil-Cote® & Atlas Pipe Support® Pads

TO ORDER A COMPLETE FIRE-RATED INSULATING GASKET KIT PLEASE SPECIFY THE FOLLOWING:

- Flange Specification
- Operating Pressure, Temperature and Media
- Nominal Pipe Size, Pressure Rating and Bore Size
- Operating Pressure, Temperature and Media
- Nominal Pipe Size, Pressure Rating and Bore Size

ISOLATION GASKET TECHNICAL SPEC

The gasket shall provide isolating and sealing gas, shall be manufactured as follows.

1. Flange Specification
   - ANSI, API, MSS SP44, BS or Din Standard
   - RTJ or Raised Face
   - Nominal Pipe Size, Pressure Rating and Bore Size
   - Operating Pressure, Temperature and Media
   - G-10, G-11, Mylar, or Nomex Sleeve Material

2. Operating Conditions
   - Maximum Temperature: 400° F
   - Minimum Operating Temperature: -100° F
   - Dielectric Strength: 875 V/mil
   - Low Coefficient of Friction
   - Abrasion Resistance

3. ISO 9001:2015 Certified Company
   - Made in USA
   - Made in USA
   - Made in USA

INTGRA II SSAFS

CATHODIC ISOLATION GASKETS

ADVANCE PRODUCTS & SYSTEMS, LLC

Distributed by:

PIPS DISTRIBUTION

800-315-6009 • 337-233-6116 • FAX: 337-232-3888

Note: Please contact your distributor or the factory for prices.
**Isolation Gasket Technical Spec**

The gasket and its components for use on pipes containing water, aqueous fluids, oil, or natural gas, shall be manufactured as follows:

- The gasket shall provide isolating and sealing between two flange connections. The gasket, IntegrA II SSAFS, .334” uncompressed thickness and .274” compressed thickness, with a 316 Stainless Steel core and NEMA grade G-110 or G-11 fiberglass reinforced laminate permanently bonded to both sides, shall contain a precision machined groove to provide a controlled compression of an engineered PTFE spring energized seal. The PTFE shall be bonded as to provide for either flat, raised or RTJ face flanges, and also shall be pressure and spring energized. The gasket shall also contain precision machined and PTFE coated kammprofile serrations on both sides with a fire safe coating. The serrations on the kammprofile serrations shall provide fire safe protection for either flat, raised or RTJ face flanges. The fiberglass reinforced laminate shall have a dielectric strength of 800 V/mil (G-11: 550 V/mil) and a maximum compressive strength of 90,000 psi (G-11: 55,000 psi). The gasket ID shall have a diameter that matches the flange ID in which it is installed. The gasket shall have a max operating temperature of 450°F. The gasket shall have a max operating pressure of 150 PSIG.

**Gasket Isolation Kit**

Coated, Hardened Steel Washers

Accompanying the IntegrA II SSAFS Isolation Gasket are our hardened-steel isolation washers coated with our unique and highly durable, proprietary coating. This coating exhibits exceptional dielectric strength and is tough enough to withstand the required high temperatures. These washers also feature a reversible design which eliminates the potential of a backwards installation. These washers are not only useful for Fire Safe applications but are also available and beneficial for use with our other isolation kits. All coated steel isolation washers are reusable and can be installed in any direction, which helps to prevent torque loss during the burn period of the API 650 fire test.

These washers are not only useful for Fire Safe applications but are also available and beneficial for use with our other isolation kits. All coated steel isolation washers are reusable and can be installed in any direction, which helps to prevent torque loss during the burn period of the API 650 fire test.

**IS O-9001:2015 Certified Company**

**Isolation Test Results**

- **Flange – Flange Resistance:**
  - Initial: 25 Ohms
  - 1st Bolt-up: 650 Ohms
  - 2nd Bolt-up: 5500 Ohms
  - 3rd Bolt-up: 20,000 Ohms

- **Flange – Bolt Resistance:**
  - Initial: 137 Ohms
  - 1st Bolt-up: 64 Ohms
  - 2nd Bolt-up: 57 Ohms
  - 3rd Bolt-up: 51 Ohms

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**Other Products Available:**

- **Standard Isolating Gasket Kit**
- **Integra II SSAFS Flange Protectors**
- **Radar® Nut & Bolt Protector Caps**
- **Casing Spacers and End Seals**
- **Innerlynx® Modular Mechanical Seals**
- **Monolithic Isolators**
- **Foreman Nite Caps – temporary pipe plugs**
- **Ultrab-Cote® & Atlas Pipe Support® Packs**

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**Advance Products & Systems, LLC**

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- Advance Products & Systems, LLC
- 300 North Hanlon Drive
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**Note:** Please contact your distributor or the factory for prices.