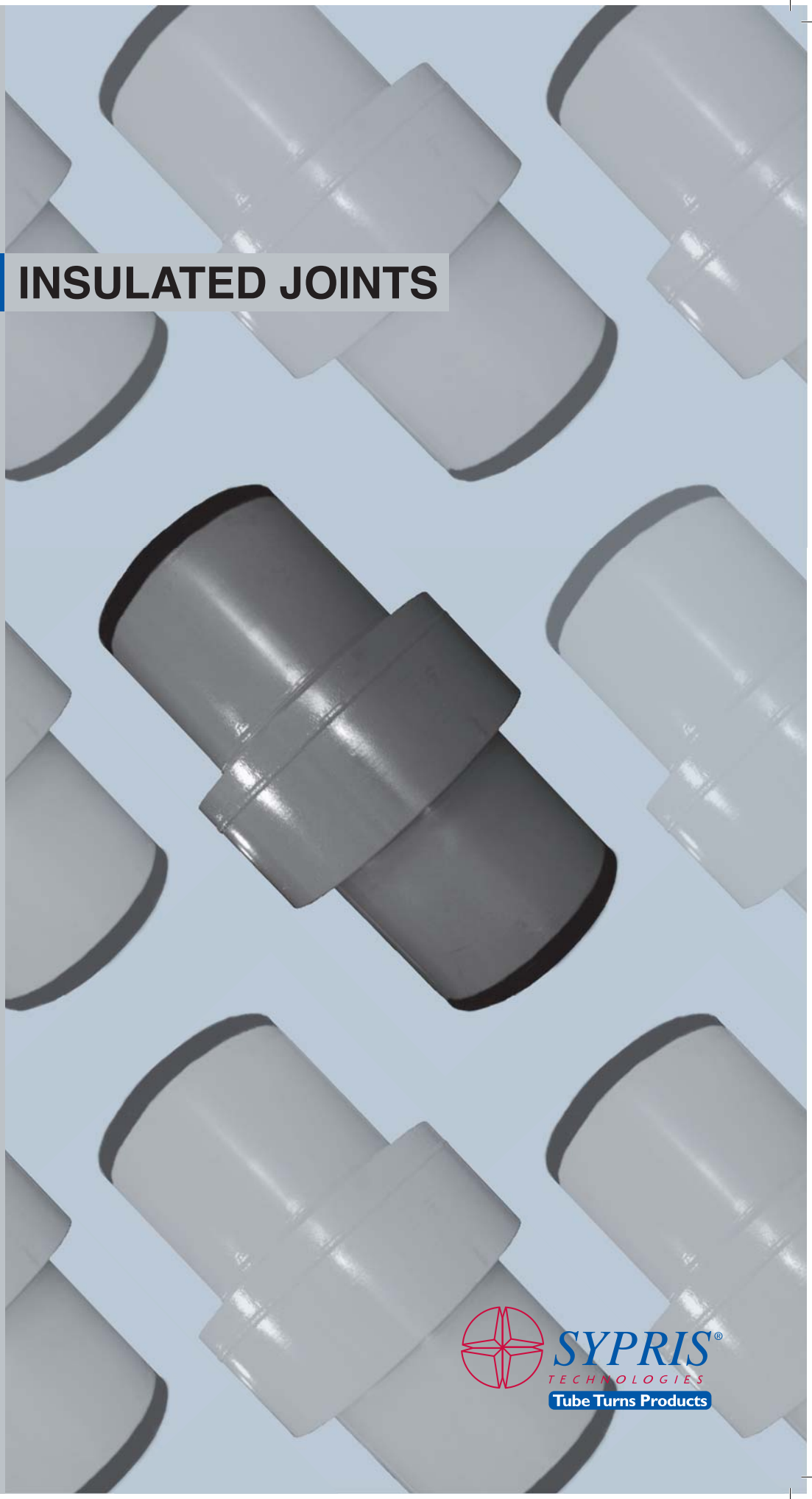
“PIPE PUP” INSULATED JOINTS

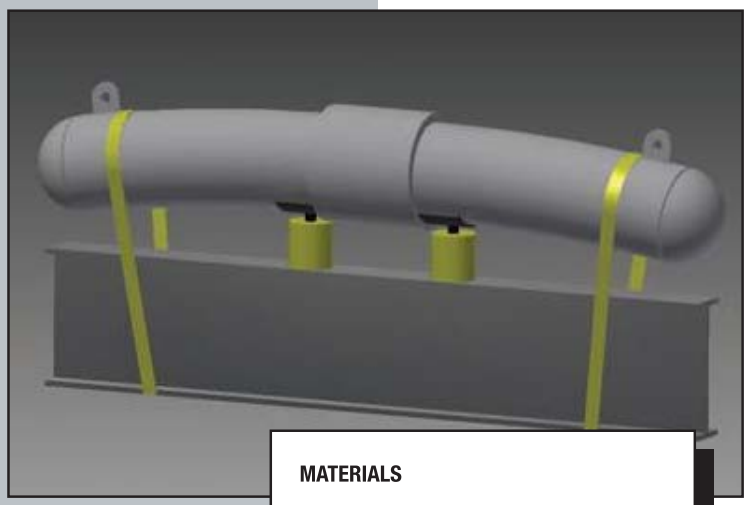


Tube Turns
“Pipe Pup”
Insulated Joints

SYPRIS®
TECHNOLOGIES
Tube Turns Products

TUBE TURNS "PIPE PUP" INSULATED JOINTS are monolithic, pre-assembled and tested units used to electrically isolate piping or pipeline segments, and from adjacent equipment. A key feature of "Pipe Pup" Insulated Joints is the inclusion of ready-to-weld pipe ends matched to the customer's pipeline outside diameter internal bore, wall thickness and pipe grade.

"PIPE PUP" INSULATED JOINTS



MATERIALS

Standard designs are carbon steel, with Pipe Pup metallurgy in API 5L Gr. B and hub/yoke metallurgy in ASTM A105. Also available are Yoke and Hub components in ASTM A694 F42, F46, F50, F52, F56, F60, F65, F70, F80, ASTM A350 LF1, LF2, LF3, LF4, Stainless Steel Grades 304, 304L, 316, 316L, 410, Duplex 31I803 and 32750, and special alloys such as Alloy 625 and 825. Pipe Pup metallurgy can be provided to match any available piping materials.

Electrical isolation insulating material is glass fiber reinforced epoxy resin.

Sealing element o-rings are available in a variety of elastomeric compounds, to be specified by the customer based on the requirements for temperature and fluid medium.

Two-part epoxy coating is applied internally and externally, with a primer and top coat.

Epoxy resin filling is used to seal the yoke-to-hub gap to prevent foreign material/water intrusion.

Selective cathodic corrosion, risk to metering or monitoring equipment, and other unpredictable damage can result from the introduction of stray electrical currents. Unwanted electrical potentials may be induced in pipelines from a number of sources: adjacent electrical transmission lines, parallel pipelines, geo-magnetic fields, flow-induced static charges, and others. The propagation of current flow along the length of the piping or into attached equipment can be prevented by use of electrical isolation devices, such as insulating flange kits, insulating flange pairs, barrier fittings, and monolithic insulated joints.

ADVANTAGES

Tube Turns Pipe Pup Insulated Joints have these advantages over other electrical isolation devices:

1. Fully factory assembled and ready for installation, no need to disassemble or reassemble
2. Factory tested electrically
3. Factory inspected and mechanically leak tested
4. Internally and externally coated with non-conductive epoxy at the factory
5. Requires no maintenance or adjustment after installation
6. Structurally robust

RATINGS

Pipe Pup Insulated Joints are available in ANSI Class 150, 300, 600, 900, 1500, and 2500.

Design options are available for temperature ranges from -50°F (-46°C) to 203°F (95°C). Up to 482°F (250°C) available on request.

SIZES, DIMENSIONS

Tube Turns "Pipe Pup" Insulated Joints are available in nominal sizes from 1" through 48", with bore sizes, wall thicknesses, and metallurgical properties available to match the piping system into which the insulated joint will be installed. Overall length is determined by the thickness of the Pipe Pups, to allow for sufficient heat dissipation during the process of welding the components into the pipeline.

APPLICATIONS

Tube Turns' Pipe Pup Insulated Joints can be designed for use with almost any fluid, including oil, gas, water, etc. where the operating temperature range falls within -50°F (-46°C) to 338°F (170°C). The insulated joints can be installed vertically, horizontally, or any other orientation, onshore, offshore, buried, exposed aboveground, or subsea, and in "sweet" (non-corrosive) or "sour" (corrosive) applications.

TESTING

Tube Turns' Insulated Joints are factory tested for electrical and mechanical integrity. Electrical resistance testing across the insulated joint is conducted at 1000 volts DC. Dielectric strength is measured to be within 5000 to 15000 volts.

Non-destructive mechanical tests include ultrasonic examination (UT) of yoke groove welds, radiographic examination (RT) of hub-to-pipe pup butt welds, hydrostatic testing of the completed insulated joint to 1.5 times the design pressure.

Other testing methods, including cyclic hydrostatic tests, Magnetic Particle (MP), Dye Penetrant (DP), are available.

PRESSURE TEST

A hydraulic pressure fatigue test was performed for 8 cycles from 0 to 2225 psi. The joint was also hydrostatically tested at 2225 psi for 60 minutes and pneumatically tested at 1480 psi for 15 minutes. The joint maintained full electrical and mechanical integrity throughout pressure testing.

BENDING TEST

An 8" CL600 Insulated Joint was welded into a piping assembly and subjected to external bending loads while simultaneously under full rated internal pressure. The actual bending load applied to the joint while holding 2225 psi internal pressure was 209,000 ft-lbs. This resulted in 100% of the Specified Minimum Yield Strength (SMYS) of the 8" diameter, 0.322" wall piping and yielded the piping assembly while the joint maintained full electrical and mechanical integrity.

There was no evidence of leakage and electrical resistance measured >2000 Megohms throughout the testing process.

QUALITY AND STANDARDS

Insulated joints are produced under ISO 9001-2008 certification, and comply with these standards (as applicable):

Materials: ASTM, AWS, ASME IX, ASME II, Part C

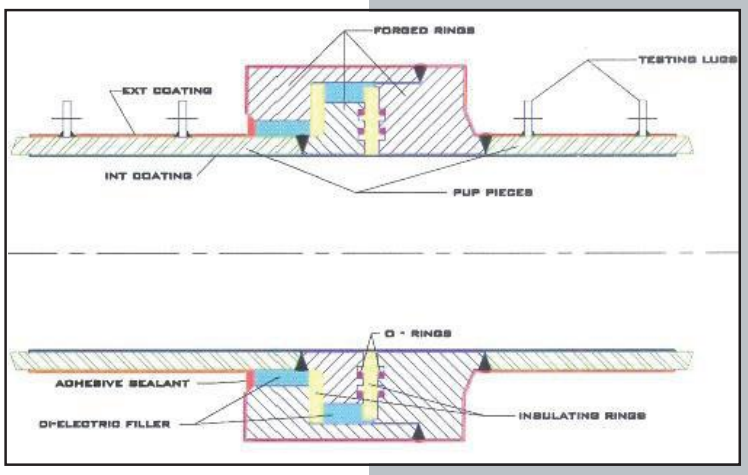
NDE Examinations and Inspections: ASME V, ASME/ANSI B 31.3, ASME/ANSI B 31.4, ASME/ANSI B 31.8, ASME Section VIII, Div. 1, API 1104

All metallic components are supplied with certified Material Test Reports (MTRs), confirming the physical and chemical properties of the components.

INFORMATION NECESSARY TO ORDER

- Nominal Pipe size
- Pipe wall thickness or bore diameter
- Pipe grade (example: API 5L X52)
- Design Pressure
- Design Temperature
- Operating Temperature
- Any additional customer-specific requirements (coating, testing, origin of materials)

Installed Pipe Pup in the field.



Pipe Pup Cutaway

Seven Pipe Pups ready for shipment.

SYPRIS® TECHNOLOGIES
Tube Turns Products

SYPRIS®
TECHNOLOGIES
Tube Turns Products

FOR GENERAL INQUIRIES:
louisvillettweb@sypris.com
2612 Howard Street
Louisville, Kentucky 40211 USA
Tel: +1 502.774.6011
Fax: +1 502.774.6300

FOR AFTERMARKET AND SERVICE:
ttaftermarket@sypris.com
2612 Howard Street
Louisville, Kentucky 40211 USA
Tel: +1 502.774.6011
Fax: +1 502.774.6300

Close-up of Pipe Pup Style Monolithic Isolating Joint

The information contained herein is based on data and information developed in the Laboratories of Sypris Technologies ("Seller"), but is presented without guarantee or warranty, and the seller disclaims any liability incurred from the use thereof. Nothing contained herein is to be construed as a recommendation for any use, including without limitation, any use in a commercial process not controlled by seller, nor for use which is in violation of any existing patent, foreign or domestic or of applicable laws and regulations.

October 2013 Sypris Techologies, Inc., Tube Turns Products Printed in U.S.A.