



CORE LINEPIPE

# Frequently Asked Questions

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# TABLE OF CONTENTS

|                                 |   |
|---------------------------------|---|
| <u>Annulus</u>                  | 3 |
| <u>Bends &amp; Risers</u>       | 3 |
| <u>Boring &amp; HDD</u>         | 3 |
| <u>ClickWeld® Performance</u>   | 4 |
| <u>Contractor Support</u>       | 4 |
| <u>CORE Service®</u>            | 4 |
| <u>Cyclic Service</u>           | 4 |
| <u>Design Life</u>              | 4 |
| <u>Electrofusion</u>            | 5 |
| <u>Field Cuts &amp; Tie Ins</u> | 6 |
| <u>Hydrotest</u>                | 6 |
| <u>Joint Length</u>             | 6 |
| <u>Regulatory Compliance</u>    | 6 |
| <u>Reliability</u>              | 7 |
| <u>Stub-ends</u>                | 7 |
| <u>Stringing</u>                | 7 |
| <u>Temperature</u>              | 8 |
| <u>Vacuum</u>                   | 8 |
| <u>Venting</u>                  | 8 |

## ANNULUS

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### *Is there continuous interstitial or annular space between the HDPE liner and the steel pipe?*

Yes, there is continuous interstitial or annular space between the HDPE and the steel. Permeated pressure is free to migrate to the nearest vents. Buried flanges and jumper vents are not required when using CORE Liner®. This is an important feature of CORE Liner®'s true dual containment. Monitoring this interstitial space is an option that CORE offers and is the key to our primary containment preventative leak detection using our AIM fitting.

## BENDS & RISERS

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### *Can I bend CORE Linepipe® product?*

Yes, CORE Liner® can be factory or field COLD bent to a minimum 20° bend radius. CORE Liner® products must be cold bent to ensure that the internal liners are not compromised.

### *Can CORE Linepipe® be bent into a riser system?*

Yes, CORE Liner® can be bent into 45° or 90° risers. Please see our bending and riser spec sheets and procedures for additional information.

## BORING & HDD

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### *Can CORE be used for boring and HDD?*

Yes, CORE Liner® is an excellent fit for HDD applications, road bores, etc. Our pull head is easily attached to the mandrel on factory end of the pipe. Our current guidance is to not exceed the following limits by product:

- 4": 90,000 lbs / 401 kN tensile rating (max) (CL440)
- 6": 130,000 lbs / 579 kN tensile rating (max) (CL640)
- 6": 160,000 lbs / 713 kN tensile rating (max) (CL648)
- 6": 230,000 lbs / 1024 kN tensile rating (max) (CL671)
- 8": 190,000 lbs / 846 kN tensile rating (max) (CL856)



## CLICKWELD PERFORMANCE

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### *How strong is the ClickWeld® joint?*

The cold work in our ClickWeld® makes that portion of the steel, the strongest pipe in the CORE Liner® system. Tensile tests are the most severe that we can subject the joint to. We have had tensile failures >350,000 lbs that cause failure in the body of the steel pipe, not in the ClickWeld®.

*Design & Test table or Qualification Reports* are available for detailed explanation.

## CONTRACTOR SUPPORT

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### *What is the pipeline contractor responsible for?*

ROW prep, strip, ditch, string, stabbing assistance, field bending, application of joint protection, lowering, backfill, hydrotest etc. Basically, everything they typically would be responsible for with the exception of welding or pulling a liner. Please review our detailed job execution package and tips for success sheet to see a detailed division of responsibilities.

### *What does CORE Linerpipe® need for support from the contractor?*

The CORE Service® team requires dedicated support and access to one piece of equipment including an operator (side boom or hoe) and one labourer to assist with handling the pipe while we energize the ClickWeld® joints during mainline. For tie-ins, a minimum of 2 pieces of equipment are required to lift pipe.

## CORE SERVICE®

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### *What does a CORE Service® crew include?*

Our team consists of 3 or 4 people, a track hoe, two trucks, Walter (custom field press), electrofusion machine, side by side, pipe, fittings, and field deployment seacan (standard items and critical spares), etc. CORE Service® completely removes welding and conventional liner installation crews. The CORE Service® team will deploy to site and integrate into a pipeline spread.

## CYCLIC SERVICE

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### *Is CORE Liner® suitable for cyclic service?*

Yes, CORE Linerpipe® uses high grade steel and HDPE components to complete our pipeline liner system. As such, our products enjoy the strength of steel and corrosion resistant benefits of HDPE. There is no expected degradation of our system due to cyclic fatigue. Cyclic testing was performed in our design and test program by an independent laboratory.

One of the best parts of our system is that you can treat CORE Liner® products just like you would traditional steel.

## DESIGN LIFE

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### *What is the design life of CORE Linerpipe®?*

CORE Liner® has a minimum 25-year design life.

## ELECTROFUSION

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### *What are electrofusion couplings?*

Electrofusion couplings are an alternative HDPE joining system to that of butt fusion. The electrofusion joining system consists of a HDPE coupling that has embedded copper wiring connected to terminals. Two pieces of HDPE are then inserted inside the coupling. A current is passed through the terminals into the copper wiring inside the coupling. Once energized flow/melt of the coupling and HDPE pipe is achieved; this creates a permanent fusion. EF fittings require extremely tight material tolerances and have stringent preparation processes, they are extremely strong and reliable.

### *What are the advantages of electrofusion compared to a butt fusion?*

In a pipeline liner The EF fittings used in CORE Liner® are energized and monitored by a computer-driven electrofusion control unit (ECU). This machine automatically adjusts fusion/soak time to account for ambient temperature, it measures amps, volts, GPS location, time of day and temperature of fusion, as well as ensuring continuity of the wiring. If a permissive requirement is not met, the ECU machine will not allow the fusion to proceed. What this means is that there is a very comprehensive QC package available on all joints. Compared to butt fusions, this is a step change in QC. EF fittings also provide around 7 times more fusion area and associated strength compared to that of a butt fusion.

### *How do I know if an electrofusion has been done correctly?*

Extensive testing has been conducted on our electrofusion system to ensure that material tolerances and fusion calibrations are perfect every time. A stringent QC program ensures that incoming materials are of the highest quality and meet our specifications perfectly. In the field all materials are closely measured and the information is recorded. Through this rigorous system we can ensure that our fusions are perfect every time. The electrofusion processor logs all information about the actual fusion and it is compiled into a field QC package that provides complete traceability on all components.



## FIELD CUTS & TIE-INS

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### *How does CORE Linepipe® complete a field cut and tie-in?*

**Field Cuts** - Walter (custom field press) is capable of recreating the ClickWeld® joint in the field (field-end). Walter recreates the cold worked bell and the CORE Service® team assembles the new ClickWeld® joint. Pipe can be cut to length; no pups are required. This is the same process for tie-ins, flanges and repairs.

**Tie-ins** - The CORE Service® tie-in team can quickly and efficiently perform flow joint installations and tie-ins, in the future as required.

CORE Liner® products have a unique advantage through the use of electrofusion. Unlike traditional liners that will have hydrocarbon saturation of the plastic, which can lead to future fusion issues (flashing, non-molecular fusions), CORE Liner® fuses on the OD of the plastic and will have no challenges with future tie-ins.

## FLANGES

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### *Does CORE Linepipe® provide flanges?*

Yes, flanges are applied to the steel pipe using our ClickWeld® mechanical joining system. Please see our video and photo library for more information. Flanges are ClickWeld®ed to the CORE Liner® system. Please see our tie-in procedure for additional information on the process.

## HYDROTEST

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### *How do I hydrotest CORE Linepipe®?*

CORE Liner products follow a standard hydrotest of 1.25 MAOP, with a 4 hour stable pressure hold. It is recommended to bump the pressure in 4 stages to achieve full 1.25 MAOP pressure. After a successful 4 hour hold, it is recommended to complete a liner leak test. The liner leak test requires the pressure to be dropped to 290psi and held for 4 hours.

## JOINT LENGTH

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### *How long is a joint of CORE Linepipe®?*

62 ft / 18.7 m per joint. Any shipment of pipe received will maintain a length tolerance of +/- 12" (0.25 m) from the average length. CORE offers half length joints (30 ft / 9.2 m) for bends and risers.

## REGULATORY COMPLIANCE

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### *Will I have any issues with regulatory compliance?*

No, CORE Complies with CSA/AER, COGCC, PHMSA/DOT, ASME.DOT/PHMSA recognition is a lengthy permit process that requires a industry sponsor. The process takes around 12 months and is very onerous. CORE meets the same criteria as all RTP products and would be permitted in those same areas. See compliance documentation for detailed explanation.

## RELIABILITY

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### *I have had challenges with a pulled liner in the past, how is CORE different?*

The CORE team has world leading experience in both composite pipeline systems and conventional field installed liners. Our intention is not to sell a product, rather we seek to partner with our clients, understand the demands of the intended service and deliver an engineered solution. CORE Liner® is not just another liner. We use premium materials and technology to deliver a product that can thrive in the most severe of service. On all applications, during the application review process, CORE engineers will review the critical design consideration matrix and verify the suitability of CORE Liner® for your service conditions.

## STUB-ENDS

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### *What about stub ends?*

HDPE flange stub ends are specially injection-molded and then machined to CORE's strict tolerances in order to work in our system. The stub ends are electro-fused, as is the rest of the system. This is a significantly more reliable than conventional butt fusion methods that potentially leave the materials under strain. CORE has developed a patented high performance compression ring. This is a custom designed component that adds two additional gaskets to complete an industry leading flange seal.

## STRINGING

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### *How do I string CORE Linepipe®?*

CORE Linepipe® handles like traditional steel pipe with very few variances. Calipers, grapple, slings, vacuum are all acceptable. The only thing that can't be used are stringing end hooks.



## TEMPERATURE

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### *What are the temperature limitations when installing CORE Liner®?*

CORE Liner® can be installed in temperatures as low as -30°C / 86°F and up to 55°C / 130°F temperatures.

## VACUUM

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### *What if my system goes on vacuum?*

Vacuum is not recommended for any liner system and CORE Linepipe® recommends avoiding vacuum conditions or installing vacuum protection if vacuum is unavoidable. Please note that CORE Liner® is significantly more resistant to collapse than conventional liner systems. We have successfully completed vacuum testing and were not able to collapse our liner until the temperature rating of the liner had been drastically exceeded. Our EF fittings act as structural supports every 62 ft / 18.7 m and our premium liner material is very robust. It is recommended as a best practice to ensure that pressure in the interstitial space between liner and steel is never to exceed the pressure inside the liner.

## VENTING

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### *Do I need to vent CORE Linepipe®? How long in-between vents is suitable?*

Yes, CORE Linepipe® needs to be appropriately vented. Vent spacing and requirements are unique to each pipeline. CORE's engineering team can assist with guidance if requested. Additionally, CORE offers our AIM (Advanced Integrity Monitoring fitting) that allows venting or monitoring to be installed anywhere along the length of the pipeline. The AIM fitting does not use buried flanges.

