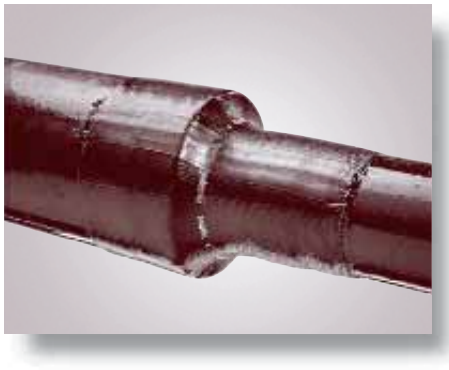
Covalence®
Heat Shrinkable Products

CSEM-F CASEAL (US) Wrap-around Pipeline Casing Seal



Heat-shrinkable sleeve providing waterproof seal between casing & carrier pipe.

Product description

CSEM-F/ CASEAL (US) casing/carrier step-down sealing.
Construction: Two-layer system:
First layer: Visco-elastic mastic sealant.
Second layer: Fiberglass reinforced, radiation cross-linked, polyethylene backing.
Additional kit component: Non-shrinkable, polypropylene support sheet.

CSEM-F/CASEAL (US) is a heat-shrinkable, wrap-around sleeve with a very high shrink ratio, specially developed for casing/service pipe sealing.
The special adhesive inside the thick-wall CSEM-F/CASEAL(US) assures an excellent bond between the sleeve and bare or pre-coated pipes.
The fiberglass reinforced woven and laminated backing gives the CSEM-F/CASEAL(US) sleeve a high mechanical resistance as well as a high recovery capacity. A zipper closing system allows a simple and fast installation. In addition to the CSEM-F/CASEAL(US) sleeve, a support sheet is supplied which provides a smooth step-down in the transition area to ensure a tight closure and enhances the mechanical strength.

CSEM-F/CASEAL(US) is installed using standard gas torches. After pipe surface preparation and preheating, the support sheet is wrapped around the transition to be sealed followed by the heat-shrinkable sleeve. The sleeve is zipper-closed, forming a tube, and shrunk in place tightly fitting around the substrate. During recovery, the adhesive softens and flows to form a tight bond. The bond strength builds up during cool down and is fully retained after completion of the job.

Product features/benefits

- **Fiberglass reinforced backing**
  Provides high mechanical resistance.
  Provides a high recovery capacity.
- **65% shrinkage ratio – conforms to high transitions**
  Reduces inventory & logistics costs.
- **Resists a wide range of environmental and mechanical forces**
  Reliable, moisture-proof seal!
  Extremely tough.
- **Specially formulated sealant**
  Ensures a strong bond & tight seal to virtually any substrate.
  Maintains its elasticity and sealing characteristics over a wide temperature range.
- **Sealing adhesive automatically flows and repairs minor mechanical damages**
  "Self-healing effect". Saves time.
- **Zipper closure system**
  Allows simple & fast installation.
- **Usable also when service pipe is not concentric with the casing.**
  Highly versatile.
- **No special equipment required**
  Makes installation fast and easy.
  Keeps installation costs low.

Product selection guide

	CSEM-F/CASUAL(US)
Max operating temperature	30°C (86°F)
Compatible line coatings	PE, PP, FBE, Tape, Coal tar, Asphalt, Plastics
Min preheat temperature	60°C (140°F)
Recommended pipe preparation	ST3 or SA 2½

Product thickness

	CSEM-F/CASUAL(US)
Backing (as supplied)	0.051 in. (1.3 mm)
Backing (fully free recovered)	0.128 in. (3.25 mm)
Adhesive (as supplied)	0.047 in. (1.2 mm)
Support sheet	0.043 in. (1.1 mm)

Product properties: CSEM-F/CASUAL (US)

Property	Test method	Typical Value
Backing		
Bursting strength	DIN 30672	3500 N
Adhesive		
Softening point	ASTM E-28	92ºC (198ºF)
Shear strength	EN12068 @ 10 mm(0.4")/min.	8 N/cm²
Peel strength	EN12068 @ 10 mm(0.4")/min.	9 N/cm
Sleeve		

Pressure tightness, angular deflection and axial displacement tests are described in the technical specification RUD6079

Ordering information

CSEM-F/CASEAL(US) type products are available as a kit, containing:

- a Uni-sleeve (pre-cut sleeve with integrated zipper closure system)
- a support sheet

Example: CSEM-F-280/110-425		
CSEM-F	**Product type**	**Standard Ordering options**
280/110	Recovery ratio in mm	See application table
425	Sleeve width in mm	See application table

Example: CS10750		
CSEM-F	**Product type**	**Standard Ordering options**
10750	Pipe diameter of the casing pipe in mils	See application table

Application table

CSEM-F	CS*	Min Pipe diameter	Max Casing diameter
280/110-425	10750	114.3 mm (4.50")	250 mm (10")
380/140-425	14000	139.7 mm (5.50")	355 mm (14")
540/180-425	20000	219.1 mm (8.75")	508 mm (20")
600/215-425	22000	273.0 mm (10.75")	560 mm (22")
760/270-600	28000	323.9 mm (12.75")	710 mm (28")
880/320-600	32000	355.6 mm (14")	813 mm (32")
1050/370-600	40000	406.4 mm (16")	1016 mm (40")
1150/410-600	44000	457.2 mm (18")	1118 mm (44")
1300/470-600	50000	508.0 mm (20")	1270 mm (50")

* CASEAL (US) can be made for any specific casing diameter. In this table only the sizes similar to the standard CSEM-F sizes are mentioned.

For proper product installation, see latest installation instruction.

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DS-CSEM/F-REV-4-0309

CASEAL

Product properties

Property	Test Method	Condition	Requirement
Bursting Strength	ISO 3303	23°C	min 2000 N
Cold Crack	ISO 4675		below -40°C
Chemical Resistance &	ISO 175		
Bursting Strength	ISO 3303	23°C	min 1700 N

Additional properties

For additional information regarding the physical, chemical, and electrical properties of CASEAL, as well as special sizes for special applications, consult your local sales engineer.

Nominal delivered backing thickness	.050”/1.3 mm
Nominal coating thickness	.040”/1 mm

Ordering information

Example
CS XXXX
└ Maximum diameter (inches)
(Sleeve will fit all casings and pipe diameters between minimum pipe and maximum casing diameters shown in table below.)

Nonstandard sizes and lengths of all Covalence CPG pipeline products can be manufactured for specific applications.

Standard sheet width is 24” but longer widths are available upon request to handle even larger carrier-casing transitions

Typical Product Sizes	Max. Casing OD (inches/mm)	Min. Carrier OD (inches/mm)
CS4500	4.500/114	2.375/60
CS5563	5.563/141	2.875/73
CS6625	6.625/168	3.500/89
CS8625	8.625/219	4.000/102
CS10750	10.75/273	5.536/141
CS12750	12.75/324	6.625/168
CS14000	14.00/355	6.625/168
CS16000	16.00/406	8.625/219
CS18000	18.00/457	8.625/219
CS20000	20.00/508	8.625/219
CS22000	22.00/559	10.750/273
CS24000	24.00/609	10.750/273
CS26000	26.00/660	10.750/273
CS28000	28.00/711	12.750/324
CS30000	30.00/762	14.000/355
CS32000	32.00/812	14.000/355
CS34000	34.00/863	16.000/406
CS36000	36.00/914	18.000/457
CS38000	38.00/965	20.000/508
CS40000	40.00/1016	22.000/559
CS42000	42.00/1066	24.000/609
CS44000	44.00/1117	26.000/660
CS46000	46.00/1168	28.000/711
CS48000	48.00/1219	30.000/762

Covalence
Heat Shrinkable Products

CASEAL

Application Guideline

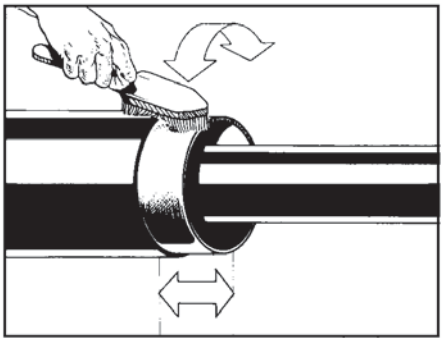
AG-CASEAL-REV6-Jan10

Material and Equipment

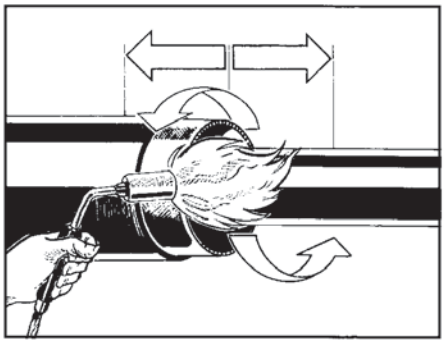
1. Appropriate size CASEAL
2. FH-2601 torch or equivalent
3. Propane tank
4. AD-1358 propane regulator and gauge
5. AD-1434, 30 foot propane hose
6. Standard safety equipment such as gloves, goggles, hard hats etc.

Notes:

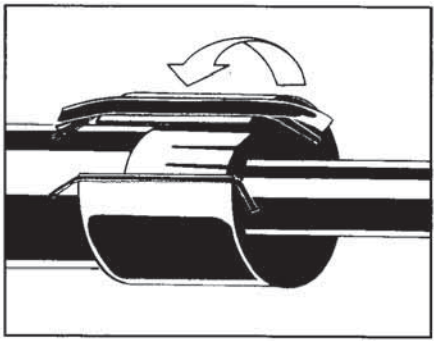
- Two sets of equipment are required for pipes of diameter 16" (400 mm) and larger.
- For proper selection of Raychem's joint protection materials, see Product Application Guide or contact your local sales engineer.



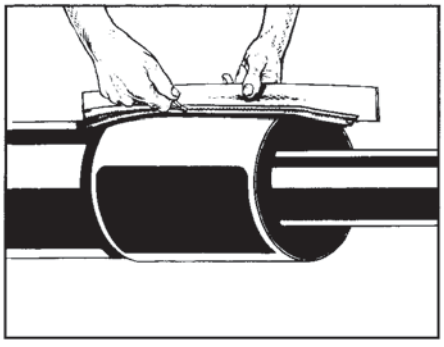
1. Preparation
Casing and carrier pipe must be cleaned by hand or power wire brush and be free of all loose and foreign materials.



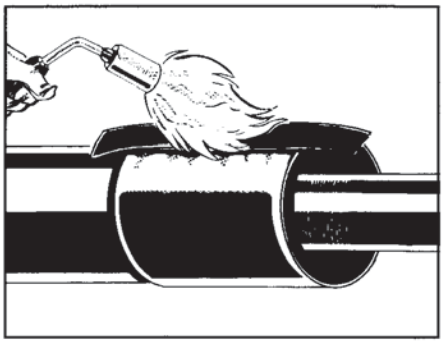
2. Preheating
Preheating is accomplished with the use of a FH-2601 torch. Both casing and carrier pipe must be preheated to a minimum hand-warm temperature which is approximately 140°F (60°C).
Preheating reduces installation recovery time and improves adhesion.



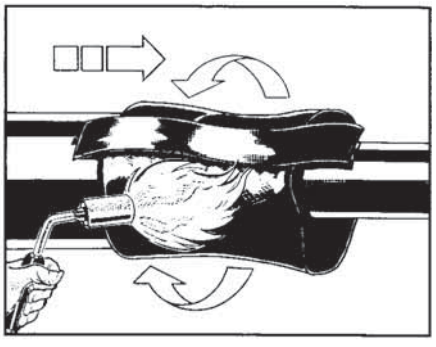
3. Sleeve installation
After removing the release film, wrap the CASEAL around the casing such that 1/3 of the sleeve is onto the casing with 2/3 free to cover the casing/carrier transition and bond onto the carrier pipe. The 1" wide uncoated edge is positioned onto the casing pipe.
Note that the split ends of the 3 finger support sheet go over the transition onto the carrier with the edge of the solid portion positioned about 2" from the edge of the casing and centered under the zipper.
Note that repositioning of the 3 finger support sheet may be necessary when the sleeve is not centered on the casing/carrier pipes.



Close the sleeve completely by zipping the closure.

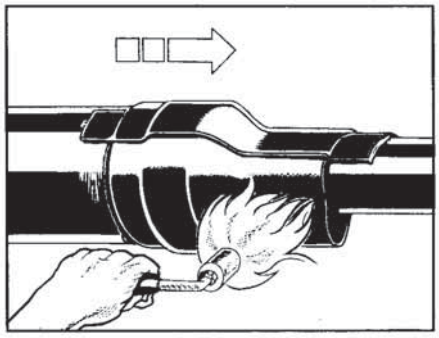


4. Shrinking of the sleeve
After folding the attached flap over the zipper, use a billowy yellow flame to heat the closure evenly until the pattern of the fabric reinforcement is visible (keep the flame moving by using a paint brush motion).

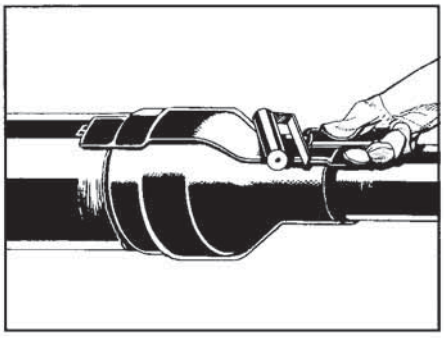


The FH-2601 torch is used for shrinking CASEAL. Adjust the torch to produce a yellow flame with enough intensity to keep the flame approximately 22 inches in length. Begin shrinking circumferentially around the casing pipe.
Note:
Two people working on opposite sides of the pipe are recommended for installing sleeves on casings 16 inch O.D. and larger.

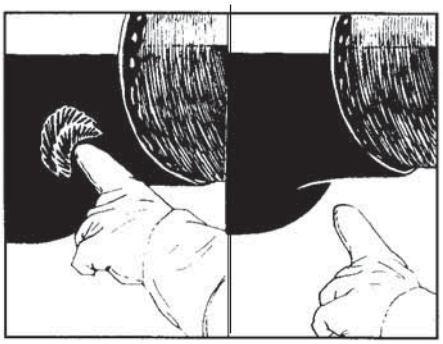
CASEAL



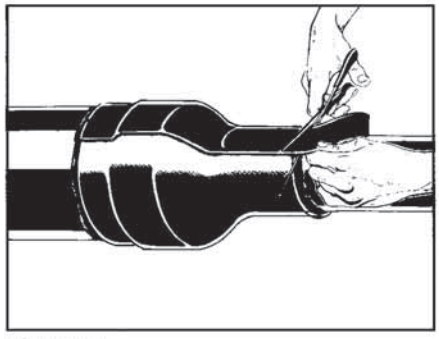
When the sleeve is fully recovered over the casing, continue shrinking circumferentially through the transition and onto the carrier pipe. Keep the torch moving in a circumferential motion at all times. Heating is complete when a smooth, uniform recovery has been achieved.



After complete recovery of the CASEAL, use roller or pat with a gloved hand the closure area to ensure complete sealing in the overlap area under the zipper.



5. Inspection
Sufficient heat has been applied when the sleeve is soft to the touch of a finger using a gloved hand.



6. Finishing
When cooled, the end of the zipper may be trimmed to assure that no electrical continuity may be present between casing and carrier pipes.
Note:
Standard cutters can be used to trim the zipper.