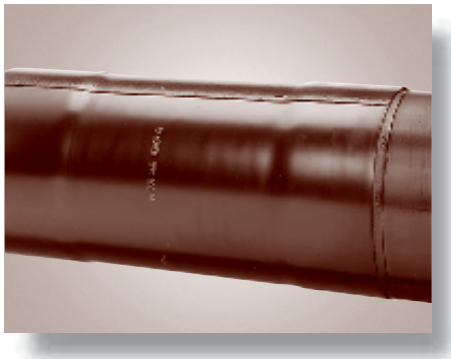
Covalence®
Heat Shrinkable Products

WPC120 Wrap-around Girth Weld Sleeve



The WPC120 with *PCI* (Permanent Change Indicator) is a two-layer field-joint coating system for pipeline operating at 121°C (250°F) temperature.

Product description

WPC120 field-joint coating.
Construction: Two-layer system:
First layer: High shear-strength copolymer adhesive.
Second layer: Radiation cross-linked, high density polyethylene with ***PCI*** (Permanent Change Indicator).

WPC120 is a wrap-around, heat-shrinkable sleeve designed for corrosion prevention and sealing on various types of piping systems (oil, gas, water, pipe-type cable, etc.), which operate at temperatures up to 121°C (250°F). WPC120 is specially suited for higher stress conditions caused both by elevated temperatures and by soils with severe contraction between wet-dry cycles. WPC120 is normally used for girth weld protection of steel pipes coated with Rayclad120 heat shrinkable tape. WPC120 may be cut to appropriate length to cover all pipe diameters. The system is designed to be applied with minimum preheating of the pipe.

While installing, WPC120 is wrapped around the joint, a closure patch is then installed (already pre-attached if Uni-sleeve) forming a tube, and the sleeve is shrunk in place. No epoxy primer is required. Upon heat exposure, the sleeve starts shrinking from its expanded size to form a tight fit around the substrate. During recovery, the copolymer adhesive softens and flows to form a perfect bond with the pipe surface providing pipe protection against corrosion. The radiation cross-linked outer layer forms a durable barrier to moisture and mechanical damage.

Product features/benefits

- **Dimpled backing provides a "permanent change" indicator for application of heat**
  Ensures correct application heat & allows easy post-heat inspection.
  Reliable inspectability at any time.
- **Available as a one-piece wrap-around unit or in roll form**
  Saves money by keeping inventory and logistics costs low.
- **High shear resistance**
  Provides high functional performance and safety.
- **High operating temperature rating**
  Top performance in demanding conditions.
- **No special equipment (standard gas torch & a roller) or skills required**
  Makes installation fast and easy.
  Keeps installation costs low.

Product selection guide

	WPC120
Max operating temperature	121°C (250°F)
Compatible line coatings	FBE, Rayclad120
Min preheat temperature	230°C (446°F)
Recommended pipe preparation	SA 2½
Soil stress restrictions	None

Product thickness

	WPC120 (/B)
Backing (as supplied)	0.030 in. (0.75 mm)
Backing (fully free recovered)	0.039 in. (1.0 mm)
Adhesive (as supplied)	0.039 in. (1.0 mm)

Product properties: WPC120 (1)

Property	Test method	Typical Value
Backing		
Tensile strength	ASTM D-638	2700 psi @ 23°C (73°F) 660 psi @ 121°C (250°F)
Elongation	ASTM D-638	580% @ 23°C (73°F) 560% @ 121°C (250°F)
Hardness, Shore D	ASTM D-2240	57
Shrink force	ASTM D-638 150°C (302°F)	40 psi
Dielectric strength	ASTM D-149	800 volts/mil 31.5 kV/mm
Moisture absorption	ASTM D-570	0.06%
Adhesive		
Softening point	ASTM E-28	175°C (347°F)
Lap shear	ASTM D-1002	1300 psi @ 23°C (73°F) 100 psi @ 121°C (250°F)

DS-WPC120-REV8-JUL10-LEXPS0008

Product properties: WPC120 (2)

Property	Test method	Typical Value Property
Sleeve		
Peel to Steel	ASTM D-1000	30 lbs/in.width @ 23°C (73°F)
Cathodic disbondment	ASTM G-42, 30 days	10 mm radius @ 121°C (250°F)
Hot water immersion	ASTM D-870, @ 90°C (194°F), 120 days	no delamination, no blisters or water under sleeves
Soil stress creep resistance	TP-206, @ 120°C (248°F), 24 hrs	0.002 inches (0.051 mm)
Low temperature flexibility	ASTM D-2671-C	-50°C (-58°F)
Impact resistance	ASTM G-14	90 in-lbs
Penetration resistance	ASTM G-17	no holiday with 12 kV detector @ 121°C (250°F)

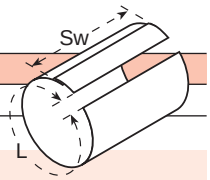
(1) *Nominal width*

Ordering information

WPC120 type products are available:

- as cut piece (pre-cut sleeve and separate closure patch)
- as Uni-sleeve (pre-cut sleeve with pre-attached closure patch)
- as a roll (closure patches to be ordered separately)

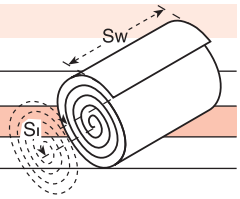
Select sleeve width that will overlap onto the mill-applied coating by 2 inches (50 mm) minimum on each side of the weld joint.
Take a 10% shrinkage during installation of sleeve width into account when calculating the minimum sleeve width.



*** Cut piece / Uni-sleeve**

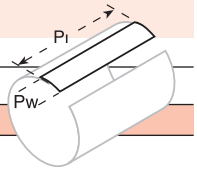
Example: WPC120-10750X17/B/UNI		
*** Roll form** (closure patches to be ordered separately)		**Standard Ordering options**
WPC...	Product type	WPC120
10750	Outside pipe diameter in mils	2.375" – 48.000" (DN50 – DN 1200)
17	Sleeve width in inches (Sw)	11" (11.25 or 285 mm) (1), 17" (17.75 or 450 mm) (1) 24" (23.5 or 600 mm) (1), 34" (34.25 or 870 mm) (1)
B	Thickness code	B
/UNI	Designates pre-attached closure patch	optional

(1) *Nominal width*



Example: WPC120-17x100-RL		
*** Closure patch**		**Standard Ordering options**
WPC...	Product type	WPC120
17	Roll width in inches (Sw)	11" (11.25 or 285 mm) (1), 17" (17.75 or 450 mm) (1) 24" (23.5 or 600 mm) (1), 34" (34.25 or 870 mm) (1)
100	Roll length in feet (Sl)	100 ft (30 m)

(1) *Nominal width*



Example: WPCP-IV-4x17		
4	Closure patch width in inches (Pw)	4" (100 mm), 6" (150 mm)
17	Closure patch length in inches (Pl)	11" (11.25 or 285 mm) (1), 17" (17.75 or 450 mm) (1) 24" (23.5 or 600 mm) (1), 34" (34.25 or 870 mm) (1)

(1) *Nominal width*

Sleeve cut lengths and appropriate closure patch widths depend on the pipe size and product construction, see latest application table AT-GIRTHWELD
For proper product installation, see latest installation instruction.

DS-WPC120-REV8-JUL10-LEXPS0008

BERRY PLASTICS CORPORATION AND SUBSIDIARIES
CORROSION PROTECTION GROUP
www.berrycpg.com

Local Distributor / Representative:

For contact details of local Distributors / Representatives
Please visit www.berrycpg.com.

Headquarters
Franklin, MA, USA
Tel: +1 508 918 1714
US Toll Free: +1 800 248 0149
Fax: +1 508 918 1910
CPG@berryplastics.com

Houston, TX, USA
Tel: +1 713 676 0085
US Toll Free: +1 888 676 7202
Fax:+1 713 676 0086
CPGH@berryplastics.com

Tijuana, Mexico
Tel USA +1 858 633 9797
Fax US: +1 858 633 9740
Tel Mexico: +52 664 647 4397
Fax Mexico: +52 664 607 9105
CPGTJ@berryplastics.com

Westerlo, Belgium
Tel. +32 14 722500
Fax +32 14 722570
CPGE@berryplastics.com

Baroda, India
Tel: +91 2667 264721
Fax: +91 2667 264724
CPGIN@berryplastics.com

WPC 120

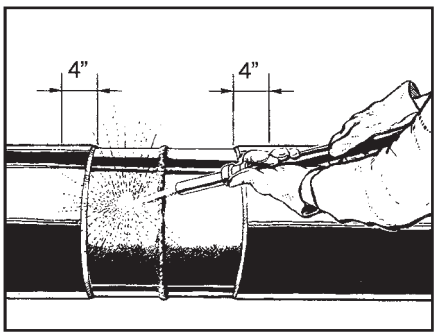
Wrap-around Pipe Sleeve
For High-Temperature Pipes
Installation Instructions
AG-WPC120-REV7-Jan10

Materials and equipment
1. Appropriate size WPC120 sleeve and WPCP IV closure
2. Propane torch
3. Propane gas tank, hose, regulator and gauge
4. Contact pyrometer
5. Hand roller (straight)
6. Standard safety equipment such as gloves, goggles, hard hat, etc.

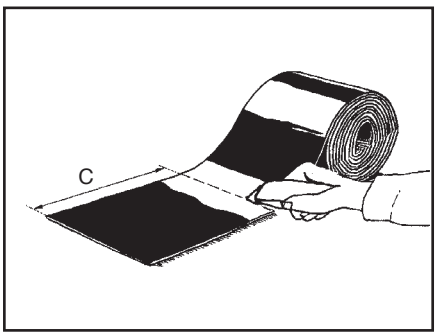
Installation has to be done according to local government regulations and usual safety precautions.

Note:
For sleeves 12"(300 mm) in diameter and larger, two people are needed.

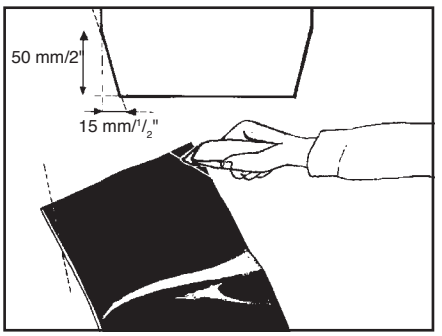
For proper selection of joint protection materials, see Product Selection Guide or contact your local Sales Engineer.



Joint cleaning
1. Weld area must be thoroughly cleaned with a grit blaster to a white metal finish, SIS Sa 2 1/2 or better. Adjacent line coating must also be gritblasted to a clean surface. The exposed steel and coated areas should be wiped clean of all foreign materials.

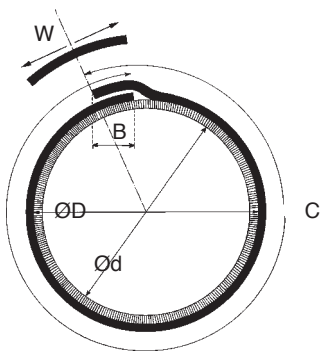


2. Cut the sleeve to the appropriate length according to below table.

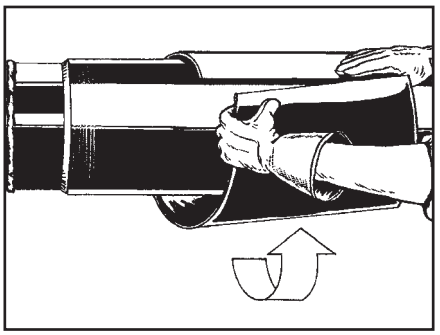


3. Cut the corners of the underlying end of the sleeve to approximately 1/2" x 2" (15 mm x 50 mm)

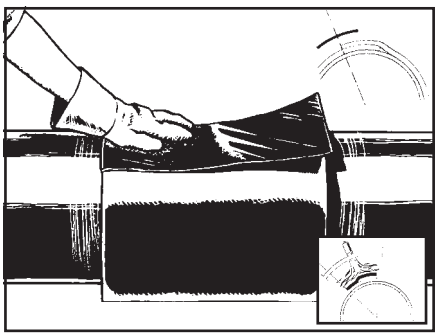
Ø D mils	Ø d	C	B	W
inches (0,001)	mm	in./mm	in./mm	in./mm
3500	80	15/380	2/50	4/100
4500	100	19/485	2/50	4/100
5563	125	23/585	2/50	4/100
6625	150	27/685	2/50	4/100
8625	200	36/915	2/50	4/100
10750	250	44/1115	2/50	4/100
12750	300	50/1265	2/50	4/100
14000	350	55/1395	2/50	4/100
16000	400	62/1575	2/50	4/100
18000	450	68/1730	2/50	4/100
20000	500	75/1900	2/50	6/150
22000	550	81/2055	2/50	6/150
24000	600	87/2205	2/50	6/150
26000	650	95/2415	2/50	6/150
28000	700	102/2590	2/50	6/150
30000	750	107/2720	2/50	6/150
32000	800	114/2895	2/50	6/150
34000	850	121/3075	2/50	6/150
36000	900	127/3225	2/50	6/150
38000	950	134/3400	2/50	6/150
40000	1000	140/3555	2/50	6/150



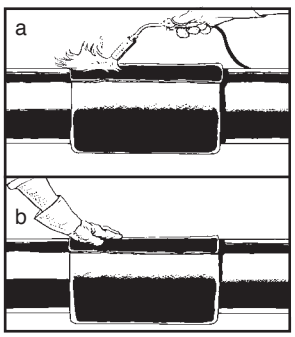
WPC 120

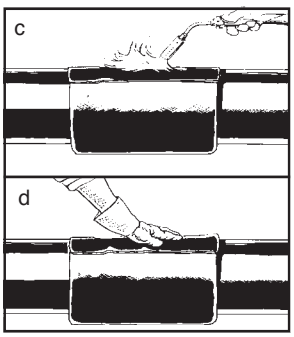


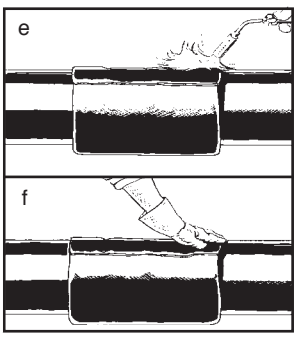
Sleeve assembly
1. Wrap the WPC120 sheet around the pipe about 1 meter away from the weld.
The sheet should overlap the sheet (excluding closure) by 2” (50mm) minimum.
Note:
This will make a tube 2-3” (50-75 mm) larger than the pipe in diameter. Sheet end that comes over the top of the pipe should be on the top of overlap.



WPCP IV closure application
1. Press the WPCP IV closure in position, centering over the exposed sheet end. (For UNI-sleeve products, the closure is preattached and already centered in position.)

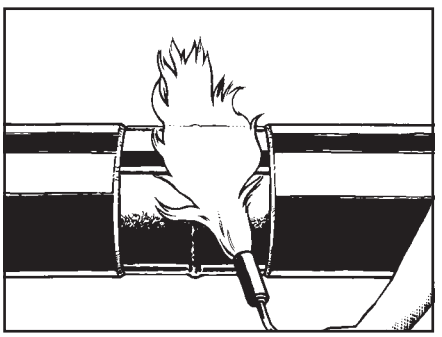




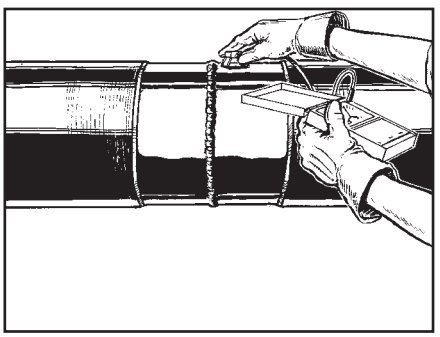


2. Using a torch, adjust flame length to approximately 20" (500 mm) to produce a yellow flame.
Using the yellow portion of the flame, heat the closure evenly until the pattern of the fabric reinforcement is visible.

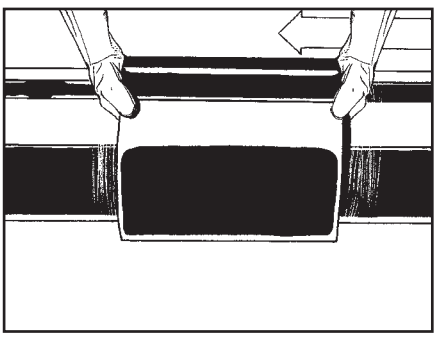
With gloved hand, pat down the closure and smooth any wrinkles by gently working them outward from the center of the closure.



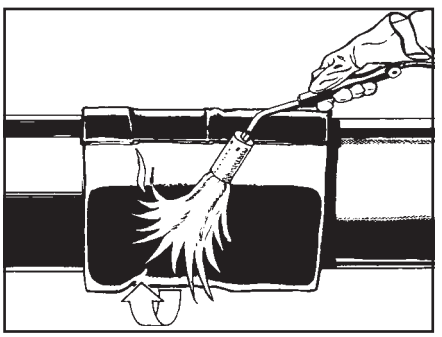
3. Using a torch, evenly preheat the bare steel surface to a minimum of 445°F (230°C) but not higher than 500°F (265°C). Adjacent line coating must be heated to a minimum of 275°F (135°C). (When construction conditions require, the area may be preheated with a ring burner and protective blankets or an induction heater.)



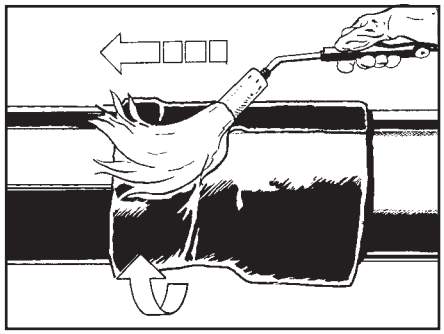
4. Using a pyrometer, ensure that proper preheat has been achieved. Wait 30 seconds after heating before verifying temperature to avoid incorrect temperature measurements.



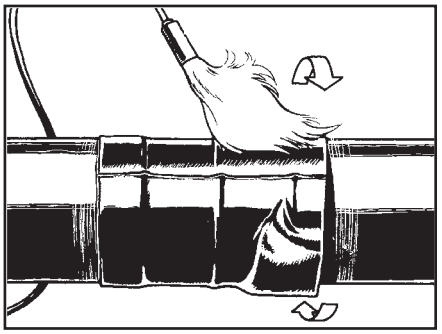
Sleeve recovery
1. Slide the sleeve over the joint area, centering it over the weld.



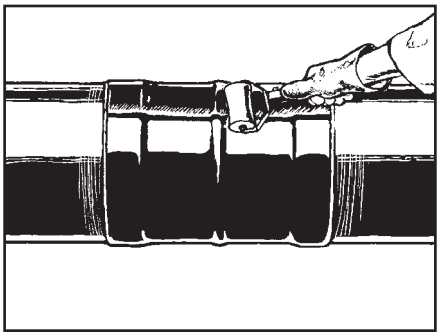
2. Using the torch, adjust flame length to approximately 20" (500 mm) to produce a yellow flame. Using the yellow portion of the flame, begin at the center of the sleeve and heat circumferentially around the pipe, using a constant paintbrush motion.



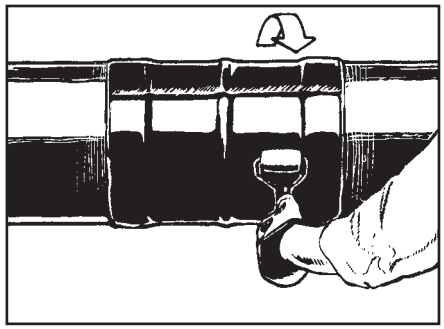
3. Continue heating toward one end of the sleeve, followed by the other.



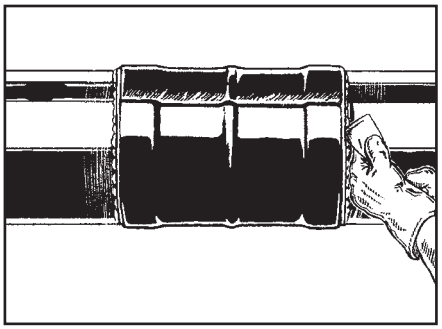
4. Continue shrinking until the sleeve is completely recovered and soft to the touch.
Note:
Sleeve may be recovered starting at one end and proceeding toward the opposite end, depending on conditions (i.e., wind).



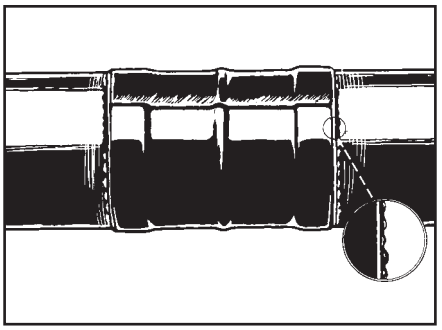
5. When the sleeve has been shrunk onto the joint area and is still hot and soft, run a small hand roller over the sleeve to push out any trapped air.



6. Particular attention should be paid to the weld and cut-back area. If necessary, areas may be reheated to roll out air.



7. When the sleeve has cooled, examine the edges for proper adhesion. Using a paintscraper, smooth the outcoming adhesive. A proper bond is achieved when the adhesive is well-bonded to the coating surface.



8. Sleeve is fully recovered when all of the following have occured:
1) The sleeve has fully conformed to the pipe and adjacent coating.
2) There are no cold spots or dimples on the sleeve surface.
3) Weld bead profile can be seen through the sleeve.
4) After sleeve is cool, adhesive flow is evident on both edges.