

---

**SECTION 02260  
POLYETHYLENE WRAP**

**PART I: GENERAL**

**1.1 GENERAL REQUIREMENTS**

- A. Polyethylene wrap to be used in open-cut construction for cast iron and ductile iron pipe when cathodic protection system is not required by the Drawings.

**1.2 MEASUREMENT AND PAYMENT**

- A. Unit Prices:
  - 1. No separate payment will be made for polyethylene wrap. Include cost of polyethylene wrap in the unit price for pipes and fittings to be wrapped.
  - 2. Refer to Section 01270 – Measurement and Payment for unit price procedures.
- B. Stipulated Price (Lump Sum):
  - 1. If Contract is Stipulated Price Contract, payment for work in this Section is included in Total Stipulated Price.

**1.3 REFERENCE**

- A. ASTM – American Society for Testing and Materials.
  - 1. ASTM D1248 – Standard Specification for Polyethylene Plastics Molding and Extrusion Materials For a Wire and Cable.
- B. AWWA – American Water Works Association.
  - 1. AWWA C105 – Standard for Polyethylene Encasement for Ductile-Iron Pipe System.
- C. CFTS – City of Friendswood Technical Specifications.

**1.4 SUBMITTALS**

- A. Conform to requirements of Section 01330 – Submittal Procedures.
- B. Submit product data for proposed film and tape for approval.

**1.5 QUALITY ASSURANCE**

- A. Provide manufacturer's affidavits that material was manufactured in compliance with Technical Standards referenced in this Section.

**PART II: PRODUCTS**

**2.1 MATERIALS**

- A. Polyethylene Film: Tubular or sheet form without tears, breaks, holidays or defects; conforming with requirements of AWWA C105, two and one-half percent (2-1/2%) to three (3%) percent carbon black content, either low- or high-density:

**02260-1**

1. Low-density polyethylene film: Low-density polyethylene film shall be manufactured of virgin polyethylene material conforming to following requirements of ASTM D1248.
  - a. Raw material.
    - 1) Type : I.
    - 2) Class: C (black).
    - 3) Grade: E-5.
    - 4) Flow rate (formerly melt index): Four tenths gallons per ten minutes (0.4 Gal/10 Min), maximum.
    - 5) Dielectric strength: Volume resistivity,  $10_{15}$  ohm-cm, minimum.
  - b. Physical properties.
    - 1) Tensile strength: One thousand pounds per square inch (1200 psi), minimum.
    - 2) Elongation: Three hundred percent (300%), minimum.
    - 3) Dielectric strength: Eight hundred volts per mil (800 V/mil) thickness, minimum.
  - c. Thickness: Low-density polyethylene film shall have normal thickness of eight thousandths inch (0.008 In). Minus tolerance on thickness is ten percent (-10%) of nominal thickness.
2. High-density, cross-laminated polyethylene film: High-density, cross laminated polyethylene film shall be manufactured of virgin polyethylene material conforming to following requirements of ASTM D1248.
  - a. Raw material.
    - 1) Type: III.
    - 2) Class: C (black).
    - 3) Grade: P33.
    - 4) Flow rate (formerly melt index): Four tenths Gallon per ten minutes (0.4 Gal/10 Min) to five tenths gallon per ten minutes (0.5 Gal/10 Min), maximum.
    - 5) Dielectric strength: Volume resistivity,  $10_{15}$  ohm-cm, minimum.
  - b. Physical properties:
    - 1) Tensile strength: Five thousand pounds per square agent (5000 psi), minimum.
    - 2) Elongation: One hundred percent (100%), minimum.
    - 3) Dielectric strength: Eight hundred volts per mil (800 V/mil) thickness, minimum.
  - c. Thickness: Film shall have nominal thickness of four thousandths inch (0.004 In). Minus tolerance of thickness is ten percent (-10%) of nominal thickness.

- B. Polyethylene Tape: Provide three inch (3 In) wide, plastic-backed, adhesive tape; Paleocene No. 900, Scotchwrap No. 50 or approved equal.

**PART III: EXECUTION**

**3.1 PREPARATION**

- A. Remove lumps of clay, mud and cinders from pipe surface prior to installation of polyethylene encasement. Prevent soil or embedment material from becoming trapped between pipe and polyethylene.
- B. Fit polyethylene film to contour of pipe to affect snug, but not tight fit; encase with minimum space between polyethylene and pipe. Allow sufficient slack in contouring to prevent stretching polyethylene where it bridges irregular surfaces, such as bell-spigot interfaces, bolted joints or fittings and to prevent damage to polyethylene due to backfilling operations. Secure overlaps and ends with adhesive tape to hold polyethylene encasement in place until backfilling operations are complete.
- C. For installations below water table or in areas subject to tidal actions, seal both ends of polyethylene tube with adhesive tape at joint overlap.

**3.2 INSTALLATION**

- A. Tubular Type (Method A):
  - 1. Cut polyethylene tube to length approximately two feet (2 Ft) longer than pipe section. Slip tube around pipe, centering tube to provide one foot (1 Ft) overlap on each adjacent pipe section and bunching it accordion-fashion lengthwise until it clears pipe ends.
  - 2. Lower pipe into trench and make up pipe joint with preceding section of pipe. Make shallow bell hole at joints to facilitate installation of polyethylene tube.
  - 3. After assembling pipe joint, make overlap of polyethylene tube. Pull bunched polyethylene from preceding length of pipe, slip it over end of adjoining length of pipe and secure in place, then slip end of polyethylene from adjoining pipe section over end of first wrap until it overlaps joint at end of preceding length of pipe. Secure overlap in place. Take up slack width at top of pipe to make a snug, but not tight, fit along barrel of pipe, securing fold at quarter points.
  - 4. Repair cuts, tears, punctures or other damage to polyethylene. Proceed with installation of next section of pipe in same manner.
- B. Tubular Type (Method B):
  - 1. Cut polyethylene tube to length approximately one foot (1 Ft) shorter than pipe section. Slip tube around pipe, centering it to provide six inches (6 In) of bare pipe at each end. Take up slack width at top of pipe to make snug, but not tight, fit along barrel of

- pipe, securing fold at quarter points; secure ends.
  2. Before making up joint, slip three foot (3 Ft) length of polyethylene tube over end of preceding pipe section, bunching in accordion-fashion lengthwise. After completing joint, pull three foot (3 Ft) length of polyethylene over joint, overlapping polyethylene previously placed on each adjacent section of pipe by at least one foot (1 Ft); make each end snug and secure.
  3. Repair cuts, tears, punctures or other damage to polyethylene. Proceed with installation of next section of pipe in same manner.
- C. Sheet Type:
1. Cut polyethylene sheet to length approximately two feet (2 Ft) longer than pipe section. Center length to provide one foot (1 Ft) overlap on each adjacent pipe section, bunching sheet until it clears pipe ends. Wrap polyethylene around pipe so that sheet circumferentially overlaps top quadrant of pipe. Secure cut edge of polyethylene sheet at intervals of approximately three feet (3 Ft).
  2. Lower wrapped pipe into trench and make up pipe joint with preceding section of pipe. Make shallow bell hole at joints to facilitate installation of polyethylene. After completing joint, make overlap and secure ends.
  3. Repair cuts, tears, punctures or other damage to polyethylene. Proceed with installation of next section of pipe in same manner.
- D. Pipe-shaped Appurtenances: Cover bends, reducers, offsets and other pipe-shaped appurtenances with polyethylene in same manner as pipe.
- E. Odd-shaped Appurtenances: When it is not practical to wrap valves, tees, crosses and other odd-shaped pieces in tube, wrap with flat sheet or split length of polyethylene tube by passing sheet around appurtenance and encasing it. Make seams by bringing edges together, folding over twice and taping down. Tape polyethylene securely in place at valve stem and other penetrations.
- F. Openings in Encasement: Create openings for branches, service taps, blow-offs, air valves and similar appurtenances by making X-shaped cut in polyethylene and temporarily folding back film. After appurtenance is installed, tape slack securely to appurtenance and repair cut, as well as other damaged area in polyethylene, with tape. Service taps may also be made directly through polyethylene, with resulting damaged areas being repaired as specified.
- G. Junctions between Wrapped and Unwrapped Pipe: Where polyethylene-wrapped pipe joins adjacent pipe that is not wrapped, extend polyethylene wrap to cover adjacent pipe for distance of at least three feet (3 Ft). Secure end with circumferential turns of tape. Wrap service lines of dissimilar metals with polyethylene or suitable dielectric tape for minimum clear distance of three feet (3 Ft) away from cast or ductile iron pipe.

**3.3 REPAIRS**

- A. Repair cuts, tears, punctures or damage to polyethylene with adhesive tape or with short length of polyethylene sheet or cut open tube, wrapped around pipe to cover damaged area and secured in place.

**END OF SECTION**