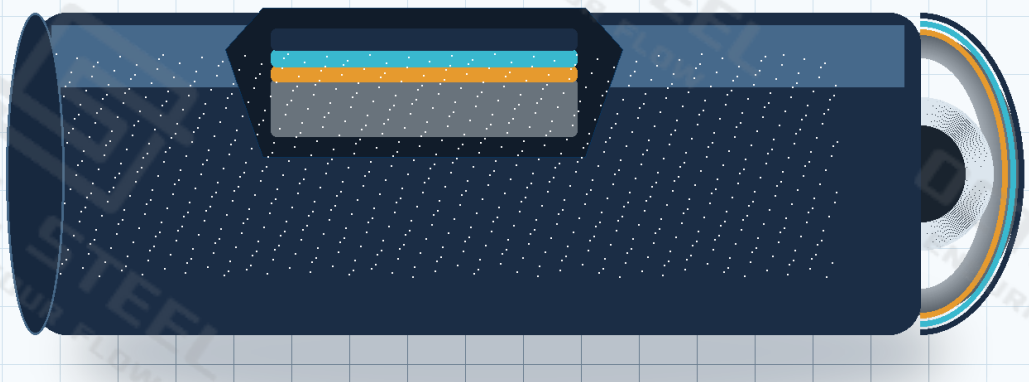
Product Definition and Coating Structure

A procurement-ready view of the steel substrate, three functional layers and acceptance logic

- **3 Extruded polyethylene topcoat**
- **2 Copolymer / grafted adhesive**
- **1 Fusion-bonded epoxy primer**
- **0 Blast-cleaned steel pipe**



SYSTEM LOGIC Steel adhesion and corrosion barrier + interlayer bond + mechanical topcoat

LAYER 1

FUSION-BONDED EPOXY

Primary corrosion-protection interface; bonds to prepared steel. Controls: cleanliness, profile, steel temperature, cure and film continuity.

LAYER 2

COPOLYMER ADHESIVE

Connects FBE to the polyethylene topcoat. Controls: material compatibility, extrusion temperature, application timing and coverage.

LAYER 3

POLYETHYLENE TOPCOAT

Protects against moisture, impact, indentation and abrasion. Controls: total thickness, weld-seam coverage, continuity and handling damage.

3LPE shall be specified as a complete qualified coating system, not by total thickness alone.

Base pipe + coating standard + qualified material combination + process controls + inspection records = release basis

Governing Standards

Separate the steel-pipe product specification from the external coating conformity requirements

COMPLETE ORDER = BASE-PIPE STANDARD + COATING STANDARD + SURFACE-PREPARATION METHODS + PROJECT CONTROLS

A base-pipe MTC verifies the steel product. It does not, by itself, certify the external 3LPE coating system.

A BASE-PIPE STANDARDS

- **API SPEC 5L - 47TH EDITION**
  Steel line-pipe manufacturing and acceptance requirements; construction, grade, dimensions, properties and inspection are defined in the purchase order.
- **ISO 3183:2019**
  Seamless and welded pipeline steel pipe, including PSL 1 and PSL 2. ISO confirms this edition remains current after its 2026 review.
- **AGREED ASTM / EN / PROJECT SPEC**
  Used only when explicitly identified and compatible with the coating-line and project requirements.

B COATING STANDARDS

- **ISO 21809-1:2018**
  Plant-applied external three-layer polyethylene and polypropylene coatings for welded and seamless steel pipe used in pipeline transportation systems.
- **DIN 30670-1:2024-01**
  Requirements and testing for factory-applied extruded polyethylene coatings on steel pipes and fittings.
- **CSA Z245.21:22**
  Plant-applied external polyethylene coating requirements covering qualification, application, inspection, testing, handling and storage.

C SURFACE PREPARATION

- **ISO 8501-1**
  Visual assessment of rust grades and preparation grades; commonly referenced for blast-cleaned steel condition.
- **ISO 8502 SERIES**
  Methods for assessing dust and surface contaminants, including soluble salts where the project requires them.
- **ISO 8503 SERIES**
  Comparator, replica-tape and instrument methods for assessing blast-cleaned surface profile / roughness.

PROJECT SPECIFICATION CONTROLS

- **Temperature class**
  Qualified coating system and design/service temperature
- **Coating class**
  Normal, reinforced or project-defined mechanical protection
- **Layer thickness**
  Minimum FBE, adhesive and total coating thickness
- **Pipe-end cutback**
  Length, tolerance, edge geometry and bare-end protection
- **Test frequency**
  Production, lot, shift, daily or PQT frequencies per approved ITP
- **Repair limits**
  Permitted damage, maximum repair size and approved repair system
- **Documentation**
  APS, PQT, ITP, calibration, inspection, repair and release records

ORDERING CAUTION: “API 5L 3LPE PIPE” IS INCOMPLETE WITHOUT COATING CLASS, THICKNESS, CUTBACK, TESTING AND DOCUMENTATION.

Standards verified against official public catalogue / announcement pages, June 2026.

Project-specified values are controlled by the PO, APS, PQT or ITP.

Supply and Ordering Data Sheet

Use this sheet to convert a product name into a complete, auditable RFQ and purchase order

REFERENCE-RANGE RULE: 4-60 in OD and approximately 1.8-3.7 mm total coating are Octal supply references, not universal limits or acceptance criteria.

Item	Supplier Reference Range	Project Requirement	Confirmation Record
Base-pipe construction	Seamless, HFW/ERW, LSAW or SSAW	Select approved manufacturing route	PO / mill capability review
Pipe standard and edition	API Spec 5L, 47th Edition; ISO 3183:2019; agreed project standard	State exact standard and edition	PO + base-pipe MTC
Product specification level	PSL 1 or PSL 2 where applicable	Project-specified	PO + MTC
Steel grade	Grade B and X-series grades per selected standard and qualified mill route	Project-specified	MTC + mechanical test reports
Outside diameter	Octal reference supply range: 4-60 in	State OD / dimensional system	PO + dimensional report
Wall thickness	Subject to selected pipe standard, grade, route and mill capability	State WT / schedule / tolerance	PO + dimensional report
Pipe length	Project schedule and transport plan	Project-specified length and tolerance	PO + packing list
End preparation	Plain or beveled ends	Bevel / land / squareness as applicable	End-preparation report
Coating standard and edition	ISO 21809-1:2018; DIN 30670-1:2024-01; CSA Z245.21:22	Select one governing basis plus project specification	PO + APS / compliance matrix
Design temperature	Controlled by qualified coating-system data and service conditions	Project-specified	PO + coating data sheet / PQT
FBE minimum dry-film thickness	No universal value - governing standard and project specification control	Project-specified minimum	APS + thickness report
Adhesive minimum thickness	No universal value - approved material combination controls	Project-specified minimum	APS + material certificate / report
Total minimum coating thickness	Octal reference range: approximately 1.8-3.7 mm	State minimum by OD / coating class	PO + thickness report
Coating class	Normal, reinforced or project-defined system	Project-specified	PO + APS / PQT
Cutback length and tolerance	Production capability subject to welding and field-joint needs	Project-specified	PO + cutback report
Coating edge geometry	Straight / tapered / profiled termination as qualified	Project-specified	APS + visual / dimensional record
Holiday-detection procedure	Approved procedure selected for coating thickness and standard	Project-specified method and acceptance	ITP + holiday report
Peel / bond test requirement	Per governing standard, coating system and PQT / ITP	Project-specified temperature and frequency	PQT / production test report
Impact and indentation testing	Qualification or production testing as required	Project-specified method and frequency	PQT / production test report
Cathodic-disbondment testing	Qualification / production basis per governing requirements	Project-specified conditions	PQT / laboratory report
Maximum repair size	Controlled by approved repair procedure and project limits	Project-specified	Repair procedure + repair map
Inspection frequency	Defined by standard, PQT and approved ITP	Project-specified	ITP + inspection dossier
Third-party inspection	Witness / hold / review points only where contracted	Project-specified	TPI release note

RFQ and Purchase-Order Checklist

Twelve items that connect the specification, qualified process, inspection evidence and shipment release

01 DEFINE THE PIPE

- [ ] **Complete pipe designation**
  Standard + edition + PSL + construction + grade + OD x WT + length
- [ ] **End preparation**
  Plain / bevel geometry, tolerances and temporary protection
- [ ] **Service basis**
  Medium, design temperature, buried / submerged condition and installation risk

02 DEFINE THE COATING

- [ ] **Complete coating designation**
  Governing coating standard + project specification + coating class
- [ ] **Layer requirements**
  Minimum FBE, adhesive and total coating thickness
- [ ] **Pipe-end interface**
  Project-specified cutback, tolerance, edge geometry and field-joint compatibility

03 QUALIFY AND INSPECT

- [ ] **Approved material combination**
  FBE + adhesive + PE batches and supplier data
- [ ] **APS + PQT + ITP**
  Application Procedure Specification, Procedure Qualification Test and Inspection & Test Plan
- [ ] **Inspection evidence**
  Calibration, surface preparation, temperature, thickness, holiday, bond and performance records

04 REPAIR, TRACE AND RELEASE

- [ ] **Repair control**
  Approved method, maximum project limit, repair map and reinspection
- [ ] **Pipe-number traceability**
  Pipe identity linked to heat, coating batches, production shift and inspection results
- [ ] **Shipment release**
  Packing-list pipe map, final dossier and third-party release where specified

MINIMUM TECHNICAL DESIGNATION - COMPLETE THE BRACKETED FIELDS

API Spec 5L, 47th Edition, PSL 2 [construction / grade / OD x WT] line pipe with external 3LPE coating to ISO 21809-1:2018 [coating class], design temperature [ ], minimum layer / total thickness [ ], cutback [ ], and approved project ITP.

RELEASE CHAIN

1 Pipe designation → 2 Coating designation → 3 APS / PQT → 4 ITP records → 5 Repair closure → 6 Pipe-number map → 7 Packing list → 8 Shipment release

Reference basis verified June 2026: API Spec 5L public announcement; ISO 21809-1:2018 and ISO 3183:2019 catalogue pages; DIN 30670-1:2024-01 catalogue; ISO 8501 / 8502 / 8503 catalogue pages; CSA Z245.21:22 public material.
This guide summarizes ordering fields only. Licensed standards, approved project specifications, coating-system data, APS, PQT and ITP acceptance criteria govern the contract.

No universal holiday voltage, cutback, heating temperature or test frequency is stated.