

HDPE PIPING SYSTEMS

PE100 PRESSURE PIPES
2026 EDITION

INTERNATIONAL & AMERICAN STANDARDS

ISO 4427 • EN 12201 • ISO 4437 • EN 1555 • DIN 8074/8075

ASTM F714 • ASTM D3035 • ASTM D2513 • ASTM D3350 • AWWA C906

UPI-SA.NET



الاتحاد لصناعة الأنابيب
UNION PIPES
INDUSTRIES

02

SAUDI MANUFACTURING FOR CRITICAL INFRASTRUCTURE

ABOUT UNION PIPES

Union Pipes Industries manufactures PE100 HDPE pressure pipes for water, gas, fire protection and infrastructure projects. Controlled production and technical support help clients select the right pipe system for each service condition.

PE100 PRODUCTION

Consistent raw materials

WIDE PRODUCT RANGE

OD, SDR and PN options

TECHNICAL SUPPORT

Specification and supply



WHY HDPE?

PE100 combines durable pressure performance with practical installation advantages.

01 LEAK-TIGHT JOINTS

Heat-fused joints create a continuous piping system and reduce potential leakage points.

02 CORROSION RESISTANCE

HDPE does not rust or scale, supporting reliable service in aggressive environments.

03 FLEXIBILITY & IMPACT STRENGTH

The pipe accommodates ground movement and demanding installation conditions.

04 SMOOTH INTERNAL BORE

A low-friction flow path supports hydraulic efficiency throughout the system life.

05 LIGHTWEIGHT INSTALLATION

Lower pipe weight helps simplify handling, transport and field installation.

06 LONG SERVICE LIFE

PE100 provides durable performance when correctly designed, installed and operated.

UPI PRODUCT

RANGE

PE100 pressure pipes for water, gas, fire protection and infrastructure networks.

The range combines multiple diameters, wall thicknesses and pressure classes so designers can match pipe performance to project conditions and applicable standards.

AVAILABLE RANGE

OD 16–2,000 mm

SDR 41–6

PN4–PN32

PE100 PRESSURE PIPES

Straight lengths and coils
Blue, red and yellow identification stripes
Dimensions supplied to applicable project standards

MANUFACTURED IN ACCORDANCE WITH PROJECT REQUIREMENTS

ISO 4427 EN 12201 ISO 4437 EN 1555 DIN 8074/8075

ASTM F714 ASTM D3035 ASTM D2513 ASTM D3350 AWWA C906

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HDPE PRESSURE PIPE SYSTEMS

One PE100 platform for essential infrastructure networks



WATER & IRRIGATION

Blue stripe

Potable water, irrigation
and utility networks

ISO 4427 · EN 12201

FIRE PROTECTION

Red stripe

Fire-water distribution
networks

FM · ISO 4427 · EN 12201

GAS DISTRIBUTION

Yellow stripe

Natural gas distribution
networks

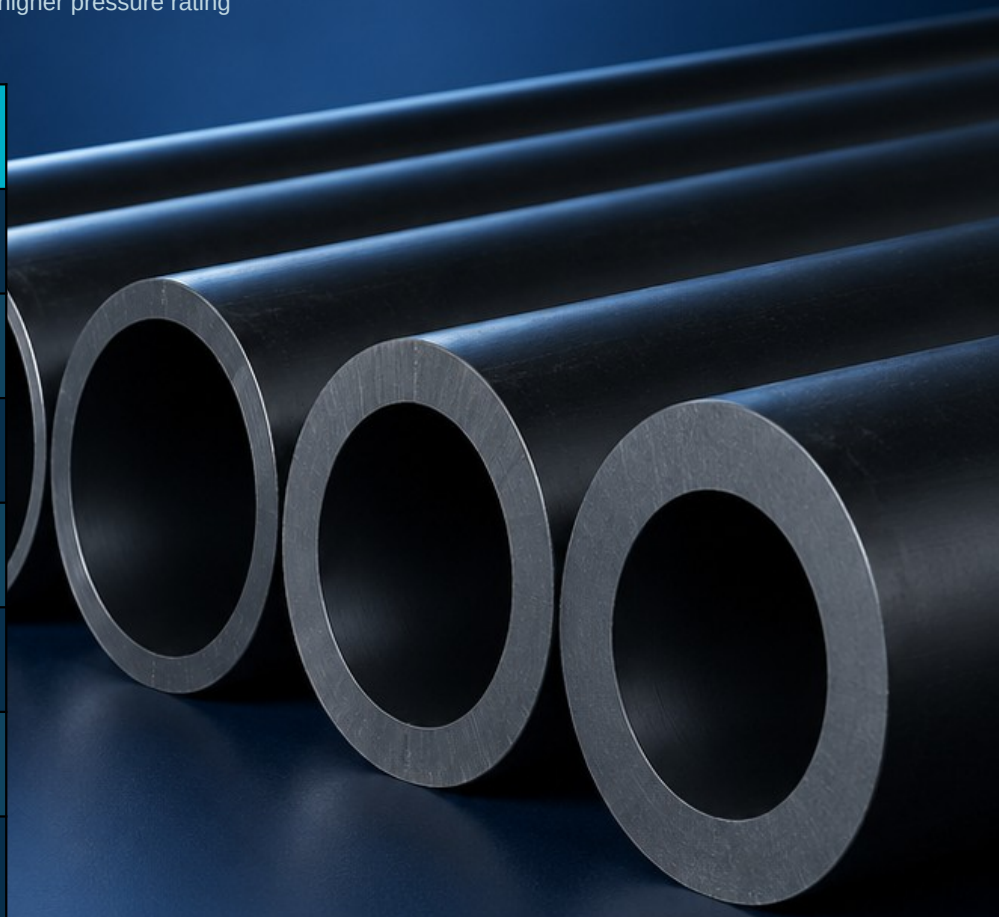
ISO 4437 · EN 1555

SDR & PRESSURE CLASSES

SDR = OUTSIDE DIAMETER ÷ MINIMUM WALL THICKNESS

Lower SDR means a thicker pipe wall and a higher pressure rating

SDR	PN (bar)
41	4
33	5
26	6.3
21	8
17	10
13.6	12.5
11	16
9	20
7.4	25
6	32



PE100 · 20°C

Typical pressure classes based on a design coefficient of C = 1.25. Temperature, fluid, installation and project requirements govern final selection.

PE100 PIPE DIMENSIONS

OD 16–315 mm · SDR 41–6 · PN4–PN32

Minimum wall thickness, mm

ISO 4427-2 · EN 12201-2 · C = 1.25 · 20°C

OD mm	SDR 41 PN4	SDR 33 PN5	SDR 26 PN6.3	SDR 21 PN8	SDR 17 PN10	SDR 13.6 PN12.5	SDR 11 PN16	SDR 9 PN20	SDR 7.4 PN25	SDR 6 PN32
16	–	–	–	–	–	–	–	2.0	2.3	3.0
20	–	–	–	–	–	–	2.0	2.3	3.0	3.4
25	–	–	–	–	–	2.0	2.3	3.0	3.5	4.2
32	–	–	–	–	2.0	2.4	3.0	3.6	4.4	5.4
40	–	–	–	2.0	2.4	3.0	3.7	4.5	5.5	6.7
50	–	–	2.0	2.4	3.0	3.7	4.6	5.6	6.9	8.3
63	–	–	2.5	3.0	3.8	4.7	5.8	7.1	8.6	10.5
75	–	–	2.9	3.6	4.5	5.6	6.8	8.4	10.3	12.5
90	–	–	3.5	4.3	5.4	6.7	8.2	10.1	12.3	15.0
110	–	–	4.2	5.3	6.6	8.1	10.0	12.3	15.1	18.3
125	–	–	4.8	6.0	7.4	9.2	11.4	14.0	17.1	20.8
140	–	–	5.4	6.7	8.3	10.3	12.7	15.7	19.2	23.3
160	–	–	6.2	7.7	9.5	11.8	14.6	17.9	21.9	26.7
180	–	–	6.9	8.6	10.7	13.3	16.4	20.1	24.6	30.0
200	–	–	7.7	9.6	11.9	14.7	18.2	22.4	27.4	33.3
225	–	–	8.6	10.8	13.4	16.6	20.5	25.2	30.8	37.5
250	–	–	9.6	11.9	14.8	18.4	22.7	27.9	34.2	41.7
280	–	–	10.7	13.4	16.6	20.6	25.4	31.3	38.3	46.7
315	7.7	9.7	12.1	15.0	18.7	23.2	28.6	35.2	43.1	52.5

NOTES

Values show nominal minimum wall thickness. Dimensional tolerances follow ISO 11922-1, Grade V. Pressure ratings apply to PE100 water service at 20°C with design coefficient C = 1.25. Product availability depends on manufacturing and project requirements.

PE100 PIPE DIMENSIONS

OD 355–2,000 mm · SDR 41–6 · PN4–PN32

Minimum wall thickness, mm

ISO 4427-2 · EN 12201-2 · C = 1.25 · 20°C

OD mm	SDR 41 PN4	SDR 33 PN5	SDR 26 PN6.3	SDR 21 PN8	SDR 17 PN10	SDR 13.6 PN12.5	SDR 11 PN16	SDR 9 PN20	SDR 7.4 PN25	SDR 6 PN32
355	8.7	10.9	13.6	16.9	21.1	26.1	32.2	39.7	48.5	–
400	9.8	12.3	15.3	19.1	23.7	29.4	36.3	44.7	54.7	–
450	11.0	13.8	17.2	21.5	26.7	33.1	40.9	50.3	61.5	–
500	12.3	15.3	19.1	23.9	29.7	36.8	45.4	55.8	68.2	–
560	13.7	17.2	21.4	26.7	33.2	41.2	50.8	62.5	–	–
630	15.4	19.3	24.1	30.0	37.4	46.3	57.2	70.3	–	–
710	17.4	21.8	27.2	33.9	42.1	52.2	64.5	79.3	–	–
800	19.6	24.5	30.6	38.1	47.4	58.8	72.6	89.3	–	–
900	22.0	27.6	34.4	42.9	53.3	66.2	81.7	–	–	–
1000	24.5	30.6	38.2	47.7	59.3	72.5	90.2	–	–	–
1200	29.4	36.7	45.9	57.2	71.4	88.2	–	–	–	–
1400	34.3	42.9	53.5	66.7	83.3	102.9	–	–	–	–
1600	39.2	49.0	61.2	76.2	94.1	117.6	–	–	–	–
1800	43.8	54.5	69.1	85.7	105.9	–	–	–	–	–
2000	48.8	60.6	76.9	95.2	117.6	–	–	–	–	–

NOTES

Values show nominal minimum wall thickness. Dimensional tolerances follow ISO 11922-1, Grade V. Pressure ratings apply to PE100 water service at 20°C with design coefficient C = 1.25. Product availability depends on manufacturing and project requirements.



TEMPERATURE DERATING

PE100 pressure adjustment for continuous operating temperatures above 20°C

ALLOWABLE OPERATING PRESSURE

Allowable pressure = nominal PN × temperature reduction factor

Temperature °C	20	25	30	35	40	45	50
Reduction factor	1.00	0.93	0.87	0.80	0.74	0.675	0.61

WORKED PRESSURE EXAMPLES

Temperature	PN10	PN16	PN25	PN32
20°C	10.0	16.0	25.0	32.0
25°C	9.3	14.9	23.3	29.8
30°C	8.7	13.9	21.8	27.8
35°C	8.0	12.8	20.0	25.6
40°C	7.4	11.8	18.5	23.7
45°C	6.8	10.8	16.9	21.6
50°C	6.1	9.8	15.3	19.5

DESIGN NOTE

Temperature derating applies to continuous operating conditions.

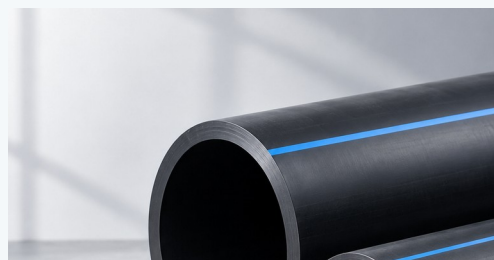
Confirm the final pressure rating using the approved PE100 compound data, conveyed fluid, installation conditions and project specification.

AMERICAN STANDARD RANGE

ANSI/AWWA C906 · PE4710 / PE100 · IPS sizing

Pressure-class pipe dimensions

The American series uses IPS outside diameters and DR designations. Values below show nominal outside diameter and minimum wall thickness in inches.



Size in	OD in	DR11 PC200	DR9 PC250	DR7.3 PC317	DR7 PC335
4	4.500	0.409	0.500	0.625	0.643
6	6.625	0.602	0.736	0.920	0.946
8	8.625	0.784	0.958	1.198	1.228
10	10.750	0.977	1.194	1.473	1.536
12	12.750	1.159	1.417	1.747	1.821
14	14.000	1.273	1.556	1.918	2.000
16	16.000	1.455	1.778	2.192	2.286
18	18.000	1.636	2.000	2.466	2.571
20	20.000	1.818	2.222	2.740	2.857
22	22.000	2.000	2.444	3.014	3.143
24	24.000	2.182	2.667	3.288	3.429
26	26.000	2.364	2.889	3.562	3.714
28	28.000	2.545	3.111	3.836	—
30	30.000	2.727	3.333	—	—
32	32.000	2.909	3.556	—	—
34	34.000	3.091	3.778	—	—
36	36.000	3.273	—	—	—
42	42.000	3.818	—	—	—

TECHNICAL NOTE

PC values are shown in psi. Metric pressure equivalents: PC200 ≈ 13.8 bar, PC250 ≈ 17.2 bar, PC317 ≈ 21.9 bar and PC335 ≈ 23.1 bar. Confirm final availability and dimensional tolerances against the controlled UPI product specification.

PE100 GAS DISTRIBUTION

ISO 4437 · EN 1555 · Black pipe with yellow identification stripes

Designed for buried gas networks

UPI PE100 gas pipes combine flexibility with fused joints that form a continuous, leak-resistant pipeline.

01 Material

PE100 compounds suitable for gas service

02 Preferred series

SDR 17 and SDR 11

03 Jointing

Butt fusion and electrofusion

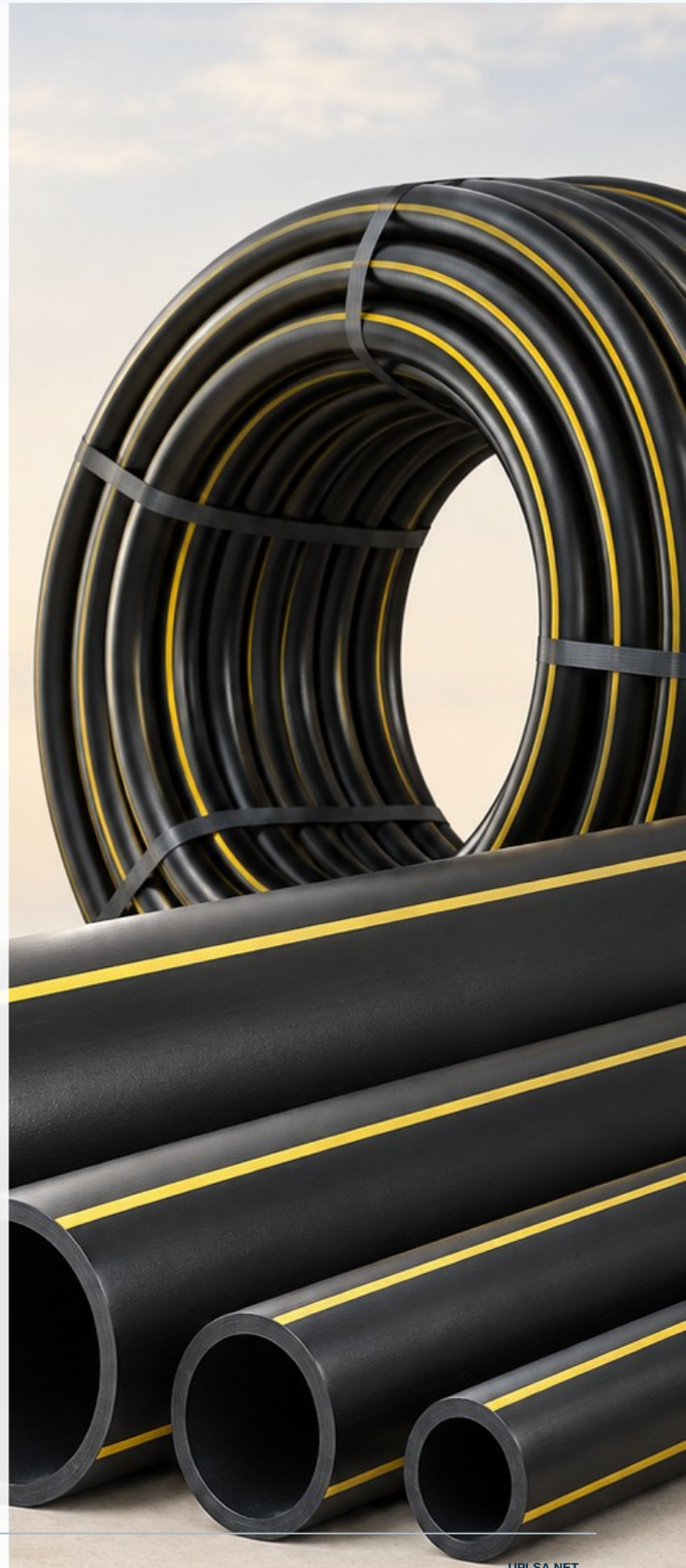
04 Supply format

Coils for smaller sizes; straight lengths for larger diameters

05 Identification

Black pipe with yellow longitudinal stripes

Gas pressure ratings follow the applicable gas standard and project design basis.



PE100 GAS PIPE DIMENSIONS

ISO 4437 · EN 1555 · Nominal outside diameter and wall thickness

Preferred gas series

Wall thickness range, mm

SDR 17

PN 6.25*

SDR 11

PN 10*

OD mm	SDR 17 min-max mm	SDR 11 min-max mm
20	—	2.3–2.7
25	—	2.3–2.7
32	2.3–2.7	3.0–3.5
40	2.4–2.8	3.7–4.2
50	3.0–3.5	4.6–5.2
63	3.8–4.3	5.8–6.5
75	4.5–5.1	6.8–7.6
90	5.4–6.1	8.2–9.2
110	6.6–7.4	10.0–11.1
125	7.4–8.3	11.4–12.7
140	8.3–9.3	12.7–14.1
160	9.5–10.6	14.6–16.2
180	10.7–11.9	16.4–18.2
200	11.9–13.2	18.2–20.2
225	13.4–14.9	20.5–22.7
250	14.8–16.4	22.7–25.1
280	16.6–18.4	25.4–28.1
315	18.7–20.7	28.6–31.6
355	21.1–23.4	32.2–35.6
400	23.7–26.2	36.4–40.1
450	26.7–29.5	40.9–45.1
500	29.7–32.8	45.5–50.1
560	33.2–36.7	50.9–56.1
630	37.4–41.3	57.3–63.2

* Gas pressure designations are application-specific. Confirm the approved operating pressure, design coefficient, compound classification and national requirements before publication or project use.

MANUFACTURING PROCESS

Controlled extrusion from approved raw material to final release

Modern extrusion lines

UPI controls material feeding, melt processing, sizing and cooling throughout production. Operators monitor the line and record key process parameters for every production batch.

SIX CONTROLLED STAGES

- | | | |
|----|--------------------------------|--|
| 01 | RAW MATERIAL | Material approval and batch identification |
| 02 | FEEDING & EXTRUSION | Controlled dosing, melting and stripe coextrusion |
| 03 | VACUUM SIZING | Outside diameter formation and dimensional stability |
| 04 | COOLING | Progressive cooling under controlled line conditions |
| 05 | MARKING & CUTTING | Permanent product marking and required supply length |
| 06 | FINAL RELEASE | Inspection, testing, packaging and dispatch approval |

QUALITY CONTROL & TESTING

Inspection and testing throughout every production batch

CONTROL PLAN

Quality checks begin with incoming material and continue through extrusion, laboratory testing and final release.

01 RAW MATERIAL

Certificate review, batch traceability, density and MFR verification

02 DIMENSIONAL CONTROL

Outside diameter, wall thickness, ovality and surface finish

03 HYDROSTATIC PRESSURE

Long-term pressure resistance under controlled temperature

04 MECHANICAL TESTING

Tensile properties and elongation at break

05 THERMAL STABILITY

Oxidation induction time for PE100 compound

06 FINAL INSPECTION

Marking, appearance, length and release documentation

TRACEABILITY

Production and inspection records connect each delivered pipe to its raw-material batch and manufacturing data.



HDPE JOINING METHODS

Reliable joints for pressure-piping systems

Controlled fusion

Clean preparation, correct alignment, verified parameters and full cooling time produce a consistent joint.

SELECTED FOR THE APPLICATION

01

BUTT FUSION

Heated pipe ends join under controlled pressure to form a homogeneous joint. Suitable for straight pipe and compatible spigot fittings.

DVS 2207-1 / ISO 21307

02

ELECTROFUSION

Embedded heating wires fuse the pipe surface to the fitting. Useful for repairs, branches and locations with limited movement.

ISO 12176-2

03

FLANGED CONNECTION

Stub ends and backing rings provide a detachable joint for valves, pumps and transitions to other piping materials.

Project flange standard

Joining procedures, equipment and parameters must match pipe size, SDR, material and project requirements.

HANDLING, STORAGE & INSTALLATION

Protecting pipe integrity from delivery to final backfill

Controlled installation

Correct handling and uniform soil support help preserve joint quality and long-term pipeline performance.



SITE PRACTICE

01

LIFTING

Use wide fabric slings and balanced lifting points. Keep chains and sharp edges away from the pipe surface.

02

STORAGE

Place pipes on level supports, secure the stack and keep pipe ends clean and protected from contamination.

03

BEDDING

Provide firm, continuous support. Remove sharp objects and compact suitable material evenly around the haunches.

04

BACKFILL

Inspect pipe and joints before lowering. Place initial backfill evenly to prevent movement or local deformation.

Follow approved project drawings, local safety requirements and the pipe manufacturer's installation instructions.

QUALITY & CONFORMITY

CERTIFICATIONS & APPROVALS

Management-system certification, product conformity and client approvals.

KEY CERTIFICATIONS & APPROVALS



FM APPROVED



SASO



National Water Company



Saudi Aramco



Saudi Electricity Company



stc



WRAS

ISO

9001

2015

ISO 9001:2015

ISO

14001

2015

ISO 14001:2015



نيوم, NEOM

NEOM



Red Sea Global



شركة المدن السعودية
Saudi modon company

MODON



Ma'aden



Kuwait Oil Company



QatarEnergy



Oman Oil



ADNOC



China Harbour Engineering



China Railway Group

Approval and certification scope remains subject to the applicable supporting document.



HDPE PIPING SYSTEMS

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UNION PIPES INDUSTRY

Saudi-made piping solutions for infrastructure, water, gas and industrial applications