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مطابقة لكافة المعايير الدولية

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Guaranteed Seamless Supply Chain
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Extended Long-Term Warranty
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Comprehensive One-Stop Services
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كل المنتجات في مكان واحد

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OPTIMIZE YOUR NETWORK:
Use Takween's Plast Advanced Hydraulics Calculator.

صمّم بدقة:
حمّل مكتبة (BIM) لمنتجات تكوين الآن.
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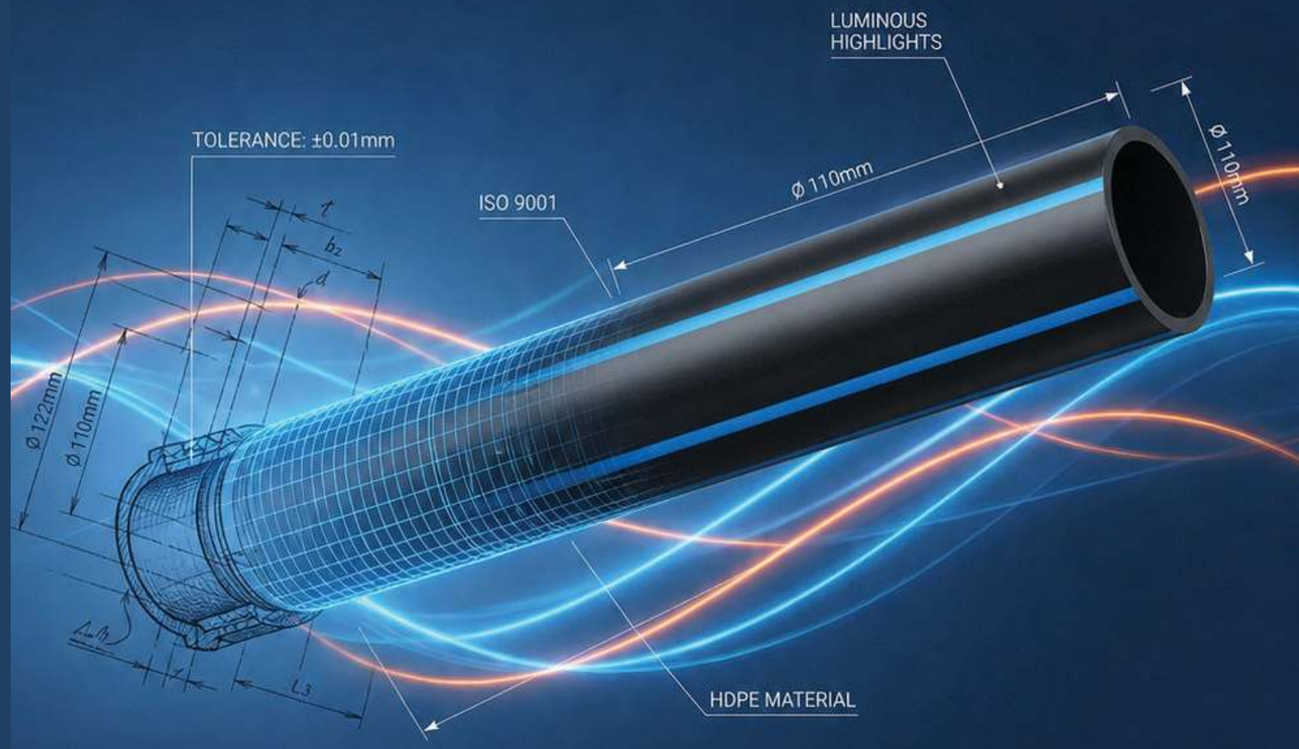

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HDPE PIPES
SASO/ISO
STANDARD

SKZ · bsi · ISO · FM APPROVED · SASO · WRAS APPROVED MATERIAL · شركة المياه الوطنية National Water Company

TP-CAT-HDPE/P-26-V1.0

من نحن
تكـــوين بلاســـت

تعد شركة "صادرات الابتكار" المظلة المؤسسية والمالك لعلامة "تكوين بلاست" التجارية. حيث يجسد هذا الارتباط تكاملاً استراتيجياً يجمع بين الرؤية الاستثمارية والخبرة الصناعية المعمقة؛ بينما تقود "صادرات الابتكار" قاطرة الابتكار والنمو، تبرز "تكوين بلاست" كذراع صناعي متميز يمثل تحالفاً استراتيجياً لنخبة من كبار المصنعين في العديد من الدول عبر خمس دول.

نحن ملتزمون بتقديم حلول مستدامة ومبتكرة لأنظمة الأنابيب البلاستيكية المستخدمة في شبكات تصريف المياه، والاتصالات، وأنظمة التكييف (HVAC)، وتطبيقات الطاقة. ونفخر بتوفير أنظمة متطورة تتماشى مع المتطلبات المتسارعة لمشاريع البنية التحتية الحديثة، على المستويين الإقليمي والعالمي.

تكمن قوتنا في العمل التشاركي، والوحدة التنظيمية، والالتزام المشترك بالتميز. ومن خلال تواجدنا الاستراتيجي في مراكز الأعمال الرئيسية بالمملكة العربية السعودية ومنطقة الخليج والشرق الأوسط، تستند "تكوين بلاست" إلى كوادر بشرية عالية الكفاءة، وشبكة موثوقة من الموزعين، وشراكات تجارية متينة لخدمة قاعدة عريضة ومتنوعة من العملاء.

وتعمل "تكوين بلاست" كشبكة متكاملة من شركات التصنيع المحلية، بالتعاون مع أكثر من 20 شريك إنتاج دولي، مدعومة بسلسلة توريد قوية في كافة أنحاء المملكة ودول مجلس التعاون الخليجي والشرق الأوسط الكبير. تتيح لنا هذه القدرات الجماعية تقديم جودة ثابتة، وحلولاً مخصصة، وخدمات موثوقة في كافة الأسواق التي نتواجد فيها.

رسالتنا

بناء قاعدة صلبة ومتنامية من العملاء المخلصين عبر تقديم أنظمة أنابيب بلاستيكية عالية الجودة تتوافق مع أرفع المعايير الدولية. نحن ملتزمون بتوفير منتجات موثوقة وحلول مبتكرة وخدمات استثنائية تدعم النجاح طويل الأمد لعملائنا وشركائنا، وتسهم بفاعلية في التنمية المستدامة للبنية التحتية الحديثة.

رؤيتنا

أن نصبح رائداً عالمياً معترفاً به في مجال أنظمة الأنابيب البلاستيكية، واضعين معايير جديدة للثقة والابتكار والتميز الصناعي. تطمح "تكوين بلاست" لقيادة الأسواق الإقليمية من خلال التقنيات المتقدمة والحلول المستدامة والشراكات الاستراتيجية، لتصبح مرجعاً موثوقاً لمشاريع البنية التحتية والمرافق العامة حول العالم.

قيمنا الجوهرية

1. التميز في الجودة: نلتزم بأعلى معايير التصنيع لتقديم حلول أنابيب موثوقة وطويلة الأمد تلبي المتطلبات الدولية وتتجاوز تطلعات عملائنا.
2. الالتزام تجاه العملاء: نضع عملاءنا في قلب اهتماماتنا، ونبني شراكات طويلة الأمد قائمة على الثقة، والأداء المتفوق، والنجاح المشترك.
3. الابتكار والتحسين المستمر: نسعى دوماً لتطوير حلول متقدمة وتحسين عملياتنا لمواكبة الاحتياجات المتطورة في قطاع البنية التحتية والصناعة.
4. النزاهة والموثوقية: نعمل بشفافية ومسؤولية ومهنية عالية، بما يضمن أداءً يعتمد عليه في كل مشروع ندعمه.
5. الاستدامة والمسؤولية: نلتزم بممارسات تصنيعية مسؤولة بيئياً تسهم في تطوير بنية تحتية مستدامة وحماية البيئة للأجيال القادمة.

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Who We Are
TAKWEENPLAST

About Us"Innovation Expeerts" (Innovation Exports) is the institutional umbrella and the proud owner of the "Takween Plast" brand. This relationship represents a strategic integration combining investment vision with industrial expertise, where "Innovation Expeerts" drives innovation and growth , while "Takween Plast" operates as a distinguished industrial arm representing a strategic consortium of leading Saudi manufacturers.We are committed to delivering sustainable and innovative plastic piping solutions for water drainage, telecommunications, HVAC, and energy applications. We take pride in providing advanced piping systems that align with the evolving requirements of modern infrastructure projects, both regionally and globally.Our strength lies in collaboration, organizational unity, and a shared commitment to excellence. With a strategic presence across key business hubs in the Kingdom of Saudi Arabia, the Gulf region, and the Middle East, TAKWEEN PLAST leverages a highly skilled workforce, a trusted network of distributors, and strong business partnerships to serve a broad and diverse client base.Operating as an integrated network of local manufacturing companies, and collaborating with more than 20 international production partners, TAKWEEN PLAST is supported by a robust distribution chain throughout Saudi Arabia, the GCC, and the wider Middle East. This collective capability enables us to deliver consistent quality, customized solutions, and reliable service across all markets we serve.

OUR MISSION
To build a strong and continuously expanding base of satisfied and loyal customers by consistently delivering high-quality plastic piping systems that meet the highest international standards. We are committed to providing reliable products, innovative solutions, and exceptional service that support the long-term success of our clients and partners while contributing to the sustainable development of modern infrastructure.

OUR VISION
To become a globally recognized leader in plastic piping systems, setting benchmarks for trust, innovation, and manufacturing excellence. Takween Plast aims to lead regional markets through advanced technologies, sustainable solutions, and strategic partnerships, becoming a trusted reference for infrastructure and utility projects worldwide.

Our Core Values

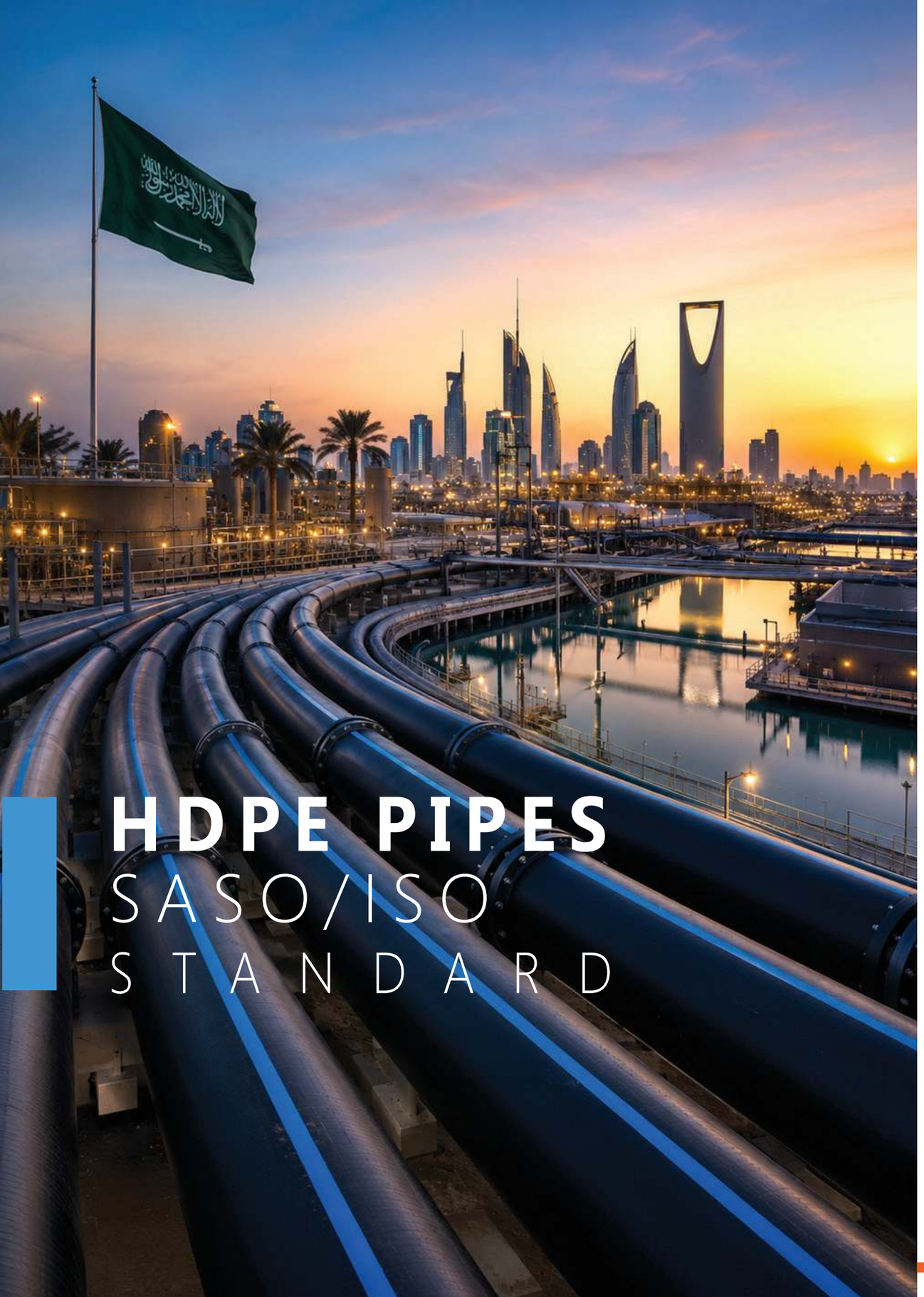
١ Quality Excellence: We uphold the highest standards in manufacturing, delivering reliable and long-lasting piping solutions that meet international requirements and exceed customer expectations.

٢. Customer Commitment: We place our customers at the center of everything we do, building long-term partnerships based on trust, performance, and mutual success.

٣. Innovation & Continuous Improvement: We continuously develop advanced solutions and enhance our processes to meet evolving infrastructure and industry demands.

٤ Integrity & Reliability: We operate with transparency, accountability, and consistency, ensuring dependable performance in every project we support.

٥. Sustainability & Responsibility: We are committed to environmentally responsible manufacturing practices that contribute to sustainable infrastructure development and long-term environmental protection.



HDPE PIPES
SASO/ISO STANDARD

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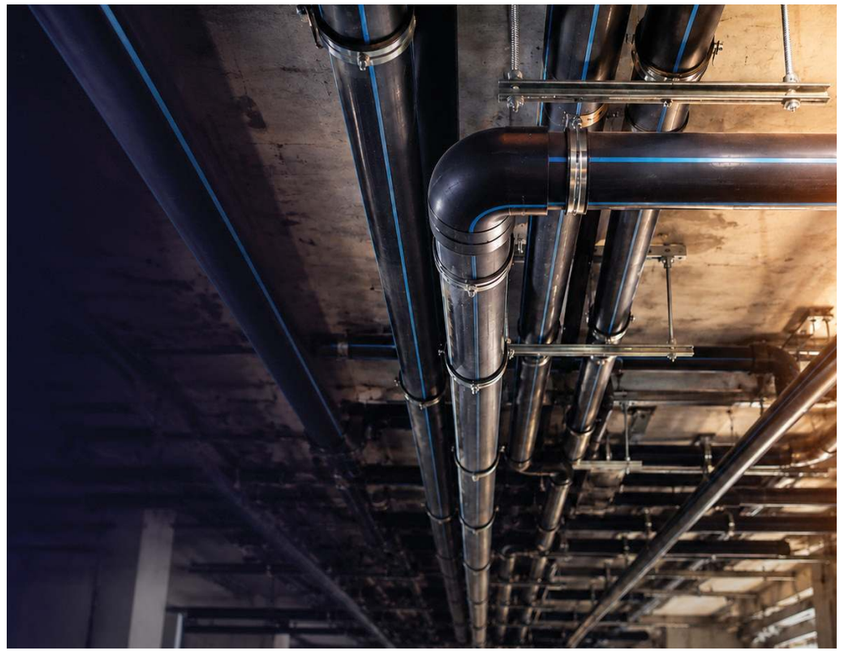

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HDPE Industry Overview
History of HDPE Pipes

- 1950s: High-Density Polyethylene (HDPE) was first polymerized, revolutionizing plastic piping due to its flexibility and chemical resistance.
- 1970s: Introduction of PE80 (MRS 8 MPa) for pressure pipelines, replacing rigid materials in corrosive environments.
- 1990s: PE100 (MRS 10 MPa) emerged, enabling higher-pressure applications (ISO 4427 certified).
- Today: HDPE dominates water/gas distribution, mining, and trenchless installations due to its fusion-welded, leak-free joints.

ADVANTAGES OF HDPE VS. PVC & METAL

Property	HDPE	PVC	Metal (Steel/Ductile Iron)
Lifespan	50+ years (ISO 4427)	20-30 years	15-25 years (prone to rust)
Corrosion Resistance	Immune to rust/electrolysis	Resists chemicals	Requires coatings/cathodic protection
Joint Integrity	Heat-fused (leak-free per ISO 21307)	Solvent-cemented (risk of cracks)	Flanged/gasketed (leak points)
Flexibility	Withstands ground movement	Brittle (fails under stress)	Rigid (cracks under seismic load)
Flow Efficiency	Smooth bore (C=150)	Smooth initially (scales over time)	Rough interior (C=100-120)
Installation Speed	Lightweight; long coil lengths	Heavy segments; glued joints	Crane-dependent; welding needed
Temperature Range	-50°C to +60°C (ISO 4427-1)	0°C to 60°C (becomes brittle in cold)	-30°C to 150°C (but corrodes)
Environmental Impact	Recyclable; non-toxic (FDA/WHO)	Chlorine-based (toxic when burned)	Energy-intensive production

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Measurements and Terms	Dimensions: Diameter (d, d1, d2, d3), Nominal Diameter (DN), Length (L, L1, L2, z, z1), Wall Thickness (e, e1), Height (H), Radius (R) Bolt Holes: Number of bolt holes (NH) Standard Ratio: Standard Dimension Ratio (SDR)
Working Pressure	The maximum allowable operating pressure (MAOP) of TAKWEEN PLAST's Polyethylene (PE) piping systems depends on factors such as temperature, fluid type, and application requirements.
Compliance and Standards	TAKWEEN PLAST PE pipes and fittings adhere to the following international and national standards: **Water Applications:** SASO ISO 4427-2:2019, DIN 8074 & EN 12201: 2013. **Gas Applications:** SASO ISO 4437-2:2014, DIN 8074 & EN 1555:2010.
Premium Material Quality	Our HDPE pipes and fittings are produced from pre-compounded raw materials certified by the PE100+ Association. Independent accredited laboratories conduct regression analysis in accordance with ISO 9080 to ensure classification accuracy and long-term performance.
Sales Terms and Conditions	For detailed terms and conditions, please refer to TAKWEEN PLAST's official sales policies.
Commitment to Quality and Safety	TAKWEEN PLAST maintains a robust Quality Management System, continuously enhanced to meet customer expectations. Our certifications include: **Quality Management:** ISO 9001:2015 **Environmental Management:** ISO 14001:2015 **Occupational Health & Safety:** ISO 45001:2018
Technical Support and Resources	For technical documentation, visit TAKWEEN PLAST's official website or reach out to our local representatives.
Training and Expert Consultation	We offer comprehensive training programs, expert advice, and consultation services to support your projects.

Your Trusted Partner

TAKWEEN PLAST is a globally recognized organization. Contact details for your nearest partner can be found on the back cover of this document.

Let's build the future together with reliability, innovation, and excellence.

TAKWEEN PLAST Polyethylene Piping Systems

TAKWEEN PLAST Polyethylene (PE) Pipes & Fittings offer a high-durability piping solution designed for transporting liquids, slurries, and gases across various industries. Our systems are widely used in:

- -Water & Wastewater: Sewer rising mains, effluent transport, reuse water systems
- -Mining & Industrial: Slurry pipelines, mine water supply
- -Marine & Infrastructure: Submarine pipelines, irrigation networks
- -Trenchless Installations: Directional drilling, slip lining, pipe bursting

PE is the ideal material for modern piping systems, offering superior flexibility and longevity. Unlike traditional materials, TAKWEEN PLAST PE pipes are joined using heat fusion (Butt Fusion, Electrofusion) or mechanical joints, ensuring leak-free connections without the need for adhesives or solvents.

- **Why Choose TAKWEEN PLAST PE Systems?**
  Our PE piping solutions outperform metal and rigid alternatives with unmatched benefits:
- **Long Lifespan**
  PE pipes are corrosion-resistant and non-aging when used within design specifications, ensuring decades of reliable service.
- **Superior Weather Resistance**
  UV-stabilized with carbon black and hindered amine light stabilizers (HALS), our pipes withstand sunlight exposure for above-ground use. Colored pipes should be shielded from prolonged UV exposure during storage.
- **Outstanding Abrasion Resistance**
  Ideal for aggressive slurries, TAKWEEN PLAST PE pipes resist wear far better than steel or traditional piping materials.
- **Chemical & Corrosion Resistance**
  Highly resistant to acids, alkalis, salts, and environmental factors—both inside and outside the pipe.
- **Eco-Friendly & Safe**
  Made from non-toxic, taint-free materials, our PE systems meet World Health Organization (WHO) and EU standards for potable water, food, and medical applications.
- **Smooth Bore for Optimal Flow**
  Unlike steel, PE maintains a smooth interior over time, preventing scale buildup and pressure loss due to corrosion.
- **Exceptional Flexibility & Impact Strength**
  Remains durable even in sub-zero temperatures. Flexible installation reduces labor costs and eliminates shear breaks common in rigid pipes like uPVC or cast iron.
- **Long Pipe Lengths, Fewer Joints**
  Available in extended coil lengths (depending on diameter), minimizing connections and potential leak points.
- **Built for Performance, Designed for the Future**
  TAKWEEN PLAST PE systems combine innovation with sustainability, offering a lightweight, cost-effective, and long-lasting alternative to conventional piping. Whether for water, gas, or industrial applications, our solutions ensure efficiency, safety, and environmental responsibility.
- **Need a reliable piping partner?** Contact TAKWEEN PLAST today for expert consultation and tailored solutions!

SDR/PN CONVERSIONS FOR PE80 AND PE100

SDR	41	33	26	21	17	13.6	11	9	7.4
PN for PE80	3.2 Bar	4 Bar	-	6 Bar	8 Bar	10 Bar	12.5 Bar	16 Bar	20 Bar
PN for PE100	4 Bar	-	6 Bar	8 Bar	10 Bar	12.5 Bar	16 Bar	20 Bar	25 Bar

PRESSURE REDUCTION FACTORS FOR ANY TEMPERATURES

Material classification	Pressure reduction factors						
	20°C	25°C	30°C	35°C	40°C	45°C	50°C
PE100 and PE80	1,00	0,92	0,85	0,79	0,73	0,67	0,63

For every 10°C >20°C, derate pressure by 15% (PE100) or 20% (PE80).

INCH - METRIC CONVERSION RANGES

Inch	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	4	5
d	16	20	25	32	40	50	63	75	90	110	125	140
DN	10	15	20	25	32	40	50	65	80	100	100	125

Inch	6	6	8	8	10	10	12	14	16	18	20	20	24
d	160	180	200	225	250	280	315	355	400	450	500	560	630
DN	150	150	200	200	250	250	300	350	400	450	500	500	600

PRESSURE REDUCTION FACTORS FOR ANY TEMPERATURES (DERATING FACTOR):

Material classification	Pressure reduction factors						
	20° C	25° C	30° C	35° C	40° C	45° C	50° C
PE100 and PE80	1.00	0.92	0.85	0.79	0.73	0.67	0.63

Adjusted PN = PN x Temp Factor x Safety Factor (1.25)
*Case Study: PN16 pipe at 40°C: 16 × 0.73 × 1.25 = 14.6 bar max.

TAKWEEN PLAST Polyethylene (PE) Piping Systems: Advanced Material Solutions
Premium PE Material Properties
Technical Specifications (Reference Values)

Property	PE 80	PE 100	Unit	Test Standard
Density	0.93	0.95	g/cm³	EN ISO 1183-1
Yield Strength (23°C)	18	25	N/mm²	EN ISO 527-1
Tensile Modulus	700	900	N/mm²	EN ISO 527-1
Impact Strength (23°C)	110	83	kJ/m²	EN ISO 179-1/1eA
Impact Strength (-40°C)	7	13	kJ/m²	EN ISO 179-1/1eA
Hardness	37	-	MPa	EN ISO 2039-1
Melting Point	131	130	°C	DIN 51007
Thermal Conductivity	0.43	0.38	W/m·K	EN 12664
Water Absorption	<0.04	<0.04	%	EN ISO 62
Flammability (LOI)	17.4	-	%	ISO 4589-1

Typical material values shown - consult our engineers for design specifications

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WHY CHOOSE TAKWEEN PLAST PE?
SUPERIOR MATERIAL SCIENCE

- Bimodal PE100: Combines short chains (for processability) and long chains (for crack resistance)
- 3rd Generation PE: Outperforms older PE80 (2nd gen) with 25% higher pressure resistance (MRS 10MPa)
- Environmentally Safe: Pure hydrocarbon structure (CH_2-CH_2)□ with no heavy metals

UNMATCHED PERFORMANCE BENEFITS

- Lightweight - Easy to transport and install
- Flexible - Withstands ground movement and seismic activity
- Corrosion-proof - No rust or electrochemical degradation
- Temperature resilient (-50°C to +40°C operational range)
- Excellent flow characteristics - Smooth bore maintains hydraulic efficiency

COMPREHENSIVE RESISTANCE PROPERTIES
CHEMICAL & ENVIRONMENTAL

- Resistant to: Acids, alkalis, alcohols, water
- Limited resistance: Oxidizing acids, ketones, chlorinated solvents
- UV Stabilized: Carbon-black compounded for outdoor durability

THERMAL PERFORMANCE

- Thermal Expansion: 0.15-0.20 mm/m·K (requires proper anchoring)
- Insulation Value: 0.38 W/m·K (300× better than copper)

SAFETY & COMPLIANCE

- Food Grade: FDA-compliant, odorless and tasteless
- Fire Rating: B2 (EN 13501-1), HB (UL94) - Use water/CO_2 extinguishers
- Electrical: >10^{15} Ω·cm resistivity (avoid static in explosive areas)

PROVEN APPLICATIONS

- Water & Gas Distribution
- Industrial Slurry Transport
- Earthquake-resistant Installations
- Food/Beverage Processing

Our technical team provides application-specific guidance to ensure optimal performance.

TAKWEEN PLAST PE PIPING SYSTEMS: ENGINEERED FOR EXCELLENCE PERFORMANCE FEATURES

Our polyethylene piping systems maintain their nominal pressure rating (PN) at 20°C. For elevated temperature applications, please consult our engineering team for proper pressure derating calculations to ensure system integrity.

VERSATILE INSTALLATION METHODS

TAKWEEN PLAST offers multiple reliable joining technologies:

Fusion Jointing Systems

- Heat Fusion: Precision butt welding for permanent joints (Moulded & Fabricated)
- Electrofusion: Socket fusion for fast, reliable connections

Mechanical Jointing Solutions

- Compression fittings
- Flange adapters
- Push-to-connect systems

COMPREHENSIVE PRODUCT RANGE

Fittings & Components

- Molded and fabricated fittings
- Full range of electrofusion couplers
- Mechanical couplings and compression joints

System Instrumentation

- Flow monitoring sensors
- Water quality analyzers (pH, chlorine, DO)
- Pressure and temperature monitors

Valve Solutions

- Ball valves (thermoplastic and metal-bodied)
- Butterfly valves
- Diaphragm valves

Key Advantages

- Corrosion-free performance
- Exceptional chemical resistance
- Hydraulically efficient smooth bore
- UV-stabilized for outdoor use
- Lightweight yet durable construction
- Flexible design for seismic zones
- 50+ year service life
- Trenchless installation compatible

PRODUCT SPECIFICATIONS

Size Range	Standard Lengths	Coil Lengths*
d20-d1200	6m, 12m	50m-200m

*Coils available for sizes d20-d160
Pressure Ratings: PN6-PN25 (For complete technical specifications or custom lengths, contact our technical support team.)

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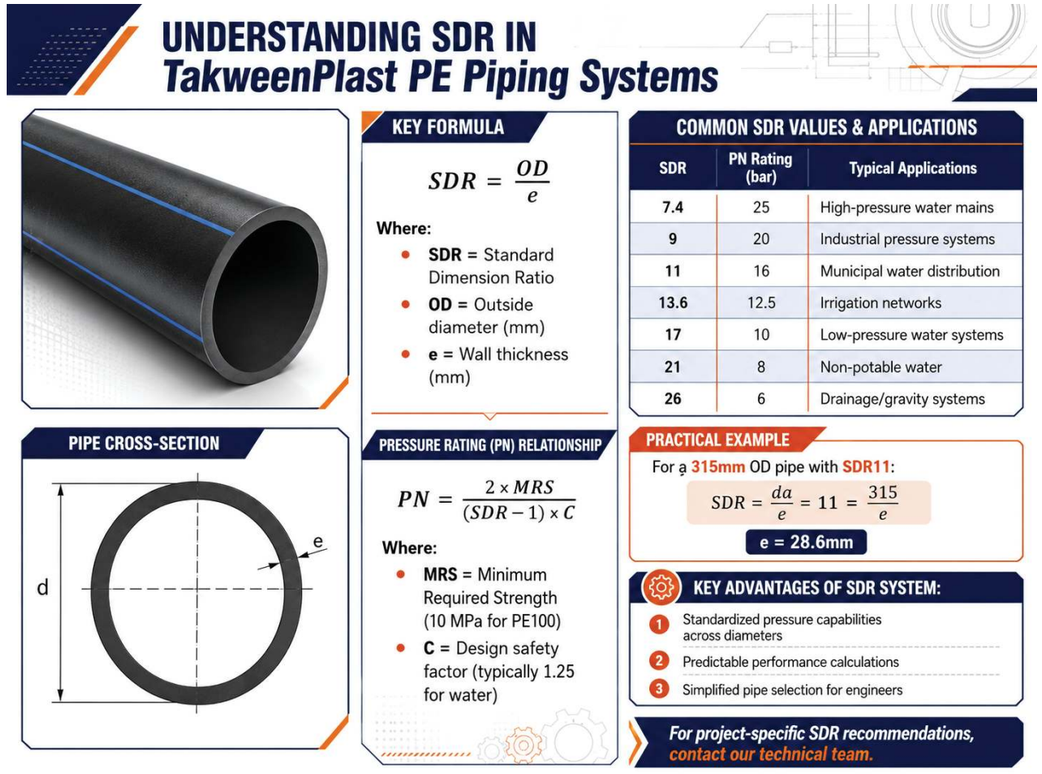
TAKWEEN PLAST PE100 PIPING SYSTEMS FOR WATER DISTRIBUTION

PREMIUM QUALITY PE100 PIPES

Product Specifications

- Material: High-performance PE100 polyethylene
- Standards Compliance: SASO ISO 4427-2:2019, DIN 8074 & EN 12201:2013.
- Available Lengths: 6m, 12m (custom lengths available)
- Color: Standard black (custom color stripes optio)
- Applications: Potable water distribution, irrigation systems, industrial water transport

COMPREHENSIVE PRODUCT RANGE



PRESSURE CLASSES & DIMENSIONS

SASO ISO 4427-2:2019, DIN 8074 & EN 12201:2013. for Water Application.
SASO ISO 4437-2:2014, DIN 8074 & EN 1555:2010. for Gas Application.

Pressure Classes & Dimensions Table (A)

Diameter (mm)	SDR 26		SDR 21		SDR 17		SDR 13.6	
	PN 6		PN 8		PN 10		PN 12.5	
	Wall Thickness (mm)	Weight (kg/m)	Wall Thickness (mm)	Weight (kg/m)	Wall Thickness (mm)	Weight (kg/m)	Wall Thickness (mm)	Weight (kg/m)
16								
20							1.6	0.10
25					1.6	0.12	2.0	0.14
32			1.6	0.16	2.0	0.19	2.4	0.23
40			2.0	0.24	2.4	0.30	3.0	0.36
50	2.0	0.31	2.4	0.38	3.0	0.46	3.7	0.55
63	2.5	0.48	3.0	0.58	3.8	0.73	4.7	0.88
75	2.9	0.68	3.6	0.85	4.5	1.03	5.6	1.23
90	3.5	0.99	4.3	1.02	5.4	1.48	6.7	1.77
110	4.2	1.48	5.3	1.50	6.6	2.20	8.1	2.66
125	4.8	1.86	6.0	1.90	7.4	2.80	9.2	3.42
140	5.4	2.35	6.7	2.72	8.3	3.52	10.3	4.29
160	6.2	3.08	7.7	3.55	9.5	4.59	11.8	5.60
180	6.9	3.84	8.6	4.50	10.7	5.81	13.3	7.10
200	7.7	4.76	9.6	5.87	11.9	7.17	14.7	8.71
225	8.6	5.99	10.8	7.42	13.4	9.09	16.6	11.06
250	9.6	7.42	11.9	9.08	14.8	11.14	18.4	13.63
280	10.7	9.25	13.4	11.46	16.6	14.00	20.6	17.08
315	12.1	11.78	15.0	14.40	18.7	17.72	23.2	21.64
355	13.6	14.89	16.9	18.28	21.1	22.55	26.1	27.44
400	15.3	18.88	19.1	23.31	23.7	28.50	29.4	34.80
450	17.2	23.88	21.5	27.36	26.7	36.12	33.1	44.08
500	19.1	29.45	23.9	36.38	29.7	44.49	36.8	54.39
560	21.4	36.91	26.7	45.55	33.2	55.90	41.2	68.23
630	24.1	46.78	30.0	57.51	37.4	70.63	46.3	86.24
710	27.2	59.46	33.9	73.23	42.1	89.83	52.2	109.57
800	30.6	75.30	38.1	92.83	47.4	113.91	58.8	138.98
900	34.4	95.24	42.9	117.44	53.3	144.58	66.2	175.95
1000	38.2	117.52	47.7	145.10	59.3	178.09	72.5	215.74
1200	45.9	169.21	57.2	206.77	71.1	250.45		

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PRESSURE CLASSES & DIMENSIONS
SASO ISO 4427-2:2019, DIN 8074 & EN 12201:2013. for Water Application.
SASO ISO 4437-2:2014, DIN 8074 & EN 1555:2010. for Gas Application.

Pressure Classes & Dimensions Table (B)

Diameter (mm)	SDR 11		SDR 9		SDR 7.4	
	PN 16		PN 20		PN 25	
	Wall Thickness (mm)	Weight (kg/m)	Wall Thickness (mm)	Weight (kg/m)	Wall Thickness (mm)	Weight (kg/m)
16						
20	2.0	0.11	2.5	0.13	3.0	0.16
25	2.3	0.17	3.0	0.20	3.5	0.24
32	3.0	0.27	3.6	0.33	4.4	0.39
40	3.7	0.43	4.5	0.52	5.5	0.61
50	4.6	0.67	5.6	0.80	6.9	0.95
63	5.8	1.07	7.1	1.28	8.6	1.50
75	6.6	1.49	8.4	1.75	10.3	2.13
90	8.2	2.18	10.1	2.59	12.3	3.05
110	10.0	3.20	12.3	3.84	15.1	4.57
125	11.4	4.15	14.0	4.95	17.1	5.89
140	12.7	5.17	15.7	6.73	19.2	7.39
160	14.6	6.79	17.9	8.11	21.9	9.62
180	16.4	8.58	20.1	10.26	24.6	12.17
200	18.2	10.88	22.4	12.49	27.4	15.00
225	20.5	13.39	25.2	16.91	30.8	19.02
250	22.7	16.47	27.9	19.74	34.2	23.48
280	25.4	20.64	31.3	24.81	38.3	29.44
315	28.6	26.45	35.2	31.38	43.1	37.17
355	32.2	33.16	39.7	39.77	48.5	47.25
400	36.3	42.11	44.7	50.55	54.7	59.93
450	40.9	55.32	50.5	63.91	61.5	75.93
500	45.4	65.79				
560	50.8	82.42				
630	57.9	104.48				
710	64.5	132.66				
800	72.6	168.12				
900	81.7	212.95				
1000						
1200						

KEY FEATURES & BENEFITS

Temperature Rating:
Rated for 20°C operation
(derating required for higher temps)
Safety Factor:
1.25 for all pressure ratings

Material Advantages:
Exceptional chemical resistance
UV-stabilized for outdoor use
Corrosion-free performance
50+ year service life

CUSTOMIZATION OPTIONS

- Special lengths (5.8m, 11.8m available)
- Color identification stripes
- Custom markings (upon request)

TECHNICAL NOTES

All pressure ratings based on standard conditions. For elevated temperature applications or special requirements, please consult our engineering team.
For complete product specifications and availability, contact TAKWEEN PLAST technical support.

Note: Product codes shown are samples - actual codes may vary by region.

TAKWEEN PLAST QUALITY ASSURANCE & INSTALLATION STANDARDS
QUALITY ASSURANCE:

TAKWEEN PLAST PE piping systems comply with the highest international standards, including:
- ISO 4427 (Plastics piping systems for water supply and drainage)
- EN 12201 (Plastics piping systems for water supply under pressure)

DIN 8074 (Polyethylene (PE) pipes; dimensions).*
Our quality is further validated by ISO 9001 and ISO 14001 certifications, ensuring reliability from raw materials to finished products.

*Our PE100 compounds exceed PE100+ Association requirements with ≤2% carbon black dispersion variance

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IN-PROCESS QUALITY CHECKS

Test Parameter	Frequency	Method	Acceptance Criteria
Hydrostatic Strength	Hourly	ISO 1167	≥12.4 MPa at 80°C
Elongation at Break	2x Shift	ISO 527-2	>450%

PERFORMANCE VALIDATION:

FINISHED PRODUCT INSPECTION

100% Automated Checks:
1- Wall thickness (±0.1mm precision).
2- Ovality (<1.5% of nominal diameter)
3- Surface defects (0.02mm resolution laser scan).
4- Length tolerance (±5mm for 6m/12m lengths).

ADVANCED JOINTING TECHNOLOGIES

BUTT FUSION WELDING

SEVEN STEP CERTIFIED PROCESS:

1. **Preparation:** Square cutting (89.5° -90.5° tolerance)
2. **Alignment:** ≤10% wall thickness offset
3. **Heating:** 210°C±5°C plate temperature
4. **Bead Formation:** 0.5-1mm uniform bead
5. **Changeover:** <3sec transition
6. **Joining:** 1.5-2.5 bar pressure
7. **Cooling:** Minimum 2x heating time

* TAKWEEN PLAST technical team recommendation: All welders should be certified to ISO 12176-1 standar

ELECTROFUSION JOINTING

FLANGE CONNECTIONS

Material Options:

- Stainless Steel (316L for corrosive environments)●
- HDPE full-face flanges
- Composite isolation flanges

HANDLING & LOGISTICS STANDARDS

Safe Handling & Storage of TAKWEEN PLAST PE Pipes

While TAKWEEN PLAST polyethylene (PE) pipes are durable and resilient, their lightweight nature requires careful handling to prevent damage during transport, loading, and storage. Follow these guidelines to ensure product integrity and safety.

TRANSPORTATION BEST PRACTICES

Vehicle Type: Use flatbed trucks, containers, or curtain-sided vehicles free of sharp edges or protrusions.
Load Security: Ensure proper weight distribution and stability to prevent shifting during transit.
Avoid Deformation: Never stack heavy items on top of PE pipes, as this can cause permanent distortion.

SAFE LOADING & UNLOADING LIFTING METHODS

Recommended: Wide, padded slings or forklifts (for pipes ≤6m) with protected contact points.
Avoid: Chains, hooks, or wire ropes—these can scratch or gouge pipe surfaces.

HANDLING LARGE PIPES

* Longer lengths (>6m): Use cranes with load-spreading beams.
* Large diameters (≥35mm OD): Handle individually—they are less stable than bundled pipes.

⚠ Safety Alert: Bundled pipes store energy from strapping and temperature changes. Release restraints carefully to prevent sudden movement.

PROPER STORAGE CONDITIONS
GROUND & STACKING

* Elevate Pipes: Use timber battens or supports to prevent ground contact.
* Stack Height: Limit to avoid deformation under weight.
* Secure Stacks: Peg or block pipes to prevent rolling.

COIL STORAGE

● Flat or Vertical: Store coils on solid, flat surfaces or near-vertical positions to maintain shape.

ENVIRONMENTAL PROTECTION

● Avoid Sunlight: Prolonged UV exposure requires covered storage.
● Keep Away From:
  o Heat sources (e.g., vehicle exhausts)
  o Chemicals (oils, solvents, hydraulic fluids)
  o Open flames or high-temperature zones

CONTAMINATED PIPES: Discard if exposed to harmful substances.

WHY PROPER HANDLING MATTERS

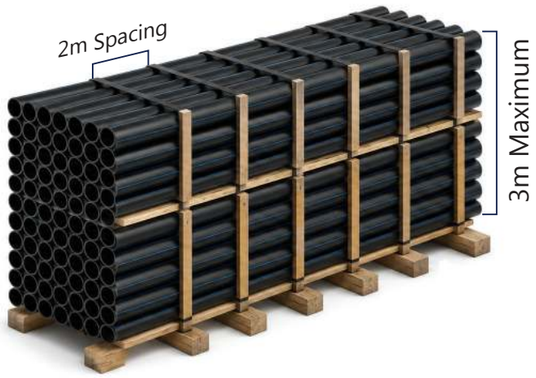
TAKWEEN PLAST PE pipes are engineered for longevity, but improper handling can compromise performance.
By following these guidelines, you ensure:

- No surface damage (gouges, abrasions)
- Maintained structural integrity (no deformation)
- Safe worksite conditions (reduced risk of accidents)

Need Support? Contact TAKWEEN PLAST for expert advice on pipe handling, storage, and installation!

A.STORAGE PROTOCOLS

Condition	Requirement
Outdoor Storage	Max 12-month UV exposure
Stack Height	≤3m for ≤315mm OD; ≤2m for >315mm OD
Ground Clearance	≥150mm on timber battens
Temperature Range	-30°C to +60°C



Storage Guidelines (Compliant with ISO 4437 & ISO 4427 for HDPE/PE100 Pipes)

1. SITE PREPARATION

- **Ground Requirements:**
  - o Flat, debris-free surface with <5° slope
  - o Timber battens (100mm x 100mm) spaced at 1.5m intervals for pipes ≤500mm OD; 1m for >500mm OD
  - o Elevated ≥150mm above ground to prevent flooding

2. STACKING CONFIGURATION

Pipe Diameter (mm)	Max Stack Height	Layer Separation
≤315	3.0m	Timber battens every layer
355–630	2.5m	Rubber mats (10mm thick)
≥710	2.0m	Custom cradles

- **Bundled Pipes:**
  - o Strapped with UV-resistant nylon bands (min. 50mm width)
  - o Ends capped with impact-resistant HDPE plugs

3. ENVIRONMENTAL PROTECTION

- UV Exposure:
  - o Black pipes: 24 months max outdoor storage
  - o Colored pipes: 6 months max (must be covered with opaque tarps)
- Temperature Range: -30°C to +50°C (monitored via IoT sensors for real-time alerts)

4. PROHIBITED CONDITIONS

- Storage near:
  - o Chemicals (min. 10m distance from acids/alkalis)
  - o Heat sources (>5m from engines/electrical panels)
  - o Sharp objects (no metal edges within 2m radius)

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B. TRANSPORTATION STANDARDS

1. LOADING PROCEDURES

- Equipment:
  - o Forklifts with nylon slings (min. 100mm width)
  - o Spreader beams for pipes ≥400mm OD
- Securing Loads:
  - o Anti-slip rubber mats between layers
  - o Crisscross strapping at 1m intervals (1.5x pipe length tension)

2. VEHICLE REQUIREMENTS

Pipe Length	Vehicle Type	Securing Method
≤6m	Flatbed trucks	Edge protectors + twist locks
6m–12m	Extendable trailers	Vacuum lifting + air-ride suspension
>12m (coils)	Specialized coil carriers	Inner diameter support frames

3. CLIMATE CONTROL

- Temperature Monitoring: GPS-enabled loggers track ambient conditions (±1°C accuracy)
- Sun Protection: Reflective covers mandatory for >8hr transit in >30°C climates

4. DAMAGE PREVENTION

- Handling:
  - o No dragging/rolling (use conveyor belts for unloading)
  - o Max drop height: 300mm (with shock-absorbing pads)
- Inspection:
  - o Pre- and post-transport laser scans for micro-cracks

C. EMERGENCY PROTOCOLS

1 Pipe Damage:

- O 3mm scratch depth: Isolate and repair via infrared welding
- O Kinked pipes: Cut damaged section (min. 500mm from defect)

2 Chemical Spills:

- O Immediate rinse with pH-neutral solution (5m–10m safety zone)

TAKWEEN PLAST PE Pipe Installation Standards
(Compliant with ISO 4427 & EN 12201 for Pressure Pipelines)

A. PRE-INSTALLATION CHECKS

1. Material Inspection

o Verify pipe/fitting markings (PN rating, SDR, batch no.)
o Reject pipes with:
- Scratches >10% of wall thickness
- Ovality >1.5% of OD
- UV damage (chalking/whitening on black pipes)

2. Trench Preparation

o Slope: 0.5% minimum gradient for drainage
o Rock Removal: Excavate 150mm below pipe to remove sharp objects

Pipe OD (mm)	Min. Trench Width	Bedding Material
≤200	OD + 400mm	Sand (0-5mm), 95% compaction
250-500	OD + 500mm	Crushed stone (5-20mm) + geotextile
>500	OD + 600mm	Engineered backfill (Class I/II)

Water (h = 1.0 - 1.8 m)

- **Trench Specifications:**
  o Width = OD + 300mm (for DN ≤ 500mm).
  o Bedding: Sand layer (100mm, 95% compaction).
- **Bending Radius Table:**

SDR	Min. Radius (x OD)
11	20

B. Jointing Methods

1. BUTT FUSION: Pressure rating = 100% of PN (if ISO 21307 compliant).
- Critical Parameters:

Pipe OD (mm)	Heating Temp (°C)	Fusion Pressure (bar)	Bead Height (mm)
≤110	210±5	1.5-2.0	1.0-1.5
>110	215±5	2.0-2.5	1.5-2.0

- Quality Control:
  o Measure bead roll-over (must be symmetrical)
  o Use ultrasonic testing for joints >315mm OD

2. ELECTROFUSION: 90% of PN (per ISO 12176-2).
- Step-by-Step:
  1. Scrape oxide layer (0.2-0.3mm depth)
  2. Align within 10% of wall thickness
  3. Weld per manufacturer's barcode (auto-sets voltage/time)
  4. Cool for 2x weld time before handling

3. MECHANICAL JOINTS: Flanges: 80% of PN (require torque checks).
- For PN16+ Systems:
  o Use EPDM gaskets + stainless steel bolts (torque to ±5% of spec)
  o Apply dielectric coating for underground metal parts

C. LAYING & BACKFILLING

1. PIPE PLACEMENT

o Snaking: Allow 1-2% slack for thermal contraction
o Bending Radius:

SDR	Min. Radius (x OD)
11	20
17	25
26	30

2. BACKFILL PHASES

Layer	Material	Thickness	Compaction
1	Selected fill	100mm below pipe	85% Proctor
2	Sand	Up to pipe crown	90% Proctor (hand tamping)
3	Native soil	300mm above pipe	95% Proctor (mechanical)

o Warning Tape: Install 200mm above pipe with "HDPE GAS/WATER" print

D. PRESSURE TESTING

1. HYDROSTATIC TEST

- o Procedure:
  - ▪ Fill at 0.5 bar/min to 1.5x PN
  - ▪ Hold for 24hr (max 2% pressure drop)
- o Water Temp: 5-40°C (corrected per ISO 10838)

2. DISINFECTION (POTABLE WATER)

- o Chlorinate at 50ppm for 3hrs flush until residual <0.2ppm

E. SPECIAL CONDITIONS

1. HOT CLIMATES (>35°C):

- o Install at dawn/dusk to avoid thermal expansion
- o Use white reflective covers during pauses

2. FROST ZONES:

- o Bury below frost line + 200mm
- o Insulate with EPS foam (R-value ≥2.5)

3. TRAFFIC LOADS:

- o Reinforce with:
  - ▪ Concrete slabs (for H20 loading)
  - ▪ Geocells (for unstable soils)

TAKWEEN PLAST
QUALITY COMMITMENTS

Delivering trusted piping solutions through certified quality, reliable performance, and long-term confidence.

ISO 9001:2015
Certified Manufacturing

Third-Party Validated
Material Certifications

10-Year Warranty
On Fusion Joints

Digital Batch Traceability
QR Code System

ISO 9001:2015 CERTIFIED COMPANY

TÜV NORD

IAF MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT

BUILT TO LAST.
BACKED BY QUALITY.

For project-specific quality plans or installation engineering support,
contact our Technical Services Department.

APPENDIX A / TERMS:

- MRS: Minimum Required Strength (PE100 = 10 MPa).
- SDR: Standard Dimension Ratio (OD/wall thickness).

HDPE vs. PE80 Material Properties Comparison
(Compliant with ISO 4427-1:2007, EN 12201:2013)

Property	PE100 (HDPE)	PE80	Test Standard	Performance Advantage
MRS (Minimum Required Strength)	10 MPa	8 MPa	ISO 9080	25% higher pressure rating
Density (g/cm³)	0.945-0.960	0.930-0.940	ISO 1183	Better impact resistance
Thermal Conductivity (W/m·K)	0.38-0.43	0.40-0.45	EN 12664	Improved insulation
Yield Strength (MPa)	25	18	ISO 527-1	Higher structural load capacity
Chemical Resistance	Excellent	Good	ISO 4437	Superior acid/alkali tolerance
Operating Temp Range	-50°C to +60°C	-40°C to +50°C	ISO 4427 Annex B	Wider application scope

KEY NOTES:

1. PE100's bimodal molecular structure provides better slow crack growth resistance (ISO 13479)
2. PE80 requires thicker walls for same pressure rating (SDR17 vs PE100's SDR21 at PN8)
3. Both materials UV-stabilized with 2.5% carbon black (ISO 4427-2:2007 Section 5.2)

MATERIAL SAFETY COMPLIANCE
CERTIFICATIONS & APPROVALS:

- Potable Water:
  - o Complies with WHO Guidelines for Drinking Water Quality (4th Ed.)
  - o FDA 21 CFR 177.1520 compliant for food contact
  - o NSF/ANSI 61 certified

HEALTH & ENVIRONMENTAL:

- Zero heavy metals (lead, cadmium <0.1 ppm per ISO 4427-1:2007 Table 5)
- Non-toxic, odorless, and tasteless (tested per EN 1420)
- 100% recyclable (PE100+ Association sustainability standards)

INSTALLATION SAFETY:

- No volatile organic compounds (VOCs) released during fusion welding
- Exempt from OSHA hazard communication standard (29 CFR 1910.1200)

TAKWEEN PLAST HDPE pipes exceed EU Directive 98/83/EC requirements for migration of substances into drinking water.