Azarakhsh Novin

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SINGLE-WALL PIPE

Production of Single-Wall Polyethylene Pipes

High-density polyethylene (HDPE) pipes with large diameters are produced through a continuous extrusion process.

In this process, the raw polyethylene material is subjected to heat, pressure, and homogenization to prepare it for pipe formation.

The extrusion process also includes stages such as material pulling, the use of a large cooling tank, and pipe fitting shaping.

Pipe joints are typically made using thermal welding methods such as butt fusion or electrofusion.

During the production process, factors such as material suction, separation, operational temperature, and extrusion speed are highly important.

Dimensional accuracy of the pipe is also a key factor and must comply with design specifications to ensure proper performance.

MATERIAL SPECIFICATIONS

Black Masterbatch

Yellow Masterbatch

Types of Raw Materials

In the production of single-wall pipes, high-quality polyethylene raw materials with PE100 and PE80 grades —along with masterbatch additives—are used.
Both types of resins exhibit excellent resistance to stress cracking and high long-term hydrostatic strength.
These properties ensure that the pipe structure is stable, reliable, and durable, making them suitable for large-scale projects.

Pipes produced from PE100 offer higher strength, enabling the use of thinner wall thicknesses without compromising performance.

Raw Material Testing

All polyethylene grades used in pipe manufacturing are tested according to ISO 13479 (Notched Pipe Test) to ensure resistance to Slow Crack Growth (SCG) and long-term durability.

In compliance with the TÜV NORD CERT quality management system, the following quality control tests are performed on raw materials:

- Melt Flow Rate (MFR)
- Density
- Ash Content

Pipe Testing

Manufactured pipes undergo a series of standardized tests, including:

- Hydrostatic Pressure Test (in accordance with ISO 1167)
- Tensile Test to Failure (in accordance with ISO 6259)
- Rapid Crack Propagation Test (in accordance with ISO 13477)
- Longitudinal Reversion Test (in accordance with ISO 2505)

These tests, conducted under international standards, ensure that the pipes meet required mechanical properties and maintain structural integrity under varying operational conditions.

Raw Material Test Data	
Test Item	PE80
Coding/Grade	PE100

Compound Test Data	
Test Item	Black Masterbatch
Coding/Grade	Yellow Masterbatch

Pipe Test Data	
Test Item	Test Standard
Hydrostatic Pressure Test	EN 1167
Elongation at Break	ISO 6259
Rapid Crack Propagation	ISO 13477
Reversion	ISO 2505

Packaging and Transportation

Packaging and Transportation of HDPE Pipes

Single-wall polyethylene pipes must be properly packaged and handled to prevent any damage and ensure the quality of the product is maintained.

Coils

In accordance with applicable standards, pipes with diameters up to 110 mm can be packaged and supplied in coil (ring) form.

Straight Lengths

Pipes with larger diameters are typically supplied in straight lengths, generally up to 12 meters.

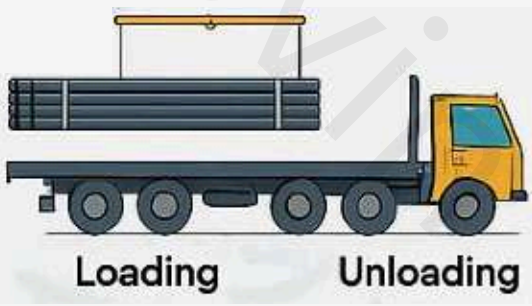
Loading and Unloading

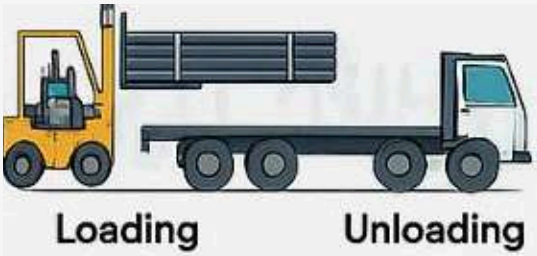
As per standard requirements, appropriate loading and unloading methods must be used to avoid any mechanical damage to the pipes during transportation and handling.

Storage

Single-wall HDPE pipes must be stored in locations that are not exposed to direct sunlight, heat sources, or open flames.

The storage surface should be flat, stable, and free from sharp objects or debris to prevent damage to the pipes.





HDPE PIPE WELDING MACHINES

Butt Fusion Welding Machines

- Available in hydraulic or manual types
- Suitable for welding pipes with diameters from 63 mm to 1600 mm (depending on the machine model)

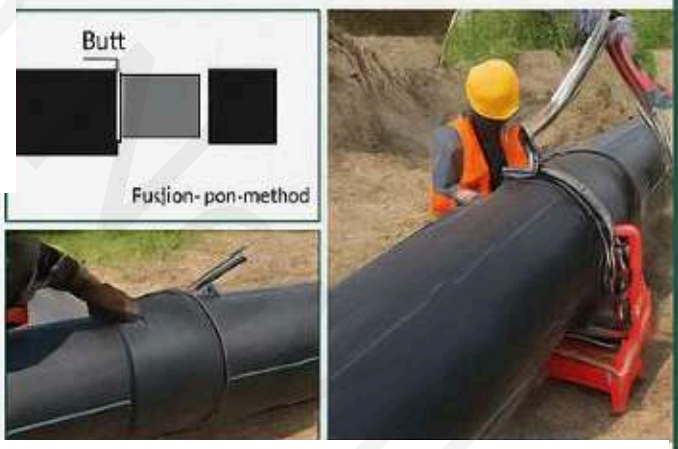
Electrofusion Units

- Machines equipped with microprocessor controllers for welding electrofusion fittings
- Suitable for welding pipes and fittings with diameters ranging from 20 mm to 800 mm (depending on the fitting type and machine)

Types of Joints

- Butt Joint: Circumferential welding of two plain pipe ends together.
- Electrofusion Joint: Welding of pipes using fittings with an embedded resistance wire, fused to the pipe spigot end.
- Saddle Joint: Welding of saddle-type fittings onto the pipe wall to create a branch connection.
- Spigot Flange Joint: Welding of a spigot flange to the pipe end for flanged connections.

HDPE PIPES



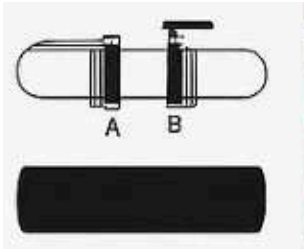
HDPE Pipes

HDPE pipes are widely used in water supply networks, sewage systems, gas distribution, drainage, and irrigation applications. Due to their excellent mechanical and chemical properties, they are considered an ideal replacement for metal and PVC pipes.

Specifications:

- Material: PE100 and PE80
- Outside Diameter: 16 – 1600 mm
- Operating Pressure: 4 – 25 bar
- Operating Temperature: -20˚C to +60˚C
- Standards: ISO 4427, EN 12201

Jointing Methods:



- Butt Fusion: Thermal end-to-end welding of pipes.
- Electrofusion: Welding using resistance fittings, suitable for smaller diameters.

Applications:

- Urban and rural water supply and distribution networks
- Agricultural irrigation and water conveyance systems
- Natural gas transmission and distribution pipelines (in compliance with gas supply standards)
- Pressurized drainage and sewer systems

Safety and Health Guidelines:

- Wear appropriate insulated gloves when handling machines and pipes
- Follow all safety precautions during welding operations
- Perform hydrostatic pressure testing after installation to ensure proper sealing
- Avoid using unsafe or non-standard end caps
- Adhere to proper storage practices to prevent mechanical damage and fire hazards

ENGINEERING GUIDE FOR INSTALLATION OF SINGLE-WALL POLYETHYLENE (HDPE) PIPES IN STRAIGHT AND SLOPED ROUTES

1. **Trench Design and Preparation**
   - Uncoil pipes up to 110 mm in diameter with controlled tension to prevent ovality.
   - Align the pipe in a straight line with gradual bends; avoid forced bending.
   - Install thrust blocks or restraining devices at changes in direction and at fittings according to hydraulic calculations.

2. **Jointing Techniques**
   - Butt Fusion: Suitable for PE80/PE100 pipes using a heating plate and alignment tools in accordance with DVS 2207-1.
   - Electrofusion: Ideal for confined spaces or repairs.
   - Mechanical Jointing: Not recommended for high-pressure lines except at specific points designed for such use.

3. **Backfilling and Compaction**
   - For high-pressure lines, allowance must be made in the design for movement due to thermal expansion and contraction.

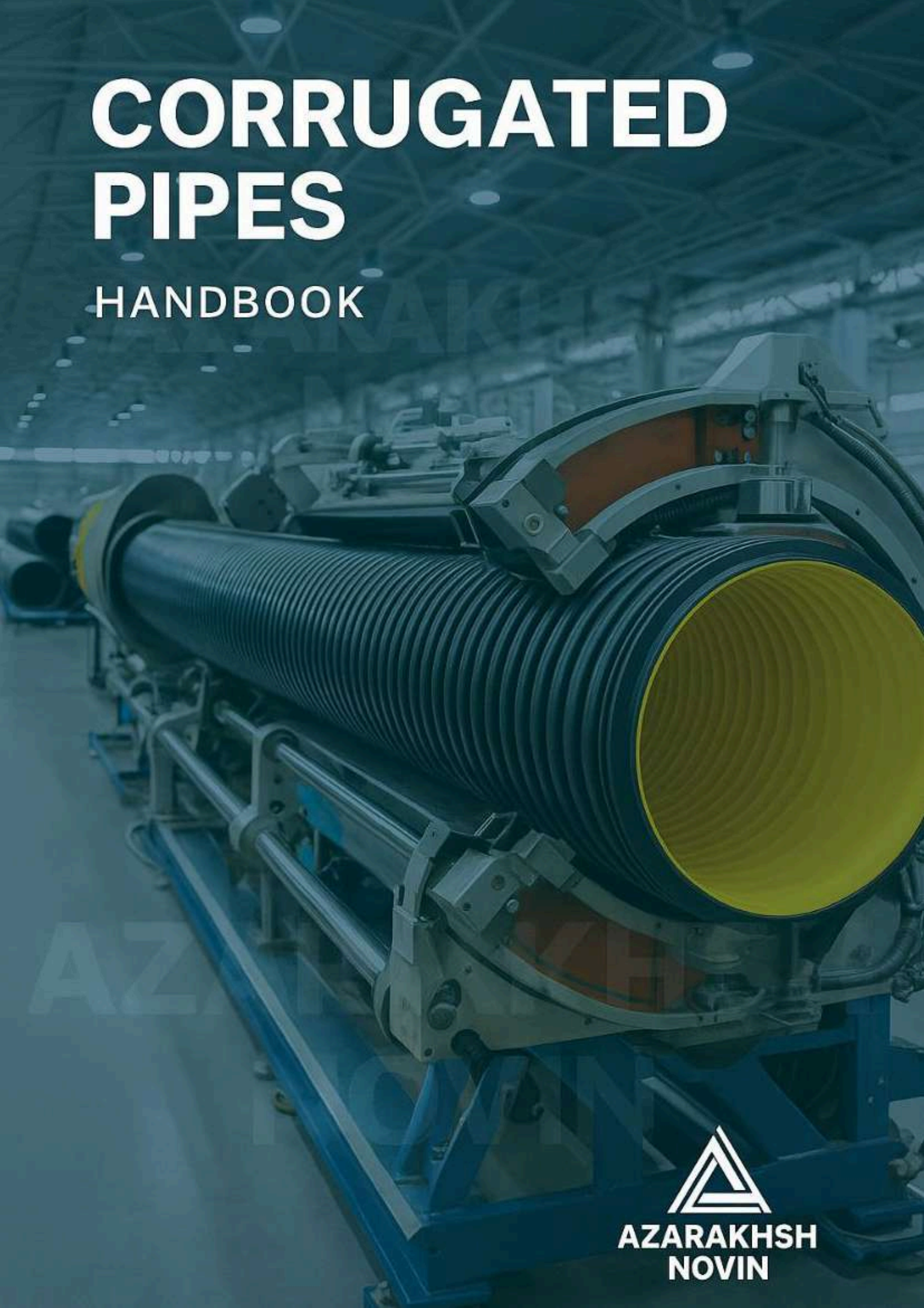
4. **Expansion and Contraction Management**
   - Initial Bedding: Minimum of 300 mm above the pipe crown with soft sand or screened soil, compacted to 90% Proctor density.
   - Final Backfill: Native soil free from stones larger than 100 mm.
   - Layer Placement: Soil layers 200–500 mm thick, mechanically compacted, especially in areas with vehicle traffic.

5. **Inspection and Testing**
   - Leak Test: Hydrostatic test at 1.5 times the operating pressure for at least one hour (according to ISO 4427 or EN 805).
   - Deflection Test: Maximum 5% deformation of the pipe's external diameter after compaction.
   - Documentation: Recording welding reports, pressure test results, and installation stage photographs.

6. **Special Considerations for Sloped Terrain**
   - Anti-Slip Measures: Install ring anchors or concrete saddles every 20–25 meters.
   - Air Release Valves: Install at high points to prevent air locking.
   - Drain Valves: Install at low points for easy maintenance and repairs.

CORRUGATED PIPES

HANDBOOK



AZARAKHSH NOVIN

Corrugated Pipe Production Process (Double-Wall with Yellow Inner Layer)

1. **Raw Material Selection:**
The production process begins with selecting high-quality polyethylene granules. These materials are typically blended with yellow masterbatch for the inner layer.

2. Feeding and Homogenization:
The polyethylene granules and color masterbatch are fed into a twin-screw extruder, where they are melted and homogenized to form the raw material for the inner layer. For the outer layer production, a separate extruder conveys black polyethylene to the mold.

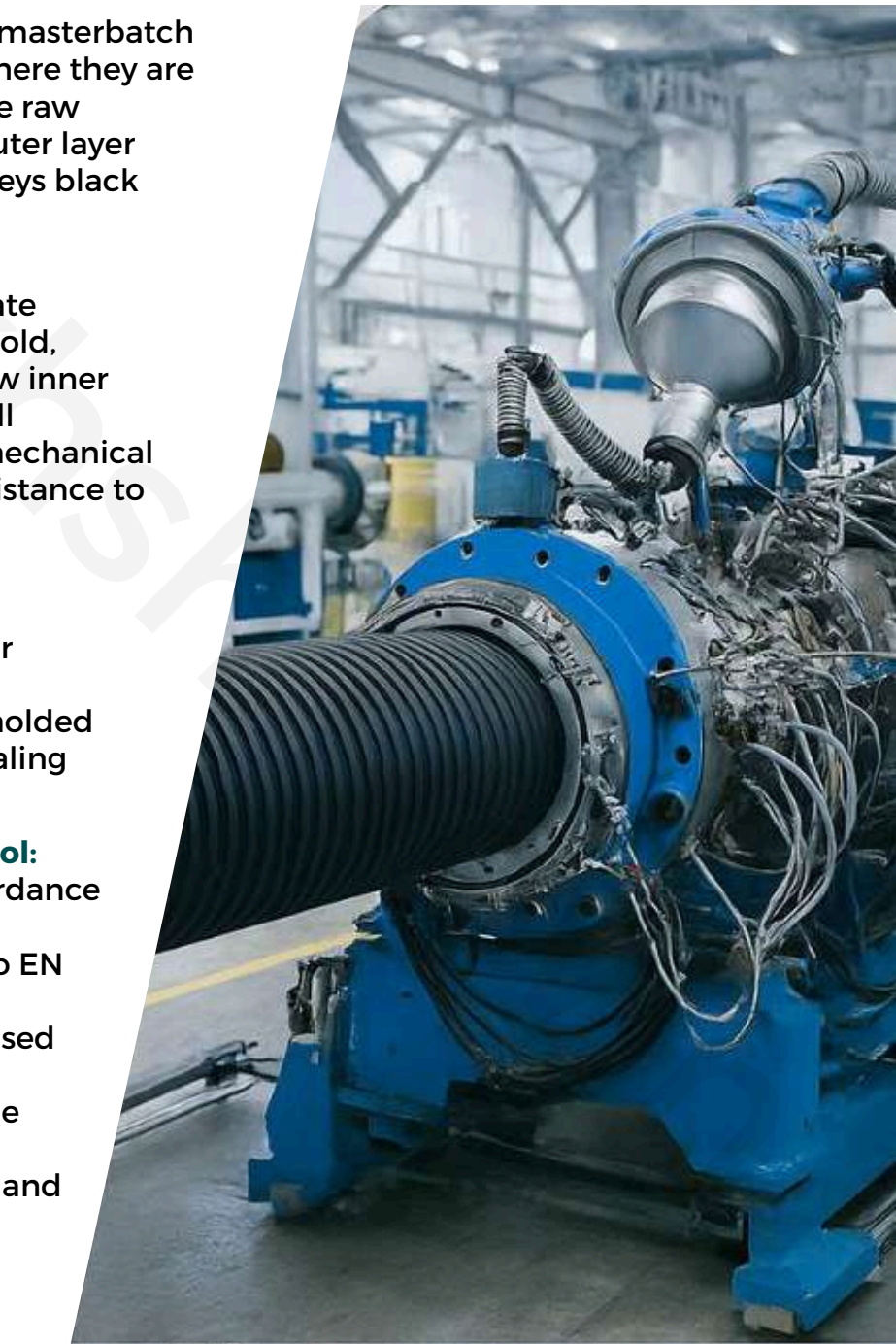
3. Dual-Layer Extrusion:
Molten polyethylene from two separate extruders is fed into a co-extrusion mold, forming the outer layer and the yellow inner layer simultaneously. This double-wall structure is chosen for its favorable mechanical properties, light weight, and high resistance to external pressure.

4. Corrugation and Socket Molding:
The extruded pipe passes through corrugated molds to form the annular (corrugated) structure. At the end of production, a bell-shaped socket is molded to enable connection using EPDM sealing rings or welded sleeves.

5. Final Inspection and Quality Control:

- Perform ring stiffness test in accordance with ISO 9969.
- Conduct leakage test according to EN 1277.
- Perform impact resistance test based on DIN 19661.
- Check dimensional accuracy of the pipes.
- Inspect the quality of the internal and external pipe surfaces.

6. Storage and Shipping:
The produced pipes are stored in a standard manner to prevent deformation and damage. They are then packaged and loaded using 20- or 40-foot containers, or flatbed trailers, and transported in accordance with international standards.



Installation of corrugated pipes

The elastomeric sealing gasket will only perform optimally if it is correctly placed in the designated groove on the pipe.
Additionally, the pipes must be inserted far enough into the socket (female end) so that the pipe end is in full contact with the inner wall of the socket.

Corrugated Pipes (Double-Wall HDPE)

Double-wall HDPE (High-Density Polyethylene) pipes are an ideal choice for buried applications such as sewage, drainage, and stormwater collection due to their high durability and superior performance compared to traditional concrete or metal pipes.

Advantages:

- Lightweight, reducing installation costs
- High resistance to external loads thanks to the corrugated structure
- Excellent resistance to corrosion and abrasion

Technical Specifications:

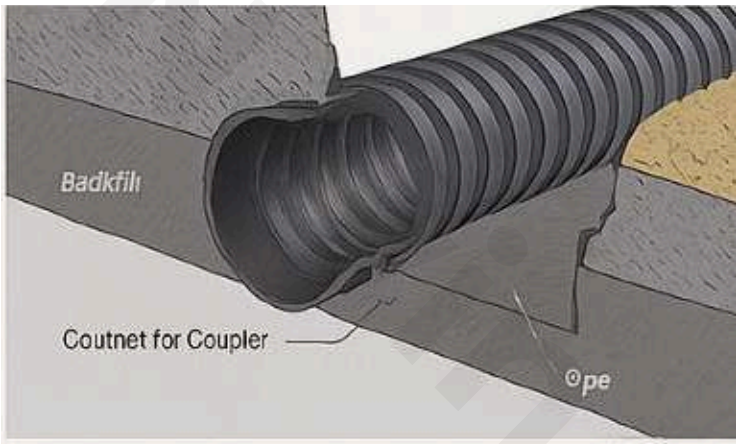
- Made from high-density polyethylene with UV-stabilizing additives
- Available internal diameters: 200 to 1200 mm
- Ring stiffness class: SN4 or SN8
- Compliant with DIN 16961 and ISIRI 9116 standards
- Standard lengths: 6 and 12 meters

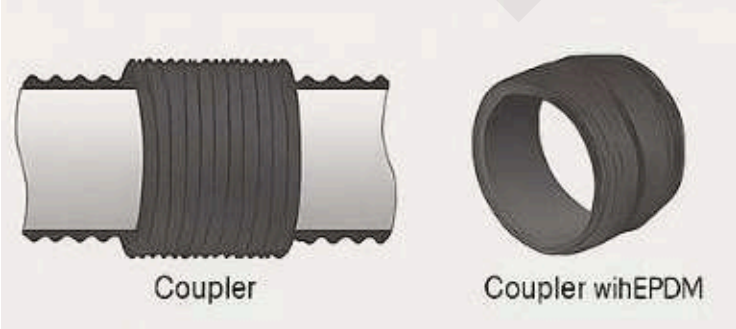
Installation & Handling:

- Handle carefully, using a forklift or crane for lifting the pipes

Installation & Handling Notes:

- Lift using a forklift or crane, avoiding any impact
- Maintain a uniform slope along the pipeline route
- Permissible burial depth: 0.8 to 6 meters
- Avoid bending or applying excessive pressure to the pipe





STANDARDS

- EN 13476-1
- ASTM F2306
- ISO 21138-1

TEST METHODS

Ring Stiffness
The pipe's circumferential stiffness is evaluated according to ISO 9969.

Ring Flexibility
By applying deformation up to 30% of the pipe's diameter, bending and structural damage are checked.

Sealing
A leakage test at the pipe joints is carried out at 0.5 bar pressure in accordance with ISO 13259.

Impact Resistance
The sample's reaction to impact is tested at 0 °C and –10 °C in accordance with EN 744.

Inspection Process
All tests are conducted in accordance with the requirements of INSO 9116.

Applications of Corrugated Pipes:

1.Urban Stormwater Drainage Systems

Double-wall high-density polyethylene pipes are an ideal choice for collecting and conveying rainwater in urban areas. They can withstand heavy loads and are more economical compared to concrete or steel pipes.

2.Municipal Sewage Collection and Conveyance Systems

These pipes are suitable for transporting municipal sewage and domestic wastewater to treatment plants. Their chemical resistance and non-degradable structure ensure stable performance under various conditions.

3.Industrial Wastewater Discharge SystemsDouble-wall HDPE pipes are used for the safe disposal of industrial effluents, offering high resistance to chemicals. This makes them a reliable option for underground drainage.

4.Subsurface Drainage in Residential and Rural Areas

In these areas, the pipes collect and direct surface water, preventing excess water from reaching building foundations and thereby avoiding soil swelling problems.

Saddle Kit

polyethylene wastewater connection kit

Overview:

- Allows direct tapping into municipal or domestic sewer networks
- Compatible with single-wall HDPE, double-wall corrugated, spiral-wound, and UPVC pipes

TECHNICAL SPECS & BENEFITS

Components:	Thickness Regulator, Threaded Sleeve with Nut, O-Ring, Sealing Gasket
Installation speed:	Under 5 minutes without full cut
Cost-effective:	Less costly than metal tee replacement
Operating pressure:	Up to 1 bar (for low pressure lines)
Availability:	Sizes: 110, 125, 160 mm for sewerage branches

Engineering Notes:

- No internal protrusion in the main pipe to ensure complete sealing and smooth flow
- Precise cutting of the branch location is recommended
- Fast and easy installation with no welding or metal tee required

Installation Steps:

- Mark and drill the main pipe
- Install the saddle fitting over the drilled hole
- Connect the threaded coupling and nut
- Tighten and secure all connections

Polyethylene Wastewater Connection Kit

1- First, determine a suitable location for connecting the branch pipe to the main sewer line, then use an appropriate hole saw to create a circular opening at the marked point.

2- Install the branch saddle on the sewer line and secure it by tightening the clamp around the pipe. Ensure that the saddle and nut are properly aligned, then place the O-ring in its designated groove at the saddle outlet.

3- Use an appropriate connection method (such as electrofusion or butt fusion) to join the sewer spigot to the saddle outlet. Then, loosen and remove the nut.

4- Finally, install the saddle cap onto the saddle outlet and secure it by tightening the nut onto the saddle.

Steel and Cast Iron Fittings and Valves

Industrial Valves – Steel and Ductile Cast Iron

Applications:

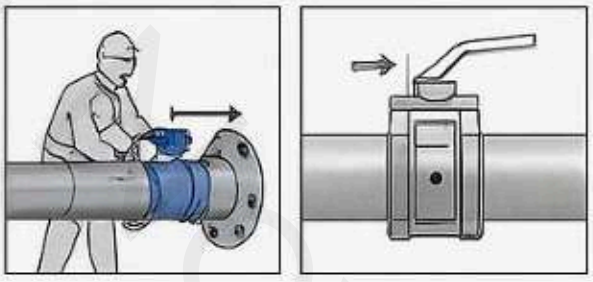
- Water distribution systems
- Pumping stations
- Firefighting systems
- Oil and gas pipelines
- Chemical industries

Features:

- Precise and reliable performance
- High-pressure resistance (PN10 to PN40)
- Certified safe for drinking water
- Internal epoxy coating for corrosion resistance

Valve Types:

- Gate valve: full shut-off or on/off flow control
- Butterfly valve: lightweight, quick operation
- Ball valve: suitable for high-pressure lines
- Check valve: prevents backflow
- Air release valve: prevents air ingress into the flow



Standards:

- EN 1074, EN 593 (Cast iron valves)
- API 600, API 609 (Steel valves)
- WRAS, NSF (Drinking water)

Safety and Handling:

- Use cranes or forklifts with appropriate slings for handling
- Prevent dropping or direct impact
- Store in a dry, covered area away from moisture

Gate, Butterfly, and Check Valves

1. Gate Valve

Application: Full shut-off of fluid flow
Features:

- Simple design with a sliding disk that fully opens or closes the flow path
- Suitable for high-pressure and large-diameter pipelines
- Minimal pressure drop when fully open
- Standards: EN 1074, API 600
- Advantages:
- Reliable sealing
- High resistance to pressure and temperature

2. Butterfly Valve

Application: Quick flow control
Features:

- Compact design with a rotating disc to regulate flow
- Lightweight and easy to install
- Suitable for large sizes
- Standards: EN 593, API 609
- Advantages:
- Fast opening and closing operation
- Low maintenance cost

3. Check Valve

Application: Prevents backflow
Features:

- Allows flow in only one direction
- Protects equipment and pipelines from damage
- Standards: EN 12334
- Advantages:
- Reduces risk of fluid backflow
- Enhances system safety

Ball Valve, Air Release Valve, Pressure Reducing Valve, Drain Valve

4. Ball Valve

Application: Quick shut-off and on in high-pressure lines

Features:

- Consists of a perforated ball that opens or closes the flow path with a 90-degree rotation
- Excellent sealing with minimal leakage
- Suitable for high-pressure and high-temperature conditions
- Standards: API 600
- Advantages:
- Long service life
- Easy maintenance

5. Air Valve

Application: Air release and intake in pipeline systems

Features:

- Prevents flow locking caused by trapped air
- Extends the lifespan of pipes and equipment
- Standards: ISO 9001
- Advantages:
- Enhances system performance
- Reduces corrosion and damage

سوراخکاری فلنج ها مطابق استاندارد: EN 1092-1(ISO 7005-1, DIN 2501)

DN	øD	øK	n×ød	B	H
50 (PN10&16)	165	125	4×ø18	273	500
80 (PN10&16)	200	160	8×ø18	273	500
100 (PN10&16)	220	180	8×ø18	273	500
150 (PN10&16)	285	240	8×ø22	273	500
200 (PN10)	340	295	8×ø22	273	500
200 (PN16)	340	295	12×ø22	273	500

Ductile Iron Pipe Fittings, Service Valves and Fire Hydrants

Applications:

- Urban and rural water supply and distribution
- Sewerage and drainage networks
- Irrigation and hydraulic structures such as dams
- Fire protection systems and fire-fighting networks

Features:

- High durability and long service life even under harsh conditions
- Excellent mechanical strength and flexibility
- High working pressure resistance (PN10 to PN40)
- Corrosion resistant with internal and external epoxy or cement lining

Types of Fittings:

- 90° and 45° Elbow
- Tee
- Reducer
- Rigid Coupling
- Flexible Coupling

Types of Complementary Valves:

- Gate Valve
- Fire Hydrant

Standards:

- EN 545 / EN 598 (Water and sewerage pipes and fittings)
- EN 12842 (Couplings)
- EN 1074-2 (Gate valves)
- EN 14384 (Fire hydrants)
- ISO 2531 (Ductile iron pipes and fittings)

Installation and Maintenance:

- Handling with a crane or forklift using proper slings
- Prevent dropping or direct impact
- Store in a dry environment away from excessive moisture

Steel and Ductile Iron Fittings

Main Fittings:

Straight Tee and Cross
- Connection Type: Welded or Flanged
- Nominal Size: DN 50 to DN 3000

Reducing Tee and Cross
- Connection Type: Welded or Flanged
- Nominal Size: DN 50 to DN 3000

Branch Coupling
- Nominal Size: DN 50 to DN 3000
- Nominal Pressure: PN 10 to PN 25 bar

Angular Coupling (AZ)
- Angular Deflection: ≥ 1.3°
- No welding or flanging required

Wall Coupling
- Nominal Size: DN 50 to DN 3000
- Nominal Pressure: PN 10 to PN 25 bar

Components and Materials:

- Body parts: Steel 6T37-2
- Ductile Iron: GJS 400-15 (for couplings)
- End rings: Steel or ductile iron
- Gaskets: NBR or EPDM, resistant up to 100°C
- Bolts and nuts: Galvanized steel

Coating:

- Electrostatic epoxy coating with thickness ≥ 250 microns

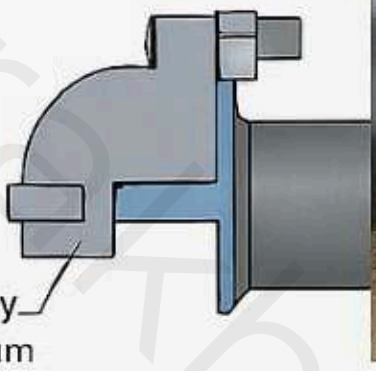
Pipe Fitting Items Specifications

Item	DN (mm)	PN (bar)	Connection Type
Straight Tee and Cross	DN 50-3000	PN 10-25	Welded/Flanged
Reducing Tee and Cross	DN 50-3000	PN 10-25	Welded/Flanged
Branch Coupling	DN 50-3000	PN 10-25	Mechanical
Wall Coupling	DN 50-3000	PN 10-25	Mechanical
Angular Coupling (AZ)	DN 50-3000	PN 10-25	

Installation and Assembly Guide

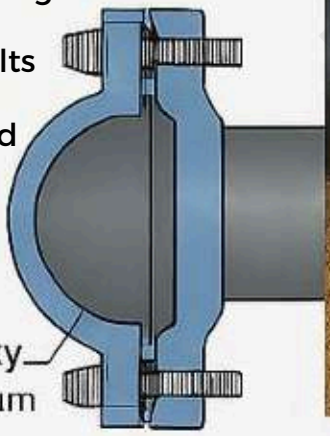
Straight Tee and Cross:

- Pipe preparation
- Positioning the fitting correctly
- Tack welding or bolting
- Tightening flange bolts
- Applying epoxy coating with thickness ≥ 250 microns



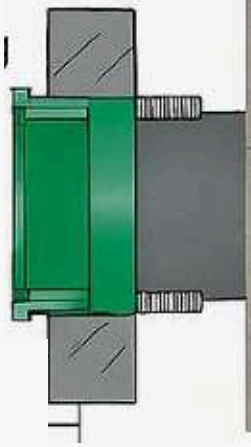
Branch (Saddle) Coupling:

- Precise drilling of the pipe at the connection point
- Proper placement and locking of the sealing gasket
- Tightening bolts or tack bolts using a torque wrench according to recommended torque values
- Coating with electrostatic epoxy with a minimum thickness of 250 microns



Wall Coupling:

- Installing the coupling in the concrete wall or performing sleeving for the pipe
- Passing the couplings through concrete walls to create a secure and durable connection



Epoxy coatings with a thickness of ≥ 250 microns provide long-lasting corrosion resistance.

Bolt Tightening Torgues	
DN 40 - 125 / M16	70 Nm
DN 150 - 300 / M20	100 Nm
DN 400 - 600 / M24	130 Nm

Steel and Ductile Iron Pipe Fittings

Flanged Tee
- Features three outlets at 90-degree angles
- Easy installation and removal due to flanged connection
- Suitable for changing flow direction and branching in pipeline systems

Dismantling Joint
- Designed to facilitate installation, removal, and maintenance of fittings
- Allows axial movement of pipes for precise alignment
- Commonly used in pipelines with bolted flanges

Elbow:
- Available in 90-degree and 45-degree angles
- Changes the flow direction in the piping system

Concentric Reducer:
- Connects two pipes with different diameters
- Maintains the pipe centerline for uniform flow

Elbotv
Consntitication

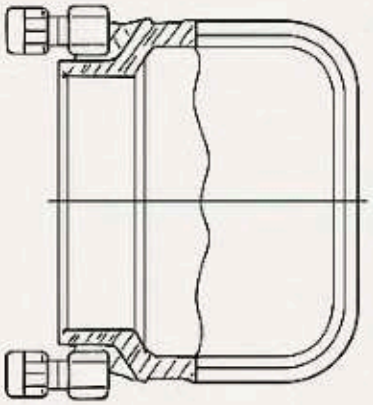
Dimensions (mm)

Elbow	D	FLd z	Flanged Tee		
			L	11	overalls
80	19	83	110	166	160
100	26	120	140	160	110
150	35	142	180	185	120
200	44	169	220	203	250
600	60	231	280	260	250

Pressure Ratings (bar)

DN	PN 10	PN 16	PN 25
80	80	80	80
100	90	90	100
150	100	100	150
200	150	150	200

Flexible Coupling



Size	Working Pressure (bar)	Dimensions (mm)			
DN 80	16	15.5	73	109	116
DN 90	16	16.5	80	193	134
DN 100	16	18.5	88	145	166
DN 150	16	20.6	102	160	192
DN 150	10	23.5	123	171	221
DN 200	10	28.0	140	202	268

Applications:

- Transmission of water, oil, gas, and petrochemical products

Design Standard:

- EN 12842

Body Material:

- Ductile Iron

Features:

- High resistance to pressure and corrosion
- Ability to absorb vibrations and pipe expansion
- Quick and easy installation without the need for welding

POLYETHYLENE FITTINGS

AZARAKHSH

NOVIN MEHREGAN JAVID

Polyethylene Fittings

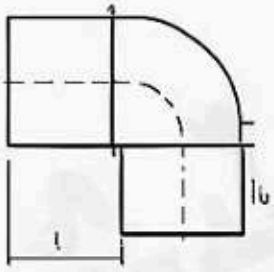
Features:

- Manufactured from high-durability black polyethylene resin PE 100.
- Designed according to international standards EN 12201-3, EN 1555-3, ISO 15494, and EN 15219.
- Pressure range from SDR 6 to SDR 41.
- Available in bend lengths of 3D and 5D.
- Available in diameters from 20 to 1200 millimeters.

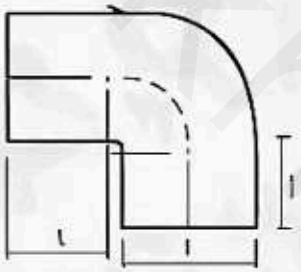
Applications:

• Suitable for drinking water supply networks, municipal and industrial wastewater systems, irrigation systems, cooling lines, and turbines.

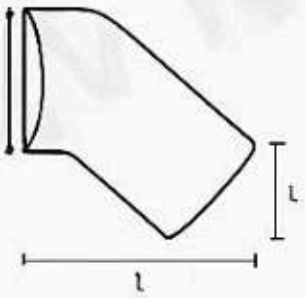
TEES



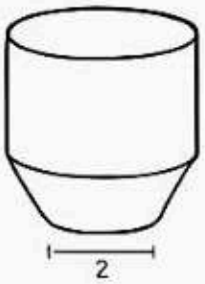
BENDS



REDUCERS



END CAPS



ELBOW BENDING RADIUS

p (mm)	11	17	26	41
20	20	30	60	50
17	50	110	100	105
26	100	140	250	230
41	240	200	300	600
D	400	700	400	800

MAXIMUM WORKING PRESSURE (MOP)

SDR	Class (PN)	Water	
		PN	Gas
11	6	8	8
17	12	12	12
26	18	16	16
41	24	20	20

MAXIMUM WORKING PRESSURE (MOC)

SDR	Water	20 °C / 20 °C	
11	12	6	4,5
17	9	8	4,5

Compression Fittings

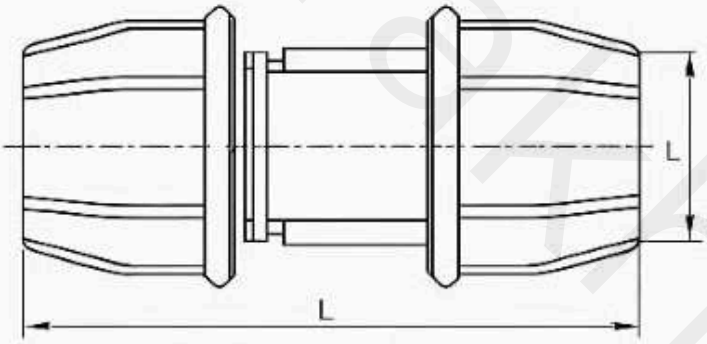
Features:

- Quick connection without welding or adhesives
- Reliable sealing with elastomer O-rings
- Resistant to pressure and torsional forces
- Easy installation with reusability for opening and closing
- Ideal for quick repairs and emergency lines

Applications:

- Drinking water distribution lines
- Agricultural irrigation systems
- Quick repairs of polyethylene pipelines
- Temporary or permanent branch connections

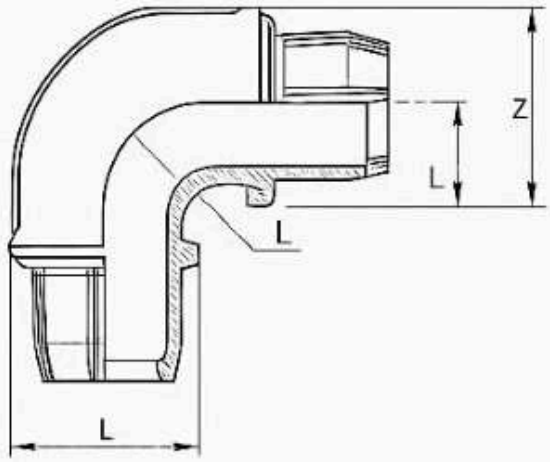
Couplers



Dimensions (mm)

NOD D	L
20	98
30	113
40	143
60	198
90	200
110	200

Elbows



Technical Specifications

Operating Pressure	PN 10
Standards	20 to 63mm
	*20 to 110mm

NOD D	L	Z
10 x 1/2"	71.5	71.5 – 23.5
16 x 3/2"	88.0	33.5 – 47.0
20x14	23.8	28.0 – 60
90	120.0	90 – 80

Standards

Operating pressure	EN 12801-3 ISO 14286
Standards	EN 12201 -3

Materials:

- Body and nut: Polypropylene (PP-B)
- Locking ring: Polyoxymethylene (POM)
- Sealing gasket: Nitrile Rubber (NBR)

HDPE Fittings

Butt Fusion, Electrofusion, and Threaded

Applications and Features:

- Suitable for drinking water supply networks, wastewater lines, gas distribution, and industrial drainage
- High pressure resistance (up to PN16)
- Corrosion resistant and resistant to most chemicals
- Long service life (over 50 years) according to ISO 4427

Types of Fittings:

- Butt fusion fittings: Elbows, tees, reducers, flanged fittings
- Electrofusion fittings: Couplers, tees, elbows
- Threaded fittings: Couplings and quick connectors for installation and repair

Standards:

- EN 12201 / ISO 4427 (for water)
- ISO 4437 (for gas)

Safety and Handling:

- Store in covered, dry locations
- Avoid prolonged exposure to direct sunlight before transportation

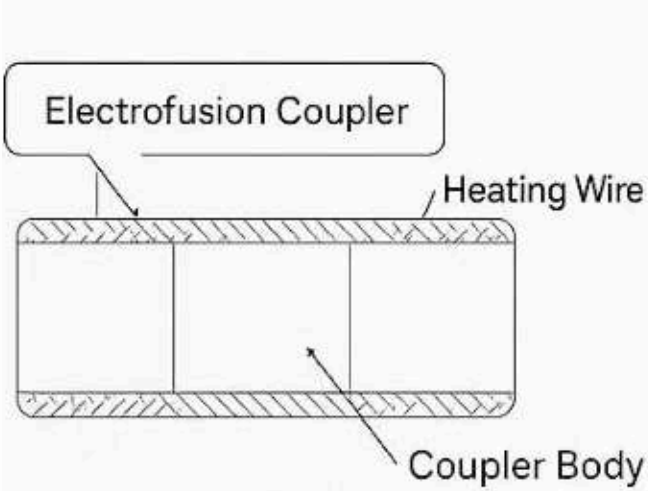
Electrofusion Fittings

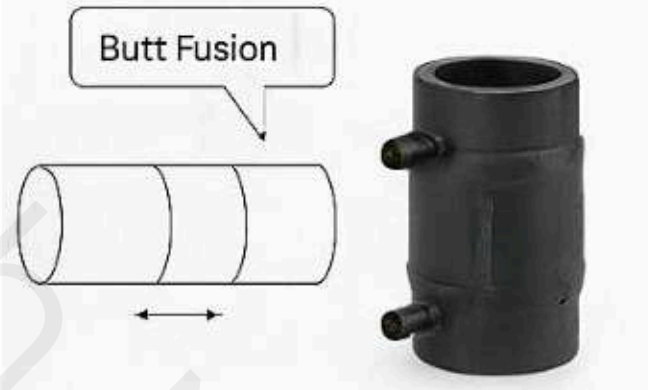
Polyethylene Fittings

Electrofusion, Injection Molded, Butt Fusion

Types:

- Electrofusion fittings: Suitable for gas and water transmission lines with working pressures up to PN 25
- Injection molded fittings: Including couplers, elbows, tees, and saddles, used in water and wastewater projects
- Butt fusion fittings: For large-diameter pipes with working pressures up to PN 25





Standards:

- ISO 4427-3
- DIN EN 12201-3

Dimensions:

- Diameter range from 16 mm to 1600 mm (customizable according to project requirements)

Installation Guide:

- Electrofusion: Ensure a perfectly square cut and precise beveling of pipe ends before welding
- Butt Fusion: Align and fix the pipe and fitting for uniform welding

Testing:

- Hydrostatic pressure test after joining, including pneumatic pressure test for saddles

Components:

- High-Density Polyethylene (HDPE)
- Heating wires and terminals
- PE 100 or PE 100-RC grades with UV resistance

Maintenance:

- Perform regular inspections on fittings and couplings
- Handle carefully to prevent any physical damage or corrosion
- Store in a dry environment away from direct sunlight to avoid material degradation

Polyethylene Fittings

Types of Fittings:

- Elbows
- Tees
- Reducers
- Stub Flanges

SDR PRESSURE CLASSES

SDR	PN
17.0	10 bar
11.0	16 bar
9.0	20 bar
7.4	25 bar

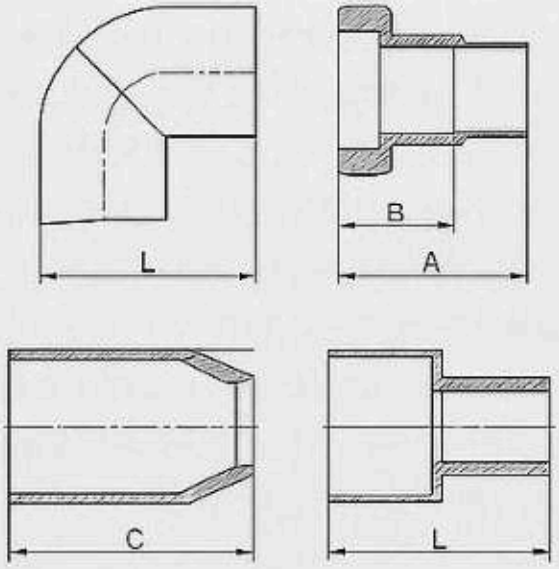
AVAILABLE SIZES

Elbows	Tees	Reducers
63 – 630	63 – 830	63 – 800 mm

AVAILABLE SIZES

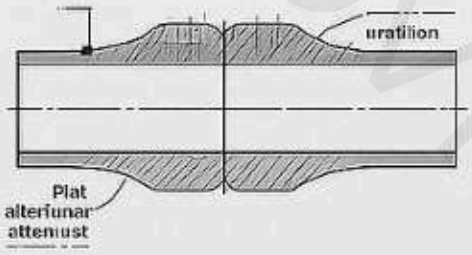
Fittings	Tees	Flange Adapters
63 – 630 mm	63 – 80 mm	63 – 80 mm

AVAILABLE SIZES



Standards:

- EN 12201-3 (for water)
- ISO 4427-3 (for water and gas)



BUTT FUSION JOINT

Connection Methods:

- PE100 Polyethylene Fusion Welding
- Electrofusion Connection

Polyethylene Granules

Polyethylene Granules

PE100 Yellow Polyethylene Masterbatch

- Suitable for gas pipes
- Yellow color for easy identification

CRP 100 Black Compound

- Contains carbon black
- High UV resistance
- Suitable for black HDPE pipes

LLDPE 209

- Linear Low-Density Polyethylene
- Suitable for packaging films and flexible containers

F7000 Black Compound

- Used in industrial products requiring black coating

F7000 White Compound

- Suitable for marking lines in sports fields and sanitary facilities

HDPE 5510 Compound

- Specifically for industrial pressure pipes

EX3 Granules

- Suitable for coatings and fittings
- Distinct color for clear identification

MP Compound (Yellow)

- Multipurpose masterbatch for coloring pipeline lines

Polyethylene Granules

Supply and Production of Polyethylene Granules

Ethylene polymerization, derived from petroleum and natural gas, involves transportation costs for raw materials. Generally, low-density polyethylene granules are used in manufacturing various products, including HDPE and LDPE grades, in production markets.

Iranian petrochemical plants, such as Amir Kabir, Asaluyeh, and Mahshahr, produce high-quality polyethylene granules. Due to abundant oil and chemical resources, Iran enjoys a significant competitive advantage.

Purchasing polyethylene granules from Iranian petrochemical companies is economically beneficial. Additionally, exporting these products from Iran provides an effective way to supply raw materials for both domestic and international markets.

Polyethylene Granules Quality Analysis

Grade	Test Method	Property	Results
PE100 Yellow Masterbatch	ISO 3236-1	0.08 g/10 min	0.08 g/10 min
CRP 100 Black	ISO 2264-1	940-960 kg/m³	940 kg/m³
LLDPE 209	ISO 3236-1	70 min	70 min
F7000 Black Compound	ISO 2266-1	122 °C	122 °C
F7000 White Compound	ISO 3236-1	>25 MPa	>25 MPa
HDPE 5510 Compund	ISO 2266-1	>650%	>25%
EX3 Granule	ISO 3236-1	>460%	>650%
EX3 Granule	ISO 23570	0.5 g	>400 g

Polyethylene Granules

Production:
We manufacture various types of polyethylene granules including LDPE, LLDPE, MDPE, and HDPE through ethylene polymerization in our advanced production facility.

Types:

- LDPE granules: Suitable for films, laminates, and flexible products
- HDPE granules: Used in pipes, packaging, and rigid products

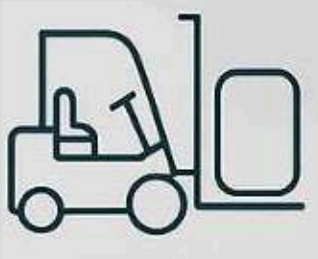
Export Markets:

- We specialize in exporting polyethylene granules to international markets.

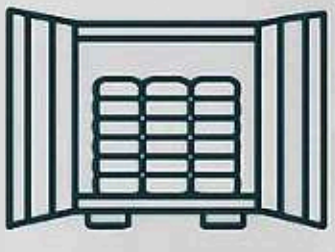
Polyethylene Granules Packaging

Jumbo Bags:
Polyethylene granules are available in large jumbo bags or smaller bags for sale.

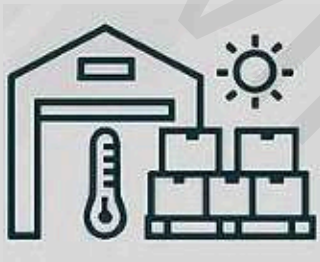
Bags
Polyethylene granules can be delivered as bulk powder or packaged, and they also support loading and unloading via suction .methods



Loading / Unloading:
Polyethylene granules can be delivered as bulk powder or packaged, and can be loaded or unloaded using pneumatic blowing or suction systems.



Container Loading:
A standard 20-foot container can carry approximately 17 jumbo bags or 1,350 small bags of polyethylene granules.



Storage Recommendations:
Polyethylene granules should be safely protected from heat and moisture to maintain their quality and material properties

Export Destinations

Export Capabilities and Global Market Presence

Transportation Routes:

- Land Routes: Bazargan, Dogharoon, and Mehran borders
- Sea Routes: Bandar Abbas and Imam Khomeini ports

Export Destinations:

- Turkmenistan and Uzbekistan: Water supply and irrigation networks
- Afghanistan and Iraq: Urban water projects and oil & gas infrastructure
- Iraq, United Arab Emirates, and Oman: Supply of polyethylene granules and industrial fittings

Our Competitive Advantages:

• Full compliance with international standards
• Professional expertise in logistics and bulk transportation
• Customized packaging tailored for maritime and land transport

Vision

Mission

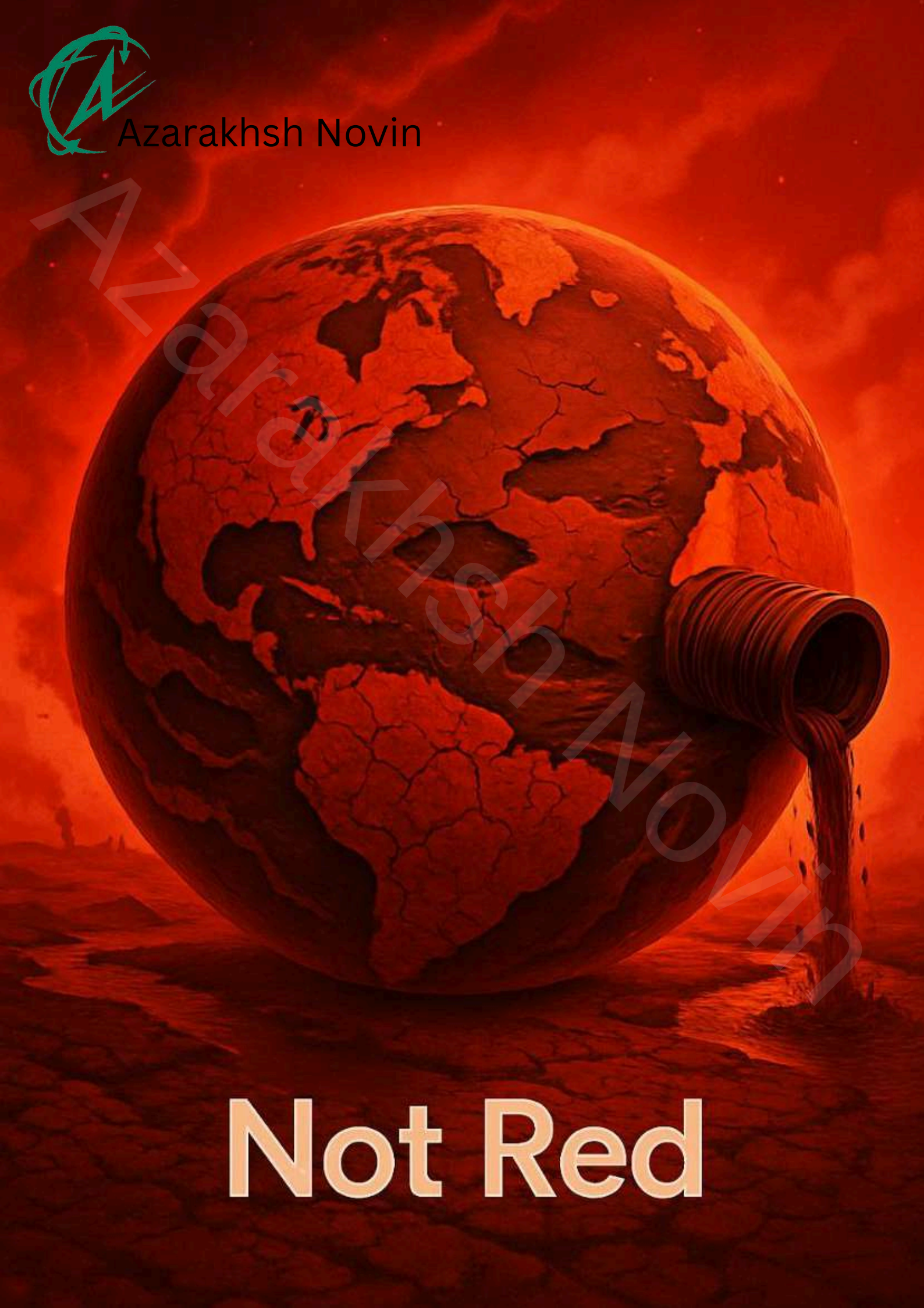
Addressing future needs and wants
without harming the environment

Guiding Principles

Finding proactive solutions to
meet all expectations

AZARAKHSH NOVIN
MEHREGAN JAVID

Azarakhsh Novin



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