

Multi-layer coating

Combination of two or more interlinking materials subsequently applied in one run

**Multi-wire welding**

Welding process using several welding wires in line for one pass

Natural gas

Incinerable fossile gaseous medium containing high energy density with low environmental impact

Natural gas pipe array

Facility made of pipes for subsurface storing of gas under pressure

Non-destructive testing (NDT)

Test methods that do not affect product integrity by sampling as e.g. ultrasonic testing, X-raying etc.

Offset of plate edges

Radial displacement of longitudinal plate edges at the weld

Oil

Incinerable fossile liquid medium containing high energy density

Operating pressure

Pressure under which the pipeline is used in normal conditions

O-press

Press to form a slit pipe out of a U-shaped plate

**Outside weld**

Outer share of DSAW of the longitudinal weld seam

Pilings

Pipes / piles driven vertically into the ground for construction and protection purposes

Pipe ends (range)

Range of about 300 mm at ends of pipe; matter of particular testing / inspection

Pipe number

Unique pipe number for each pipe of an order adapted at the end of pipe manufacturing

Pipeline

Economic and safe way to transport liquid, gaseous and other fluidic media over long distances

Planing machine

Machine for preparation of the longitudinal edge

PRODIS

Production Control and Information System

**PRODIS acceptance**

PRODIS compares all data and finally accepts a pipe after all requirements are fulfilled

Production number

Unique internal pipe number adapted early during pipe manufacturing

**QA / QC instructions**

Instructions for quality assurance / quality control

Quality assurance

Process that ensures that customers' demands are considered fully during production

Radiography

Non-destructive inspection method by X-ray to indicate imperfections in the volume of a weld by projecting them on a visualising medium

Run-on / run-off tabs

Small steel plates of same material and thickness as line pipe, where the welding processes for the longitudinal weld start and stop

Slab

Rectangular-shaped product of steelworks / prematerial for plate

Slit pipe

Pipe as produced in O-press before welding

Sour gas

Natural gas containing corrosive components

Sour oil

Natural (crude) oil containing corrosives (H₂S)

Spirally welded pipe

Method of manufacturing a pipe out of hot-rolled strips, formed and welded in spiral move (curve winding forward round a central point)

**Stress corrosion cracking (SCC)**

Material cracking requiring presence of corrosive media combined with loads / stress

Submerged arc welding (SAW)

Arc welding process where the arc is shielded by flux

Surface inspection

Inspection of pipe surface by different means

Tack weld

First temporary layer to form the longitudinal seam weld, performed as a continuous arc welding process

**Tensile specimen**

Test sample to determine tensile properties

Thermomechanical rolling (TM)

Process of plate rolling with defined degree of deformation at defined temperatures to reach mechanical properties with optimised microstructure

Three-layer coatings

Multi-layer coating consisting of epoxy primer, copolymeric adhesive and polyethylene (PE) or polypropylene (PP) top coat

Three-roll bending process (3RB)

Rolling process (pyramid roller mill) applied to form a steel plate to a slit pipe

Top-blown oxygen process

Method to convert pig-iron into steel by blowing oxygen into the melt in a furnace

Toughness

Material property describing material's capability of local or global deformation; resistance against crack initiation and propagation

Transition temperature

Specific temperature at which behaviour of carbon steel changes from ductile to brittle

Ultrasonic surface wave testing

Non-destructive examination method for indicating surface imperfections

**Ultrasonic testing**

Non-destructive examination method for indicating imperfections in the volume of a pipe or plate

Ultrasonic weld inspection

Non-destructive examination method applied to identify imperfections in the volume of a longitudinal weld

**UOE-process**

Method of forming a pipe out of a plate by using U- and O-press and after longitudinal welding using an expander (E)

U-press

Press to form a "U" shape out of a plate, as first step out of UOE-process

**Visual inspection**

Inspection of surface and weld seam for visible defects

Weldability

Material suitability for welding

Working pressure

Internal pressure of a pipeline under working conditions (different to design pressure, test pressure)

X-ray

High energy electromagnetic radiation used for radiography

Yield strength

Characteristic material value which indicates the limit of elastic behaviour under external stress

Zero defects

Our greatest aim, pipe by pipe, day by day

1,000 questions and only 112 answers.
Should your question not be answered yet,
please contact us.

EUROPIPE GmbH

info@europipe.com

www.europipe.com

Phone +49 (0)2102 857-0

EUROPIPE from A to Z

Automatic end tab welding machine

Device for fixing run-on / run-off tabs by welding

Automatic measuring device for pipe ends

Device for measurement of pipe end geometry by laser-optical means

Bainite

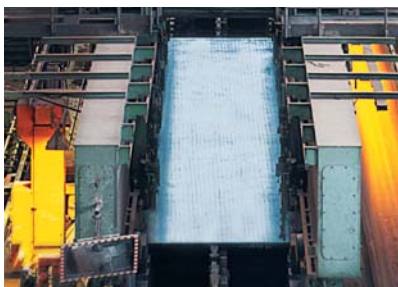
Specific type of steel microstructure with high strength and high toughness properties

Basic oxygen furnace process (BOF)

Method to convert pig-iron into steel by blowing oxygen into the melt in a furnace

Bevel

Machined shape of a plate edge or pipe end as preparation for welding

**Buckle arrestors**

Thick wall sections in pipelines to avoid local and propagating pipe collapse due to critical combined loads encountered during installation and operations (e.g. high external pressure combined with bending, tension or torsion)

Calcium treatment

Steel treatment for inclusion shape control

Carbon equivalent

Criterion for the weldability of steel, calculated by means of equations defined in agreed rules and specifications. Different equations are used.

Cathodic corrosion protection

Induced direct current with pipeline being the negative pole (cathode) to prevent dissolution of pipe material. Classified as active corrosion protection in contrast to passive corrosion protection by coatings.

Clad pipe

Microalloyed steel pipe internally clad with high-alloy austenitic chromium-nickel steels, for outstanding resistance against highly corrosive media

Coating

Any non-metal matter applied to the inner or outer surface of the pipe for various purposes, intended to keep permanent bond

**Collapse resistance**

Resistance against collapsing due to high external pressures and/or forces; resistance against buckling

Compression process

Method of applying concrete weight coating by placing concrete mortar between the pipe and an outer plastic film wrapped around the pipe so as to compress the mass

Conductor pipe

Guiding pipe driven vertically into the ground

Construction / structural pipe

Pipe for steel structures

Continuous slab caster

Device for steel casting with continuous solidification along the strand

Corrosion

Loss of integrity of metallic components by chemical, physical or combined processes

Corrosion protection

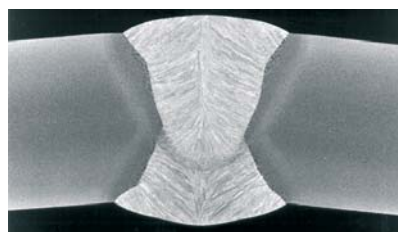
Measures taken to prevent metals from corroding by either separating medium and metal (passive) or electrochemical processes (active)

Crimping press

Press to form longitudinal edges of plate to later pipe radius

Cross-section of weld seam

Transverse view on the SAW seam for visualising (macro)

**Design pressure**

Pressure under which the pipeline is intended to be used even under critical conditions

Destructive testing

Methods and techniques to evaluate material properties

Double submerged arc welding (DSAW)

Method to weld the pipe's longitudinal seam by submerged arc welding in two passes back to back

Drop weight tear test (DWT)

Test to determine fracture arrest properties of a pipe or plate

Drying furnace

Device for drying the pipe after cleaning before tack welding

Electric arc

Medium for the energy transfer from welding heads to welded material for arc welding processes

Expander

Mechanical device to expand the pipe to its final shape and inner diameter with an internal hydraulic tool

**Facing**

Square-facing the pipe end before hydrostatic testing

Ferrite

Specific type of steel microstructure with moderate strength and good toughness properties

Filmless radiography

Non-destructive inspection by X-ray resulting in a digital image instead of the conventional film exposure technique

**Final inspection**

Inspection of pipe for final approval before dispatch

Fine-grained microstructures

Microstructure resulting in high strength and high toughness properties

Fluorescent iron powder emulsion

Agent containing fluorescent iron powder in a non-corrosive fluid for the detection of surface defects under black light (UV-light)

Friction

Resistance between two or more surfaces during movement

Fusion bonded epoxy (FBE)

Powder epoxy resin fused to a heated substrate. Used in the line pipe industry as mono- or dual-layer anti-corrosion coating or as 1st layer of multi-layer coating (primer).

Geometrical properties

Tolerances of geometrical features of a pipe, e.g. diameter tolerances, out-of-roundness, straightness etc.

Girth-weld insulation

Protection / coating of girth welds in the field

**Heat**

Amount of steel being produced in a common treatment and casting

Heat-affected zone (HAZ)

Area adjacent to the weld metal affected by heat input as a result of the welding process with a coarse grain microstructure

Heavy coating

Above the external anti-corrosion coating, applied over coat (asphalt, concrete) to overcome buoyant forces in the sea or flooded areas

**High-strength low-alloyed (HSLA) steel**

Material bearing high loads produced from steels with a low content of alloying elements

Hot metal desulphurisation

Process for decreasing sulphur content in pig-iron melts

Hot-rolled strip

Long strips of coiled plates rolled from slabs, used for example as prematerial for helically welded pipe

Hydrogen-induced

Modifying material properties caused by / based on the influence of hydrogen

Hydrostatic pressure test

Test of pipe to secure strength properties and leakproofness by pressurising the pipe internally with liquids

**Impact specimen**

Sample to determine material's toughness properties (e.g. Charpy specimen)

Impingement process

Method to apply concrete weight coating by projecting concrete mortar onto the pipe using accelerating rollers

Inductive bending process

Process of bending pipe by using local inductive heating

Injection moulding

Local three-layer pipe coating process for girth welds by injecting polyethylene or polypropylene into a mould on a pipe prepared with FBE primer and adhesive

Inside weld

Inner share of DSAW of the longitudinal weld seam

Internal pressure

Pressure in a pipeline system to transport fluidic media

J-lay method

Technique on lay barge for offshore pipeline installation with vertical pre-assembled pipes giving a J shape string between the lay barge and sea bed

Large-diameter pipe

Pipe with a diameter in excess of 400 mm / 16"

Lay barge

Equipment to install pipelines offshore

**Line pipe**

Pipe used for pipelines

Longitudinally welded pipe

Method of manufacturing a pipe out of heavy plate by butt-joining of the longitudinal edges

Magnetic particle inspection (MPI)

Electromagnetic non-destructive inspection method to indicate surface defects at the outside, inside or bevel of a pipe

Manufacturing procedure specification (MPS)

Detailed description of all production steps from steelmaking to pipe manufacturing and coating

Marking robot

Automatic system to mark a pipe according to standards and customers' requirements

Material properties

Features of line pipe material concerning e.g. resistance against deformation, crack initiation and propagation and corrosion

Measuring of pipe ends

Measurement of pipe end geometry

Misalignment

Radial displacement of the longitudinal plate edges at the weld (radial offset); divergence between the inside and the outside weld bead (out-of-line weld bead)

Movable coating facilities

Coating plants relocated job-wise close to laying sites