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Definition and Applications

JIS G3454

- ALLLAND Production Standards Overview

1. Definition

JIS G3454 primarily specifies the manufacturing, performance, and inspection requirements for carbon steel pipes intended for pressure service. The standard covers seamless and welded pipes used in high-temperature and high-pressure applications. The main steel grades include STPG 370, STPG 410, STPG 480, STPT 370, STPT 410, and STPT 480. These pipes are designed for conveying fluids under pressure in various industrial applications.

2. ALLLAND JIS G3454 Steel Pipe Dimensions

Parameters	Dimensions
O.D.	6.0 mm -- 650 mm (0.236" -- 25.6")
WT	1.0 mm -- 50 mm (Sch 10S -- Sch 160)
Length	5.8 m – 12 m（19' – 40'）
Material	JIS G3454 STPG 370/410/480, STPT 370/410/480
Process	Seamless / ERW / SAW
Connection	Butt-weld / Socket-weld / Threaded / Flanged

3. Application

JIS G3454 pipes are primarily used in pressure piping systems across various industries:Steam and hot water boilers

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Critical Tolerances

ALLLAND STEEL PIPE

- High-temperature and high-pressure process piping
- Power plant piping systems
- Chemical and petrochemical plants
- Refinery piping
- Industrial furnace tubes
- Heat exchanger tubes

Our JIS G3454 standard steel pipes are manufactured in strict compliance with JIS specification requirements, ensuring dimensional accuracy for pressure applications.

Item	Tolerance	Description
O.D.	±0.75% (Seamless, O.D. ≤ 50 mm) ±1.0% (Seamless, O.D. > 50 mm) ±1.0% (Welded)	Maximum tolerance specified by wall thickness
WT	+15% / -12.5% (Standard) +15% / -10% (For thin-wall pipes)	Minimum wall thickness must be maintained
Length	+10 mm / -0 mm (≤ 6 m) +15 mm / -0 mm (> 6 m)	Precision cutting available
Out-of-roundness	≤ 1.5% of O.D. (Seamless) ≤ 2.0% of O.D. (Welded)	Ensures proper fit-up for welding

Chemical and Mechanical Properties

1. Chemical Composition (wt%, max)

Element	Composition, %					
Element	STPG 370	STPG 410	STPG 480	STPT 370	STPT 410	STPT 480
C, max	0.25	0.3	0.3	0.25	0.3	0.3
Si	0.35 max	0.35 max	0.35 max	0.35 max	0.35 max	0.35 max
Mn	0.30-0.90	0.30-1.00	0.30-1.20	0.30-0.90	0.30-1.00	0.30-1.20
P, max	0.04	0.04	0.04	0.04	0.04	0.04
S, max	0.04	0.04	0.04	0.04	0.04	0.04

Note: STPT grades have more stringent requirements for tensile strength and may have additional restrictions on chemical composition.

2. Mechanical Properties

Grade	Tensile Strength, min	Yield Strength, min	Elongation, min
STPG 370	370 MPa (54,000 psi)	215 MPa (31,000 psi)	0.25
STPG 410	410 MPa (59,000 psi)	245 MPa (35,500 psi)	0.22
STPG 480	480 MPa (70,000 psi)	275 MPa (40,000 psi)	0.2
STPT 370	370 MPa (54,000 psi)	215 MPa (31,000 psi)	0.3
STPT 410	410 MPa (59,000 psi)	245 MPa (35,500 psi)	0.25
STPT 480	480 MPa (70,000 psi)	275 MPa (40,000 psi)	0.22

Note: STPT grades typically have higher elongation requirements due to their use in more demanding applications.

3. High Temperature Properties (when specified)

Grade	Allowable Stress at 350°C (MPa)	Creep Resistance
STPG 370	87	Standard
STPG 410	98	Standard
STPG 480	117	Enhanced
STPT 370	87	Standard
STPT 410	98	Standard
STPT 480	117	Enhanced

Testing Requirements

- Conducted to verify compliance with specified chemical limits
- Methods: Optical Emission Spectrometry, Wet chemical analysis
- Frequency: Per heat or lot as per standard requirements

1. Chemical Composition Test

2. Tensile Test

- Determines:Tensile strength,Yield strength,Elongation.
- Test specimens:Longitudinal for seamless, transverse for welded pipes
- Frequency: One test per lot (as defined in standard)

3. Hydrostatic Test

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- Mandatory test for all pressure pipes
- Test pressure: Calculated as P = 2St/D (minimum 5 MPa)
- Duration: Minimum 5 seconds
- Requirements:No leakage, weeping, or permanent deformation

4. Non-Destructive Testing (when specified)

- Eddy Current Testing: For welded pipes, full length testing
- Ultrasonic Testing: For seamless pipes or by special agreement
- Radiographic Testing: For critical applications (by agreement)
- Magnetic Particle Testing: For surface defect detection

5. Flattening Test

- Purpose: To verify ductility and weld quality
- Method: Flatten between parallel plates to specified distance
- Requirement: No cracks or breaks exceeding standard limits

6. Flaring Test (for thin-wall pipes)

- Purpose: To assess formability for mechanical joints
- Method: Expand pipe end with 60° cone to specified diameter
- Requirement: No cracks or splits

7. Hardness Test (when specified)

- Purpose: To verify material consistency
- Method: Brinell or Rockwell hardness testing
- Requirement: Within specified range for grade

Surface Treatment

Standard Finishes

- **Black (as rolled)**: Natural mill scale surface
- **Pickled & Oiled**: Scale removed, light oil coating for rust prevention
- **Galvanized** (upon request): Hot-dip galvanized for corrosion protection
- **Painted** (upon request): Primer or full paint system

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奥蓝德钢管
ALLLAND STEEL PIPE