



## ATUSA Grupo Empresarial, S.A.

## Threaded Pipe Fittings in Malleable Cast Iron

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### PRODUCT

Threaded pipe fitting in malleable cast iron according to European Standard EN-10242 (design symbol A).

These fittings are for general purposes for the transmission of fluids and gases up to the limits of pressure and temperature here specified and are intended for the connection of elements threaded in accordance with EN-10226-1 , sizes 3/8" to 4" according our product range

### BRAND IDENTIFICATION

Fittings are marked as follow ( **EO** and **Φ** brand ) :



### CHEMICAL COMPOSITION (MELTING METAL)

Elements:	C	Si	Mn	S	Cr	P	Cu	Ni
Limits (%):	3.0-3.3	0.70-1.0	0.30-.55	0.15-.20	<0.10	<0.10	<0.10	<0.10

### HEAT TREATMENT

Generally the material is annealing by heat treatment in decarburising atmosphere in order to reach malleable cast iron according to EN-1562 - class EN-GJMW-400-05 - (whiteheart malleable cast iron) which ensures mechanical properties as follow:

TENSILE TEST PIECE:	12 mm	0,2% PROOF STRENGTH (Rp 0,2) :	> 220 N/mm <sup>2</sup>
MINIMUM TENSILE STRENGTH :	400 N/mm <sup>2</sup>	BRINELL HARDNESS :	< 220 HB
MINIMUM ELONGATION (A3,4) :	5%		

### GALVANIZATION

The material is galvanized by the hot dip process in order to provide a protective zinc layer with a minimum thickness of 70 µm (microns) through of the alloy between zinc and the base material according to ISO 1460.

The surface related mass of the zinc coating is not less than 500 gr/m<sup>2</sup> .

Zinc used as raw material requirement is class Zn 99,995%, this means impurities not to exceed of 0,005%) and the content by mass of the accompanying elements in the raw material don't exceed the following maximum values (%) :

Al (0.0002) ; Cd (0.0002) ; Cu (0,0004) ; Pb(0.004) ; Sn (0.0001) ; Fe(0.0003) ; Zn (rest)

The content by mass of the accompanying elements in the finished zinc coating does not exceed the following maximum values :

Al : 0.10%	Sb : 0.01%	As : 0.02%	Bi : 0.01%
Cd : 0.01%	Cu : 0.10%	Pb : 0.10%	Sn : 0.10%

## **THREADS**

The fittings are threaded in accordance with EN 10226-1 type R(external conical) –Rp (internal parallel). The fastening threads of backnuts, union nuts and their mating are in accordance with EN ISO 228-1 (external and internal parallel)

## **TIGHTNESS**

Leak tightness tests by application of an internal pneumatic pressure of not less than 5 bar whilst the fitting is completely immerse in water are carried out.

When required, type leak tightness tests (at 300 bar hidraulic) by internal pressure are carried out ensuring the tighness of the fittings at working pressure according to VdS 2093 07.83.

## **PERMISSIBLE WORKING CONDITIONS**

The standard conditions for fluids conduction are :

### **. water (including drinking water) and other not fuel/not explosive liquids:**

<b>MWP</b> <sup>(1)</sup>	<b>Temperature</b>	<b>Sizes</b>
25 kg/cm <sup>2</sup>	-20 up to 120°C	3/8" to 4" (DN10 to DN100)
20 kg/cm <sup>2</sup>	120 - 300°C	3/8" to 4" (DN10 to DN100)

### **. not fuel/not explosive gas – general - :**

<b>MWP</b> <sup>(1)</sup>	<b>Temperature</b>	<b>Sizes</b>
25 kg/cm <sup>2</sup>	0 to 85°C	3/8" to 4" (DN10 to DN100)

### **. fuel/explosive gas/liquids – general - :**

<b>MWP</b> <sup>(1)</sup>	<b>Temperature</b>	<b>Sizes</b>	<b>Installation</b>
1 kg/cm <sup>2</sup> <sup>(2)</sup>	<sup>(3)</sup>	3/8" to 2" (DN10 to DN50)	<sup>(4)</sup>

(1) MWP (Maximum Working Pressure)

(2) For industrial installations : MWP ≤ 0.5 kg/ cm<sup>2</sup>

(3) Depending on the gas/liquid nature, project designer must be established the temperature range

(4) Installations :

- a. National-Regional-Local regulations must be satisfied
- b. Piping Network / grid : only from fluid distribution deliver point to equipment connexion
- c. Buried installations : not allowed
- d. Piping : malleable fittings must be assembled to piping components (tubes, fittings, valves, ...) permanently fixed (not movil/flexible piping components allowed)
- e. Not distribution installations allowed, just for individual/building installations.
- f. Not for LPG Storage tanks.
- g. The Sealing Products must be conform to EN 751 (parts 1 to 3) depending on fluid type.When threads type EN-ISO 228-1 always must be use appropriate sealing material
- h. Final Installation must be leakage tested before commissioning and approved by qualified personal
- i. The Installation use must be periodically supervised and will be properly maintained by a qualified personal

## **STANDARDS SUMMARY**

Product : EN 10242

Material : EN 1562

Galvanization : EN 10242 and ISO 1460

Threads : EN 10226-1 (ISO 7-1) and EN ISO 228-1 (ISO 228-1)

Sealing products : EN 751-1,2,3