CUSTOMER Cliente	**T.A.I. Tecnologie antincendio e idrauliche s.r.l.** Via Monte Fenera, 72/A 13018 Valduggia (VC) Italy
CONTRACT Commessa	**CO017519- 13/06/2019**
TEST REPORT Rapporto di Prova	**RP029619** **Tests in accordance with DM 174**
APPLICABLE STANDARDS Norme di riferimento	➢ **Decreto Ministeriale n°174 del 2004**

Date Data	**Prepared by** Redazione	**Verified by** Verifica Tecnica	**Approved by** Autorizzazione
29/07/2019	Assistant Manager *Eleonora Andrea Basso*	Assistant Manager *Eleonora Andrea Basso*	General Manager *Michele Setaro*
	Questo documento è firmato elettronicamente; le firme sono certificate da InfoCert S.p.a. *This document is signed electronically; signatures are certified by InfoCert S.p.a.*		

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1. GENERAL REMARKS

1.1 Client data

Client:	**T.A.I. Tecnologie antincendio e idrauliche s.r.l.**
Address:	Via Monte Fenera, 72/A 13018 Valduggia (VC) Italy

1.2 Identification of equipment and/or subsystem under test (EUT)

EUT nr	Acceptance code	Manufacturer and model	Receiving date
1	AC016216/1	T.A.I element in NBR of art. 405/406/408 (NBR rubber wedge)	18/07/2016
2	AC016216/2	T.A.I element in EPDM of art. 405/406/300/301/406/200 (EPDM rubber wedge)	18/07/2016 12/07/2019
3	AC016216/3	T.A.I element in AISI 304 of art. 500 ("Y" filter sheath)	18/07/2016
4	AC016216/4	T.A.I element in AISI 316 of art. 108 (Wafer check valve)	18/07/2016
5	AC016216/5	T.A.I element in AISI 420 di art. 405/406/408/300/301/107 (maneuvering rod for roll)	18/07/2016 12/07/2019
6	AC016216/6	T.A.I element in EN-GJS 500 of art. 405/406/117/408/106P (valve bodies)	18/07/2016
7	AC016216/7	T.A.I element in EN-GJS 400 of art. 108/300/301 (valve bodies)	18/07/2016 12/07/2019
8	AC016216/8	T.A.I element in EN-GJL 250 of art. 107/106/500/106/106TM/200 (valve bodies and anti-vibration joint)	18/07/2016
9	AC016216/9	T.A.I element in brass EN 12164 (CW617N) of art. 405/406 (gland valves)	18/07/2016

1.3 Identification of auxiliary equipment (AE)

EUT does not require auxiliary equipment.

1.4 Sampling

All test results are related on the samples tested by the test laboratory, taken from production by the Client. The extension of test results to the entire production is responsibility of manufacturer/importer.

2. SCOPE

Test and measurements scope is to provide to the Client useful indications in order to evaluate EUT compliance with reference standards; the test plan has been requested by Client.

3. APPLICABLE DOCUMENTS

3.1 Reference Standards and Documents

Decreto Ministeriale nr°174 of 2004	Regulation on materials and objects that can be used in fixed water collection, treatment, supply and distribution of water intended for human consumption.

3.2 Applicability

Test Plan is shown in paragraph 6.1.2 of this test report.

3.3 Definitions and glossary of terms

EUT: Equipment Under Test
AE: Auxiliary Equipment
PASS: In compliance with reference Standard
FAIL: Not in compliance with reference Standard

4. TECHNICAL COMPETENCE

Technicians, assigned to execute the tests described in this Test Report, have been qualified as required by Quality System of Tecnolab del Lago Maggiore s.r.l.

5. TEST PERFORMED

5.1 General

5.1.1 Test site

Tests were performed at laboratory Tecnolab del Lago Maggiore S.r.l., Via dell'Industria 20, 28924 Verbania Fondotoce (VB) ITALY.

5.1.2 List and description of tests

Test	Applicable Standard	Paragraph of this Test Report	Test result
Determination on NBR	D.M. 174 (2004)	5.2.1	PASS
Determination on EPDM	D.M. 174 (2004)	5.2.2	PASS
Determination on AISI 304	D.M. 174 (2004)	5.2.3	PASS
Determination on AISI 316	D.M. 174 (2004)	5.2.4	PASS
Determination on AISI 420	D.M. 174 (2004)	5.2.5	PASS
Determination on spheroidal cast iron GGG50 – EN-GJS 500	D.M. 174 (2004)	5.2.6	PASS
Determination on spheroidal cast iron GGG50 – EN-GJS 500 coated with epoxy paint	D.M. 174 (2004)	5.2.7	PASS
Determination on spheroidal cast iron GGG40 – EN-GJS 400 coated with epoxy paint	D.M. 174 (2004)	5.2.8	PASS
Determination on grey cast iron GG25 - EN-GJL 250 coated with epoxy paint	D.M. 174 (2004)	5.2.9	PASS
Determination on brass EN 12164 (CW617N)	D.M. 174 (2004)	5.2.10	PASS

5.1.3 Measurement uncertainty

The measurement uncertainties stated in this document are expressed as expanded uncertainty obtained by multiplying the standard uncertainty by the coverage factor K = 2 corresponds to a confidence level of about 95%.

5.2 Evidence of global and specific migration

The samples delivered to the laboratory were analysed in their individual materials.
In the paragraphs below, we show the results for each material.

5.2.1 Determination of global and specific migration of dyes on NBR

Date of test:	20/07/2016 – 05/08/2016			
Reference standard:	D.M. nr°174 of 2004			
Material:	NBR – Acrylo-Nitrile-Butadiene			
Condition of test:	**solution:** distilled water **time of contact:** 24 hours **temperature of contact:** 40°C			
Parameter:	**Unit of measurament**	**Result**	**Uncertainty**	**Limit**
Global migration	mg/kg	5,4	± 0,5	50
Specific migration of dyes	Optical transmission	optical transmission not lower than 95% compared to the baseline	-	optical transmission not lower than 95% compared to the baseline
PASS				

5.2.2 Determination of global and specific migration of dyes on EPDM

Date of test:	20/07/2016 – 05/08/2016 – 12/07/2019			
Reference standard:	D.M. nr°174 of 2004			
Material:	EPDM - Ethylene-Propylene Diene Monomer			
Condition of test:	**solution:** distilled water **time of contact:** 24 hours **temperature of contact:** 40°C			
Parameter:	**Unit of measurament**	**Result**	**Uncertainty**	**Limit**
Global migration	mg/kg	1,5	± 0,2	50
Specific migration of dyes	Optical transmission	optical transmission not lower than 95% compared to the baseline	-	optical transmission not lower than 95% compared to the baseline
PASS				

5.2.3 Determination of global and specific migration of nickel, chromium and manganese on AISI 304

Date of test:	20/07/2016 – 05/08/2016			
Reference standard:	D.M. nr°174 of 2004			
Material:	AISI 304			
Condition of test:	**solution:** distilled water **time of contact:** 24 hours **temperature of contact:** 40°C			
Parameter:	**Unit of measurament**	**Result**	**Uncertainty**	**Limit**
Global migration	mg/kg	1,4	± 0,5	50
Migration Ni	ppm	< 0,01	-	0,1
Migration Cr	ppm	< 0,01	-	0,1
Migration Mn	ppm	< 0,01	-	0,1
PASS				

5.2.4 Determination of global and specific migration of nickel, chromium and manganese on AISI 316

Date of test:	20/07/2016 – 05/08/2016			
Reference standard:	D.M. nr°174 of 2004			
Material:	AISI 316			
Condition of test:	**solution:** distilled water **time of contact:** 24 hours **temperature of contact:** 40°C			
Parameter:	**Unit of measurament**	**Result**	**Uncertainty**	**Limit**
Global migration	mg/kg	1,0	± 0,1	50
Migration Ni	ppm	< 0,01	-	0,1
Migration Cr	ppm	< 0,01	-	0,1
Migration Mn	ppm	< 0,01	-	0,1
PASS				

5.2.5 Determination of global and specific migration of nickel, chromium and manganese on AISI 420

Date of test:	20/07/2016 – 05/08/2016 – 12/07/2019			
Reference standard:	D.M. nr°174 of 2004			
Material:	AISI 420			
Condition of test:	**solution:** distilled water **time of contact:** 24 hours **temperature of contact:** 40°C			
Parameter:	**Unit of measurament**	**Result**	**Uncertainty**	**Limit**
Global migration	mg/kg	1,0	± 0,1	50
Migration Ni	ppm	< 0,01	-	0,1
Migration Cr	ppm	< 0,01	-	0,1
Migration Mn	ppm	< 0,01	-	0,1
PASS				

5.2.6 Determination on spheroidal cast iron EN-GJS 500 (GGG50)

Date of test:	20/07/2016 – 05/08/2016			
Reference standard:	D.M. nr°174 of 2004			
Material:	EN-GJS 500 (GGG50)			
Parameter:	**Unit of measurament**	**Result**	**Uncertainty**	**Limit**
Sb	mg/kg	< 1	-	-
As	mg/kg	< 1	-	-
Cd	mg/kg	< 1	-	-
Cr	mg/kg	< 5	-	-
Mo	mg/kg	< 1	-	-
Ni	mg/kg	< 1	-	-
Pb	mg/kg	< 1	-	-
PASS				

5.2.7 Determination of global and specific migration of dyes, antimony, arsenic, cadmium, chromium, molybdenum, nickel and lead on spheroidal cast iron EN-GJS 500 (GGG50) coated with epoxy paint

Date of test:	20/07/2016 – 05/08/2016			
Reference standard:	D.M. nr°174 of 2004			
Material:	EN-GJS 500 (GGG50) coated with epoxy paint			
Condition of test:	**solution:** distilled water **time of contact:** 24 hours **temperature of contact:** 40°C			
Parameter:	**Unit of measurament**	**Result**	**Uncertainty**	**Limit**
Global migration	mg/kg	2,5	± 0,3	50
Specific migration of dyes	Optical transmission	optical transmission not lower than 95% compared to the baseline	-	optical transmission not lower than 95% compared to the baseline
Sb	mg/kg	< 1	-	-
As	mg/kg	< 1	-	-
Cd	mg/kg	< 1	-	-
Cr	mg/kg	< 5	-	-
Mo	mg/kg	< 1	-	-
Ni	mg/kg	< 1	-	-
Pb	mg/kg	< 1	-	-
PASS				

5.2.8 Determination of global and specific migration of dyes, antimony, arsenic, cadmium, chromium, molybdenum, nickel and lead on spheroidal cast iron EN-GJS 400 (GGG40) coated with epoxy paint

Date of test:	20/07/2016 – 05/08/2016 – 12/07/2019			
Reference standard:	D.M. nr°174 of 2004			
Material:	EN-GJS 400 (GGG40) coated with epoxy paint			
Condition of test:	**solution:** distilled water **time of contact:** 24 hours **temperature of contact:** 40°C			
Parameter:	**Unit of measurament**	**Result**	**Uncertainty**	**Limit**
Global migration	mg/kg	4,2	± 0,4	50
Specific migration of dyes	Optical transmission	optical transmission not lower than 95% compared to the baseline	-	optical transmission not lower than 95% compared to the baseline
Sb	mg/kg	< 1	-	-
As	mg/kg	< 1	-	-
Cd	mg/kg	< 1	-	-
Cr	mg/kg	< 5	-	-
Mo	mg/kg	< 1	-	-
Ni	mg/kg	< 1	-	-
Pb	mg/kg	< 1	-	-
PASS				

5.2.9 Determination of global and specific migration of di dyes, antimony, arsenic, cadmium, chromium, molybdenum, nickel and lead on grey cast iron GG25 (EN-GJL 250) coated with epoxy paint

Date of test:	20/07/2016 – 05/08/2016			
Reference standard:	D.M. nr°174 of 2004			
Material:	EN-GJL 250 (GG25) coated with epoxy paint			
Condition of test:	**solution:** distilled water **time of contact:** 24 hours **temperature of contact:** 40°C			
Parameter:	**Unit of measurament**	**Result**	**Uncertainty**	**Limit**
Global migration	mg/kg	5,4	± 0,5	50
Specific migration of dyes	Optical transmission	optical transmission not lower than 95% compared to the baseline	-	optical transmission not lower than 95% compared to the baseline
Sb	mg/kg	< 1	-	-
As	mg/kg	< 1	-	-
Cd	mg/kg	< 1	-	-
Cr	mg/kg	< 5	-	-
Mo	mg/kg	< 1	-	-
Ni	mg/kg	< 1	-	-
Pb	mg/kg	< 1	-	-
PASS				

5.2.10 Determination on brass EN 12164 (CW617N)

Date of test:	20/07/2016 – 05/08/2016			
Reference standard:	D.M. nr°174 of 2004			
Material:	EN 12164 (CW617N)			
Parameter:	**Unit of measurament**	**Result**	**Uncertainty**	**Limit**
Sb	mg/kg	< 1	-	-
As	mg/kg	< 1	-	-
Cd	mg/kg	< 1	-	-
Ni	mg/kg	< 1	-	-
PASS				

6. ANNEX

- Annex 1: Models and materials
- Annex 2: Verification of conformity document
- Annex 3: Declaration of the Manufacturer
- Annex 4: Bureau Veritas ISO 9001:2015 Certificate

Part	ART 405 - GATE VALVE IN SPHEROIDAL CAST IRON PN 10 - 16 RUBBER WEDGE – FLAT BODY	ART 406 - GATE VALVE IN SPHEROIDAL CAST IRON PN 16 - RUBBER WEDGE – OVAL BODY
Body, Cover, Wedge	Spheroidal cast iron EN-GJS-500	Spheroidal cast iron EN-GJS-500
Handwheel (ART 407)	Grey cast iron EN-GJL-250	Grey cast iron EN-GJL-250
Wedge Coating	NBR / EPDM	NBR / EPDM
Rod	AISI 420	AISI 420
Seals	Synthetic rubber	Synthetic rubber
Stem nut	Brass – EN 12164 (CW617N)	Brass – EN 12164 (CW617N)
Painting	Epoxy – RAL 5005	Epoxy – RAL 5005

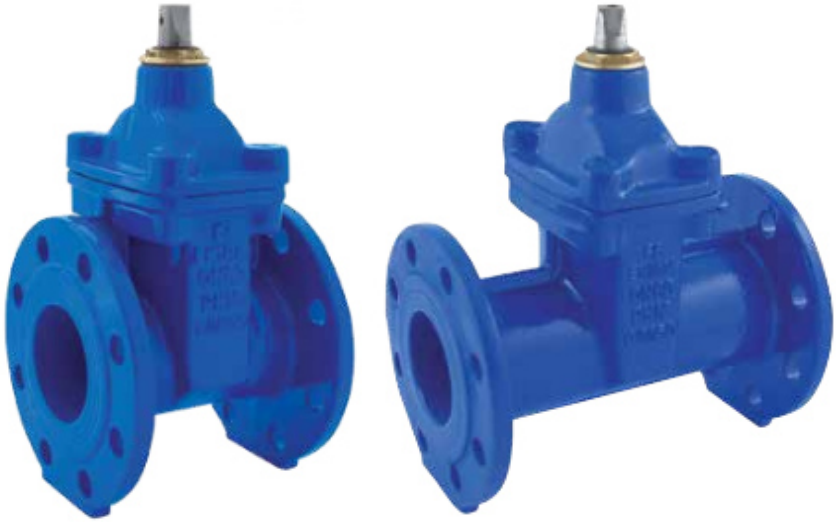

Figure 1 - Art 405 - Art 406

Part	ART 107 - GATE VALVE IN GREY CAST IRON PN 10 – METAL SEAL – FLAT BODY
Body, Cover, Wedge	Grey cast iron EN-GJL-250
Handwheel	Grey cast iron EN-GJL-250
Shaft	AISI 420
Gasket	Synthetic rubber
Stem nut	Brass
Sealing seats	Brass
Painting	Epoxy / Polyvinyl – RAL 5005

Figure 2 - Art 107

Part	ART 408 - GATE VALVE IN DUCTILE IRON PN 16 – RUBBER WEDGE FLAT BODY WITH OPENING INDICATORE	
Body, Cover, Wedge	Spheroidal cast iron EN-GJL-500	
Handwheel	Grey cast iron EN-GJL-250	
Shaft	AISI 420	
Gasket	Synthetic rubber	
Nut	Brass	
Opening indicator	Aluminium	
Painting	Epoxy – RAL 5005	Epoxy – RAL 3000

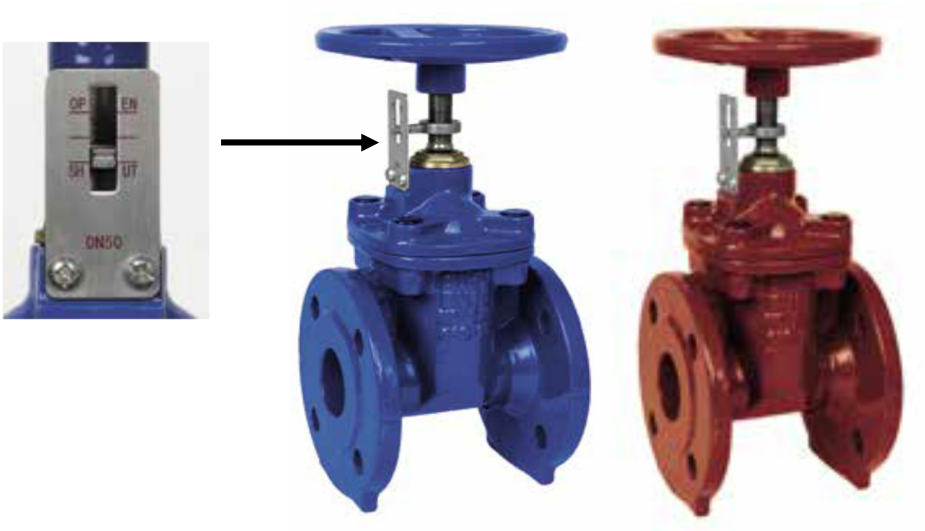

Figure 3 - Art 408

Part	ART 300 BUTTERFLY VALVE WAFER TYPE IN NODULAR CAST IRON PN 16	ART 301 BUTTERFLY VALVE LUG TYPE IN NODULAR CAST IRON PN 16
Body, Cover, Wedge	Spheroidal cast iron EN-GJL-400	Spheroidal cast iron EN-GJL-400
Sleeve	EPDM	EPDM
Disk	Spheroidal cast iron EN-GJL-400	Spheroidal cast iron EN-GJL-400
Shaft	AISI 420	AISI 420
Socket	PTFE	PTFE
O-Ring	NBR	NBR
Lever / reducer handwheel	Aluminium / Cast Iron	Aluminium / Cast Iron
Painting	Epoxy – RAL 5005	Epoxy – RAL 5005

Figure 4 - Art 300 – Art 301

Part	ART 106 – CHECK VALVE CAST IRON PN 10 – 16 FLANGED	ART TM 106 – SWING CHECK VALVE IN CAST IRON PN 16	ART 106 P – CHECK VALVE IN CAST IRON PN 16 WAFER TYPE
Body, Cover	Grey cast iron EN-GJL-250	Grey cast iron EN-GJL-250	Grey cast iron EN-GJL-250
Arm	Elastomer EPDM	Grey cast iron EN-GJL-250	-
Swing	Swing completely coated by elastomer EPDM	-	-
Disk	NBR / EPDM	Grey cast iron EN-GJL-250	EPDM
Plug	-	Stainless steel 13%	-
Drain plug	Inox	-	Spheroidal cast iron EN-GJS-400
Sealing ring	-	Brass	AISI 316
Sealing gasket on disk	-	EPDM	AISI 304
Sealing ball			
Coating ball (ABS)	NBR / EPDM	-	Thermoplastic resin
Tight Body/Cover	-	-	NBR
Painting	Epoxy RAL 5005	Epoxy RAL 5005	Epoxy RAL 5005

Figure 5 - ART 106 - ART TM 106

Figure 6 - ART 106 P

Parte	ART 108 WAFER DOUBLE DISC CHECK VALVE BODY IN CAST IRON PN 16
Corpo, coperchio	Cast iron GG25
Dischi	Spheroidal cast iron EN-GJS-400
Tenuta	EPDM
Albero	Stainless steel
Molla	Stainless steel
Verniciatura	Epoxy RAL 5005

Figure 7 - ART 108

Part	ART 500 - Y STRAINER IN CAST IRON PN 16 FLANGED WITH DRAIN PLUG
Body, Cover	Grey cast iron EN-GJL-250
Screws	Galvanized steel
Filter cartridge	AISI 304
Drain plug	Brass
Seal between Body and Cover	Graphite
Painting	Epoxy RAL 5005

Figure 8 - ART 500

Part	ART 200 - RUBBER EXPANSION JOINT THREAD F/F PN16	ART 200 - RUBBER EXPANSION JOINT FLANGED PN10-16
Body	NBR / EPDM	NBR / EPDM
Ends	Thread – Grey cast iron malleable galvanized steel type	Flanged – Galvanized steel

Figure 9 - ART 200

Part	ART 117 - AIR RELEASE VALVE PN 16 DOUBLE AND SINGLE FLOAT
Body, Cover	Spheroidal cast iron EN-GJS 500
Coating sphere (ABS)	NBR / EPDM
Seals	EPDM
Bushing, plug	Brass - EN 12164 (CW617N)
Screws	AISI 304
Painting	Epoxy RAL 5005

Figure 10 - ART 117

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Verbania, 08/07/2019
Prot. n. 370/PRES/MS

VERIFICATION OF CONFORMITY DOCUMENT

DOCUMENTO DI VERIFICA DELLA CONFORMITÀ

issued by / emesso da: **Tecnolab del Lago Maggiore s.r.l.**

Customer: Cliente:	**T.A.I. Tecnologie antincendio e idrauliche s.r.l.** Via Monte Fenera, 72/A 13018 Valduggia (VC) Italy
Tested Models: Modelli Provati:	**ART 405 – ART 406 – ART 407 – ART 107 – ART 106** **ART 106P – ART 108 – ART 500 – ART 200 – ART 117** **ART 408 – ART 300 – ART 301 – ART TM 106**
Checked materials: Materiali testati:	**NBR – EPDM – AISI 304 – AISI 316 – AISI 420 – EN-GJS 500** **EN-GJS 400 – EN-GJL 250 – Brass – EN 12164 (CW617N)**
Manufacturer: Costruttore:	**T.A.I. Tecnologie antincendio e idrauliche s.r.l.** Via Monte Fenera, 72/A 13018 Valduggia (VC)Italy
Applicable Standards: Norme Applicate:	**D.M. 174 del 2004**
Test Report Evaluation: Valutazione dei Rapporti di Prova:	**Based on the examination of Test Reports Nb. RP029519, after Manufacturer declaration of equality of the materials used for the different articles and after inspection of the different models, in date 31/08/2016 TECNOLAB del Lago Maggiore S.r.l. declares that all the checked models, ART 405 – ART 406 – ART 407 – ART 107 – ART 106 ART 106P – ART 108 – ART 500 – ART 200 – ART 117 – ART 408 ART 300 – ART 301 – ART TM 106 are in compliance with above standards.** Dopo aver esaminato il Test Report N° RP029519, dopo la dichiarazione da parte del Produttore che I materiali utilizzati risultano I medesimi per ciascun articolo e dopo l'ispezione dei differenti modelli, in data 31/08/2016 TECNOLAB del Lago Maggiore S.r.l. dichiara che tutti i modelli testati, ART 405 – ART 406 – ART 407 – ART 107 – ART 106 – ART 106P ART 108 – ART 500 – ART 200 – ART 117 – ART 408 – ART 300 – ART 301 ART TM 106 sono conformi alle normative sopra riportate.

Document Issue Date Data Emissione Documento	Verified by: Verifica Tecnica	Approved by: Autorizzazione
08/07/2019	**Assistant Manager** Assistente Responsabile di Settore *Eleonora Andrea Basso*	**Head of Laboratory** Responsabile di Laboratorio *Michele Setaro*

Note: this Document is part of the full Test Report and should be read in conjuction with it. This document refers only to the sample checked during inspection. The extension of this Document to the entire production is responsibility of manufacturer/importer.
Nota: questo Documento è parte del Rapporto di Prova e deve essere letto insieme ad esso. Questo Documento si riferisce solo al campione verificato durante l'ispezione. L'estensione di questo documento all'intera produzione è responsabilità del Costruttore/Importatore.

T.A.I.
Tecnologie Antincendio Idrauliche S.r.l.
Via Monte Fenera, 72/A - 13018 Valduggia (VC)
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E-MAIL: info@taitecnologie.it
SITO-INTERNET: www.taitecnologie.it

DECLARATION

"We state that the valves we supply are produced with components that have been submitted to specific tests made by the laboratory Tecnolab S.r.l. of Verbania, in order to validate the usage with drinking water (D.M. 174 - 2004).

Our ISO 9001 quality system certified by Bureau Veritas according to ISO9001guarantees, thanks to the checking on suppliers and the checking in production, that the materials used are only the one that have been tested.

N.B. ALL OUR PRODUCTS HAVE "AB" MARK"

T.A.I. Tecnologie Antincendio e Idrauliche S.r.l.

L'Amministratore Delegato
GALLETTI dott. Paolo

BUREAU VERITAS
Certification

BUREAU VERITAS 1828

T.A.I. S.R.L
TECNOLOGIE ANTINCENDIO E IDRAULICHE

Sede Legale e Operativa:
Via Monte Fenera, 72/A – 13018 VALDUGGIA (VC)

Bureau Veritas Italia spa certifica che il sistema di gestione dell'organizzazione sopra indicata è stato valutato e giudicato conforme ai requisiti della norma di sistema di gestione seguente

Norma

ISO 9001:2015

Campo di applicazione

Commercializzazione di prodotti destinati al settore idraulico, per acquedottistica e per l'antincendio.

Settore/i EA di attività **29**

Data d'inizio del presente ciclo di certificazione: **04 febbraio 2018**

Soggetto al continuo e soddisfacente mantenimento del sistema di gestione questo certificato è valido fino al: **27 febbraio 2021**

Data della certificazione originale: **01 marzo 2012**

Certificato No. IT242776 Rev. N.**1** del: **04 febbraio 2018**

CARMELA DE FEO- Technical Committee Coordinator

Indirizzo dell'organismo di certificazione:

Bureau Veritas Italia SpA Viale Monza, 347 - 20126 Milano, Italia

Ulteriori chiarimenti sul campo di applicazione di questo certificato e sui requisiti applicabili della norma del sistema di gestione possono essere ottenuti consultando l'organizzazione. Per controllare la validità di questo certificato consultare il sito http://www.bureauveritas.it/certificate

ACCREDIA

Membro degli Accordi di Mutuo Riconoscimento EA e IAF
Signatory of EA and IAF Mutual Recognition Agreements

---------- END OF TEST REPORT NR. RP029619 ----------