PLASTICA ALFA
INNOVATION & WATER TECHNOLOGIES

PPR SYSTEM
FOR FIRE-FIGHTING SPRINKLER AND HYDRANTS SYSTEMS

NO CLOGGING OF SPRINKLER

NO MORE CORROSION AND ENCRUSTATION

REDUCED TIME AND COSTING

LONGER LIFE AND REDUCED MAINTENANCE OF THE SYSTEM

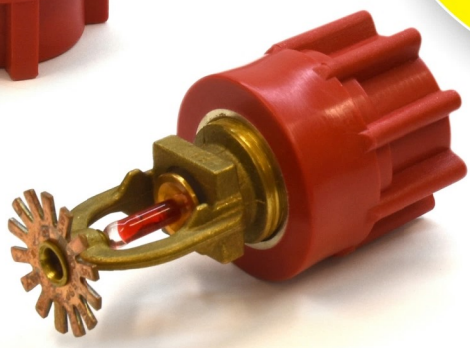
ALFAIDRO
FASER PIPE AND FITTINGS FOR SPRINKLER SYSTEMS
Nofire

FM APPROVED

SAVE TIME
80÷90%

SAVE MONEY
25÷40%

SUITABLE FOR DRINKING WATER • IDONEO AL TRASPORTO DI ACQUA POTABILE • HALOGEN FREE



50 YEARS SERVICE LIFE

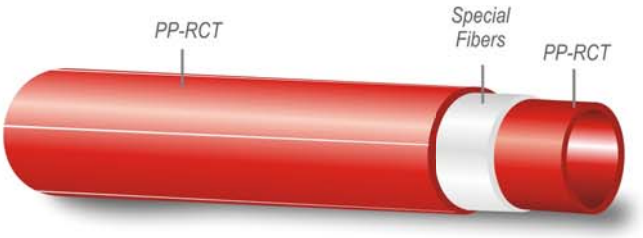
www.nofiresystem.it

absolutely made in italy

Features

Alfaidro NOFIRE represents the innovation for firefighting security, by being **the alternative in thermoplastics to metal systems** in the active protection area and more specifically in the wet pipe automatic sprinkler systems.
It stands out for its **easy installation** and handling thanks to its reduced weight - up to 80% compared to the metal pipe – the total absence of corrosion both inside and outside, **no clogging of sprinklers**, no leakage due to the welding technique, time and maintenance cost saving.

The **Alfaidro NOFIRE** system includes a **FASER pipe** made of **PP-RCT** with flame-retardant additive and reinforced by an intermediate layer of special fibers, and PP-RCT fittings; it meets high standards of mechanical and aging resistance and it is classified to fire reaction - in accordance to the **UNI EN 13501-1 - as B-s1-d0**.
Its use is approved in environments where the fire risk class is:
- Low Hazard (LH) or Ordinary Hazard (OH) as defined by UNI EN 12845
- Light Hazard (LH) according to NFPA 13, 13R and 13D standards
- HC-1 according to the FM 1635 standard.



It can be installed both in new and pre-existing systems and, by using the weld saddles, it is possible to realize end-center and end-side arrays typical of sprinkler systems in a simple and fast way.

The **Alfaidro NOFIRE** range has passed rigorous fire resistance tests carried out by national and international laboratories and it is classified:
- Class B, s1, d0 according to EN 13501-1 (equivalent to a class 1 according to DM 15/03/2005);
- Class B1 according to DIN 4102-1.
In addition, it is approved for the fire-fighting systems:

FGBOU VPO Akademia GPS MCS - Russia | U.S.A | AbP - Germany | Cuba

Further certifications are in progress.

Alfaidro NOFIRE range is also suitable for the conveyance of hot and cold drinking water in buildings that require fire resistance such as public buildings, hotels, vessels, caravans, shops, hospitals, schools, museums and private buildings.

HOW DOES IT WORK

According to the **UNI EN 12845** (design, installation and maintenance reference regulation for the fire sprinkler systems) "*An automatic sprinkler system is designed to detect a fire and extinguish it with water in its early stages or hold the fire in check so that extinguishment can be completed by other means*".
The sprinklers to use with the **ALFAIDRO NOFIRE** system are the ones with red **glass bulb** and they have to be certified: normal activation is at **68 °C** (rapid response). When the hot smoke flow reaches the sprinkler head and the activation temperature, it opens and starts sprinkling water to the underneath area.

The **ALFAIDRO NOFIRE** system guarantees the water supply to the sprinkler at the pressure and flow conditions required by the plant and for the minimum duration prescribed by the reference standards, according to **UNI EN 12845**:
- 30 minutes for LH activities
- 60 minutes for OH activity

Range

ALFAIDRO
FASER PIPE AND FITTINGS FOR SPRINKLER SYSTEMS
Nofire

PIPES

Alfaidro NOFIRE pipes are manufactured with the innovative composite **FASER** technology: the internal and external layers are made of PP-RCT, a 3rd-generation polymer that provides high mechanical and aging resistance; the intermediate layer in PPFV provides dimensional stability, which allows the use of a reduced number of clamping elements during the installation.

SDR 7,4

Outside diameter	Nominal wall thickness	Internal diameters	DN	Water Content	Weight
mm	mm	mm		l/mt	Kg/m
20	2.8	14.4	15	0.163	0.151
25	3.5	18.0	20	0.254	0.236
32	4.4	23.2	25	0.423	0.379
40	5.5	29.0	32	0.660	0.589
50	6.9	36.2	40	1.029	0.917
63	8.6	45.8	50	1.647	1.442
75	10.3	54.4	50	2.323	2.052
90	12.3	65.4	65	3.358	2.939
110	15.1	79.8	80	4.999	4.401
125	17.1	90.8	80	6.472	5.662
160	21.9	116.2	100	10.599	9.255

SDR 11

Outside diameter	Nominal wall thickness	Internal diameters	DN	Water Content	Weight
mm	mm	mm		l/mt	Kg/m
32	2.9	26.2	25	0.539	0.260
40	3.7	32.6	32	0.834	0.411
50	4.6	40.8	40	1.307	0.637
63	5.8	51.4	50	2.074	1.006
75	6.8	61.4	50	2.959	1.404
90	8.2	73.6	65	4.252	2.031
110	10.0	90.0	80	6.359	3.011
125	11.4	102.2	80	8.199	3.903
160	14.6	130.8	100	13.43	6.381

FITTINGS

The entire range of **Alfaidro NOFIRE** fittings is subject to a very strict quality control during the entire process. In addition to the socket welding fittings, several other types of joints are available:

- **Transition fittings** with metal inserts to connect the new system to former installations or to other threaded metal elements;
- **saddle fittings** that can be welded directly to the external part of the pipe suitable for practical and reliable end-center and end-side arrays;
- **PACV joints and grooved fittings Alfarapid**, available from size ø 1 "1/2 to ø 6", to connect to pipes and grooved systems (*Victaulic type*);
- **PACV flanges** (PN16 from size ø 1 "1/2 to 4" and PN10 from size 5 "to 6") and **flange adaptors** to connect the system to other **flanged systems;**
- **Compact PPR-CT valves** with chrome plated brass ball and pin, available from size **ø20 to ø160.** Thanks to the one-piece body and the welding technique, they grant high safety parameters (the ball and gasket cannot move from their seats, even under the most extreme operating conditions).

TECHNICAL FEATURES

WORKING TEMPERATURE & WORKING PRESSURE

PIPES

SDR 11

20°C - 15.4 bar
60°C - 7.7 bar
70°C - 5.1 bar

SDR 7,4

20°C - 24.5 bar
60°C - 12.3 bar
70°C - 8.1 bar

FITTINGS

SDR 6

20°C - 30.9 bar
60°C - 15.5 bar
70°C - 10.2 bar

SDR 5

20°C - 39.8 bar
60°C - 19.5 bar
70°C - 12.8 bar

RANGE OF PERMISSIBLE TEMPERATURE

MIN= **-20 °C** MAX: **+95 °C**

COEFFICIENT OF LINEAR THERMAL EXPANSION

0.035 mm/mK

THERMAL CONDUCTIVITY

0.24 W/mK

Advantages

REDUCED TIME AND COSTS

The **ALFAIDRO NOFIRE PIPES** weigh about 80% less than the metal ones, they grant higher maneuverability and reduced transportation costs and reduced structural works to support the pipe. Moreover the installation is simple and fast and does **not require the use of sealants, adhesives or gaskets.**
The complete range of **pipes, fittings, ALFARAPID joints, flanges** and accessories, allows the production of both exposed and concealed sprinkler systems. The special **saddle** connections facilitate **quick and economic** modification of existing systems.

NO MORE CORROSION AND ENCRUSTATION

NO MORE SPRINKLER CLOGGING

REDUCED SYSTEM MAINTEINANCE

Metal pipes suffer from **internal and external corrosion**: the first compromises the smooth operation of the firefighting system because it obstructs the sprinklers; the second damages the paint and deteriorates the pipe surface, requiring continuous maintenance. The **ALFAIDRO NOFIRE** system, thanks to the PPR chemical inertia, has a lifetime warranty against corrosion and grants **no clogging of sprinklers**, since there is no accumulation of products deriving from corrosion, avoiding the continuous need of cleaning and purging of the sprinklers.

INCREASED HYDRAULIC CAPACITY

Due to the very **low surface roughness**, the NOFIRE pressure loss is very low with respect to the one occurring in metal pipes. Moreover, the system is not subject to limestone scale that leads to annoying obstructions of metal systems.

RESISTANCE TO CHEMICAL AGENTS

ALFAIDRO NOFIRE resists to most solvents and chemicals used in the construction field and does not require special lime and concrete protection.

SEISMIC ASBORPTION

Due to its flexibility and elasticity, the **ALFAIDRO NOFIRE** system has greater resistance to seismic activity than metal systems.

SOUNDPROOFING

The material softens the vibrations and the noise normally generated in metal installations, due to water hammer and high flow speed.

IMPACT RESISTANCE

The high resilience values of the material ensure excellent handling during assembly and installation, without breakage or damage risks due to accidental bumps.

50-YEARS SERVICE LIFE

The technical properties and the strict aging/resistance tests mentioned above prove that the **ALFAIDRO NOFIRE** system has all the necessary requirements to ensure a long service life.

HALOGEN FREE

POTABILITY AND ATOXICITY

ALFAIDRO NOFIRE does not contain HALOGENS, CPVC, PVC or chemicals that can release gases such as hydrochloric acid or dioxin well known to be carcinogenic when burned. Moreover, the smoke produced when burning is not toxic or dangerous for people or animals. ALFAIDRO NO FIRE is non-toxic and suitable for contact with drinking water as per DM 174 of 6/04/2004 and DM 23/04/2009.

REDUCING OUR carbon FOOTPRINT

Complying to LEED Standard

ECOLOGY

The material used to produce the **ALFAIDRO NOFIRE** system is **completely recyclable,** environmental friendly and meets the LEED standards.
It has a lower **carbon footprint** than the metal systems (5 times reduced greenhouse gas emissions).

Installation

SOCKET WELDING

The welding operation is simple and fast and does not require the use of sealants or adhesives. The outer surface and the inner pipe surfaces are heated at the same time on the heating tools. Once they reach the welding temperature, the two pieces can be inserted one into the other.
The junction is ready.




TIME OF INSTALLATION

Pipe Diameter d, (mm)	Heating time (sec)	Removing and insert time (sec)	Welding time (sec)	Cooling time (min)
20	5	4	6	2
25	7		10	
32	8	6		4
40	12		20	
50	18			
63	24	8	30	6
75	30			
90	40		40	
110	50	10	50	8
125	60		60	

A watertight, uniform and **inseparable welding** is done and it will last for the entire life of the plant. By this welding method, the pipe and the fitting become a single unit and the double thickness of the material in the weld area increases twice the connection safety in a point that is usually the critical point in metal system.

BUTT WELDING

It is performed by heating at the same time the lateral surfaces of two pipes or two fittings, having the same diameter and thickness, by using a welding tool. Passed the heatingtime, the thermoelement is moved away and the surfaces are pressed together.

Wall thickness (mm)	Heating Time (sec)	Removal time (sec)	Reaching of Welding Pressure (sec)	Welding Time (sec)
2.0 - 4.5	60-135	4-5	5-6	3-6
4.5 - 7.0	135-175	5-6	6-7	6-12
7.0 - 12.0	175-245	6-7	7-11	12-20
12.0 - 19.0	245-330	7-9	11-17	20-30
19.0 - 26.0	330-400	9-11	17-22	30-40

SADDLE WELDING

By using the saddle type of fittings, it is possible to **modify existing systems** in a fast and economical way; in fact it is sufficient to drill the pipe, weld the saddle connection to the pipe surface with the help of an appropriate matrix to have the connection ready for the sprinkler or for any additional line.



Nofire VS metallo

COMPARATIVE INSTALLATION TIME	 METAL	 PPR ALFAIDRO NOFIRE
Jointing Method	Grooving/threading/sealing	Polifusion Welding
Needed workers	Minimum 2	1
Mean installation time for one assembly	10÷20 minutes	30 second÷2 minutes (See table "tima of installation)

REDUCED WEIGHT AND PRESSURE LOSS

Given the same flow rate, there is a reduction in pressure loss of 30-40% and weight: 70-80% for small diameters, 40-60% for large diameters.

Steel pipes medium series EN10255						ALFAIDRO NOFIRE SDR 7,4 Pipes					ALFAIDRO NOFIRE SDR 11 Pipes				
DN	External Diameter	Thickness	Weight	Flow	Perdite di carico	External Diameter	Thickness	Weight	Flow	Perdite di carico	External Diameter	Thickness	Weight	Flow	Perdite di carico
				v=2 m/s, T=20°C					v=2 m/s, T=20°C					v=2 m/s, T=20°C	
Pollici	Max (mm)	(mm)	Kg/m	lt/min	mm/m	mm	mm	Kg/m	lt/min	mm/m	mm	mm	Kg/m	lt/min	mm/m
½"	21.8	2.6	1.21	26.0	407.1	20	2.8	0.151	19.5	282.4					
3/4"	27.1	2.6	1.56	45.2	294.4	25	3.5	0.236	30.5	217.5					
1"	34.2	3.2	2.41	72.8	222.7	32	4.4	0.379	50.7	161.6	32	2.9	0.266	64.7	140.2
1"1/4	42.9	3.2	3.1	125.5	162.0	40	5.5	0.589	79.2	124.5	40	3.7	0.421	100.1	108.6
1"½	48.8	3.2	3.56	169.3	135.9	50	6.9	0.917	123.4	96.0	50	4.6	0.653	156.8	83.5
2"	60.8	3.6	5.03	270.6	103.3	63	8.6	1.442	197.6	72.9	63	5.8	1.031	248.9	63.7
2"½	76.3	3.6	6.45	449.8	76.7	75	10.3	2.052	278.8	59.6	75	6.8	1.437	355.1	51.8
3"	89.5	4	8.4	625.7	63.3	90	12.3	2.936	402.9	48.1	90	8.2	20.81	510.3	41.9
4"	115	4.5	12.21	1058.4	46.5	110	15.1	4.401	599.9	38.1	110	10	3.083	763.0	33.1
5"	140.8	5	16.64	1611.6	36.4	125	17.1	5.662	776.6	32.7	125	11.4	3.998	983.9	28.5
6"	166.5	5	19.77	2307.2	29.5	160	21.9	9.255	1271.9	24.5	160	14.6	6.536	1611.6	21.4

Friction loss in pipes is due to the pipe roughness and can be estimated with the **Hazen-Williams** equation where higher **Factor C** values result in lower friction and lower pressure loss.

Fattore C di Hazen-Williams	New Pipes	Old Pipes
STEEL PIPES	140-120	80-90
ALFAIDRO NOFIRE	150	150

Certifications

REFERENCE STANDARDS

Alfaidro NOFIRE pipes and fittings are manufactured in compliance with the following standards:

UNI EN ISO 15874-1, -2, -5, -7 Plastics piping systems for hot and cold water installations (PP);

UNI EN ISO 21003: Multilayer piping systems for hot and cold water istallations inside buildings;

DIN 8077-78: Polypropylene (PP) pipes – PP-H, PP-B, PP-R, PPRCT;

DIN 16962: Pipe fittings and joint assemblies for polypropylene pressure pipes;

DIN 16837: Multilayer pipes - Plastics-Multilayer pipes - General quality requirements and testing;

BS 4991: Specification for propylene copolymer pressure pipe;

ASTM F238: Standard specification for pressure rated polypropylene (PP) piping systems; The welding reference standards for Alfaidro NOFIRE system are;

DVS 2207: Welding of Thermoplastics;

DVS 2208: Machines and Equipment for Welding Thermoplastics;

Alfaidro NOFIRE system is suitable for firefighting installations according to the following standards;

UNI EN 12845: Fixed firefighting systems. Automatic sprinkler systems.Design, installation and maintenance.

UNI EN ISO 13501: Fire classification of construction products and building elements.

DIN 4102: Fire behaviour of building materials and elements – Part 1: Classification of building materials - Requirements and testing;

NFPA 13: Installation of Fire Sprinkler Systems for requirements on the use of plastic fire sprinkler piping;

FM 1635: Approval Standard for Plastic Pipe and Fittings for Automatic Sprinkler Systems;

UL 1821: Standard for Thermoplastic Sprinkler Pipe and Fittings for Fire Protection Service;

VdS 2344: Procedure for the testing, approval, certification and conformity assessment of products and systems for fire protection and security technologies;

LPS 1260: Issue 3.1- Plastic pipe and fittings for use in automatic sprinkler systems.


Fire Classification - Din 4102-1


Tensile modulus


Impact resistance


Fire Classification - Din 13501

UNI EN ISO 9001: 2008
UNI EN ISO 14001: 2004

Since 1983 **Plastica Alfa** develops innovative polymer based products for water management and, under the constant guidance of its CEO Mario Pace, has succeeded in entering into the overseas market. Dating from 1990 **Alfaidro system** becomes a solid industrial reality in the global.

Plastica Alfa's current range includes over 4400 items divided into 600 types for different fields of application: **agribusiness, water treatment snd thermo-hydraulics**.

It is constantly widening with new products designed on the basis of the market and customers' demands.

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ALFAIDRO ALUMINIUM PPR-Al-PPR MULTILAYER PIPE

ALFAIDRO FASER MULTILAYER PP-R PIPE WITH FIBERS

ALFAIDRO FASER PIPE AND FITTINGS UV RESISTANT

ALFAIDRO Nofire

Member of Green Building Council Italia

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