TECHNICAL DOCUMENT

WATER

Valves-Hydraulic Fountain Fittings

Technical document 197-05

Fire hydrants

Technical document 197-05 rev. 09
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MODIFICATION HISTORY

Revision no.	Date	Modifications
05	**01/07/2017**	**Update to the document introduction and reference.** **Basic modifications:** - Chapter 2: The standard references have been supplemented and updated. - Paragraph 4.3: The paragraph has been supplemented. - Paragraph 4.7.3: Correction to an error in standard NF EN 14339. - Paragraph 4.15: Withdrawal of a sub-paragraph that is not applicable. - Paragraph 8.1.1: Modification to the minimum stock required. - Table 2 – Inspection during production: Extra details added for the fire hydrant operating inspection. - Table 3 - Inspections carried out by the CSTB: Updating of inspection procedures.
06	**08/04/2019**	- Integration of the new version of the National Extension NF EN 14339/CN in the whole document. - Paragraph 4.10: addition of the modification carried out in Appendix C of standard NF EN 1074-2. - Paragraph 4.14: addition of the modification carried out in Appendix E of standard NF EN 1074-6. - Modification of the paragraph numbers from paragraph 4.7.
07	**01/08/2020**	- Addition of a paragraph 4.21 to define the type profile for a stem square.
08	**04/06/2021**	- Editorial update according to the structure in force following the creation of the Technical management appendix of the NF197 reference system rev. 07.
09	**23/08/2021**	- Chapter 4.14: Modification of operating procedure of appendix E

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I. RULES FOR THE APPLICATION OF STANDARD NF EN 14339 AND COMPLEMENTARY SPECIFICATIONS

Purpose

The purpose of this section is to clarify some clauses in standard NF EN 14339 using the same numbering and to complete this European baseline on quality criteria judged to be fundamental as part of the NF mark.

The extended, modified and added articles are identified in the title of each section.

The NF mark applies to freeze-proof fire hydrants, of DN 80 and DN 100, appropriate to an allowable operating pressure of a minimum of 16 bars (PFA).

They shall comply with the characteristics required for products intended to be installed on water systems intended for human consumption.

1. Scope (extended)

The fire hydrants are characterised by:

- The design of the closing and tightness system;
- The DN (Nominal Diameter).

2. Standard references (extended)

In addition to standard NF EN 14339:

NF EN 14339/CN: 2007	Underground fire hydrants - National extension to standard NF EN 14339:2006
NF EN 1563: 2012	Spheroid graphite cast-iron
NF EN 545: 2010	Ductile iron pipes, fittings, accessories and their assemblies for piping systems

3. Terms and definitions

4. Design requirements

4.1 General dimensions

4.2 Jacket (supplemented)

4.2.1 Compatibility with the water carried (added)

The materials of the fire hydrants in the zone located upstream from the obturator that are in permanent contact with water intended for human consumption shall not be susceptible to altering the quality of the water.

They shall conform to the French Regulations in force.

4.2.2 Cast-iron materials (added)

It must be possible to transport and install the fire hydrants with the least possible risk of damage due to impacts. For that purpose, the materials of the jacket of the products shall have a minimum strength and, for the cast-iron, shall be selected from among the cast-irons shown in Table 1 below:

Table 1: Materials

Component	Material	Specification
All the parts of the jacket subjected to pressure (lower shaft, check valve box, …)	Spheroid graphite cast-iron	In compliance with one of the grades defined in Standard NF EN 1563. The minimal values shall be: • tensile strength: 350 MPa. • elongation to break: 3 % min.
Lower shaft (variant possible)	Spheroid graphite cast-iron	In compliance with one of the grades defined in Standard NF EN 545; The minimal values shall be: – tensile strength: 420 MPa. – elongation to break: 10 % min.

4.3 Elastomers

The compliance of the chapter applies to all elastomers.

4.4 Obturator – main obturator

4.5 Stem seals

4.6 Materials including lubricants in contact with water for human consumption

4.7 Leak tightness and mechanical strength

4.7.1 General

4.7.2 Jacket and all components under pressure

4.7.3 Obturator (modified)

Error in standard NF EN 14339: Chapter 4.7.3.1 has been modified as follows:

Where the test is carried out in compliance with Appendix B in standard NF EN 1074-1:2000, using the value
1.1xPFA from Table 2 and the value of the maximum operating torque MOT is equal to 80Nm whatever the nominal diameter (DN) of the fire hydrant (value taken from standard NF EN 14384 Table 3, torque level 1), there should be no visible signs of leakage on the outside of the valve device.

4.7.4 Endurance

4.7.5 Endurance of non-return device

4.8 Closing direction

4.9 Number of opening turns

4.10 Strength of fire hydrants to resist operating forces

The appendix C of standard NF EN 1074-2 is modified as follows:

Appendix C

Test method for the operation of valves (see 5.2.3)

C.1 General

The test shall be performed at ambient temperature on a valve in its delivery state.

The test shall begin with the obturator in the fully open position.

C.2 Test procedure

Fill both sides of the test assembly with water and vent the air.

Close the obturator and apply a torque at least equal to MOT.

On one side of the obturator, increase the water pressure until it reaches PFA maintaining it at least 1 minute.

Under pressure, open the obturator ensuring that the operating torque does not exceed MOT. Once the pressure evacuated, continue the opening during ten turns.

Note the maximum torque required during the test and check that it does not exceed MOT.

4.11 Operating stem

4.12 Input connection

4.13 Output orifices

4.14 Drain device (extended)

In all its parts, this fitting is made of rust resistant metal or of material that cannot be altered by water.

The drain time is measured with the box closed.

The appendix E of standard NF EN 1074-6 is modified as follows:

Appendix E

Test method for the performance of draining system

E.1 - General

The test fluid shall be water at a temperature in the range of service temperatures given in 4.4 of EN 1074.1:2000.
The test shall be carried out on a pillar fire hydrant or fire hydrant in its delivery state.
The test shall begin with the obturator in the fully opened position and the outlet opened.

E.2 - Test procedure

Connect the pillar fire hydrant or fire hydrant to a water supply and fill it completely, water pouring out of the outlet.
Close the pillar fire hydrant or fire hydrant obturator with a torque at least equal to MOT maintaining a water pressure. Close the box.
Measure the time elapsed between complete closure of the valve and the last drop pouring from the draining device. This time shall not exceed the value given in 5.6.
Dry completely the inside parts of the pillar fire hydrant or fire hydrant, then close the obturator.
The obturator remaining closed, pour a recorded quantity of water (e.g. 1 l) into the pillar fire hydrant or fire hydrant through the open outlet.
Measure the quantity of water collected through the draining device.
Calculate the difference between the quantity poured in and the quantity collected.
That difference shall not exceed the values given in Table 3.
Record the test conditions and tests results, noting the calibration status of all measuring devices used.

4.15 Resistance to internal and external corrosion (extended)

The interior surfaces that are in permanent contact with the system's water as well as all the exterior surfaces of the fire hydrant (including the nuts and bolts) that are in contact with the ground or with the surrounding atmosphere, shall resist corrosion and weathering and meet the requirements of Technical document 197-01.

4.16 Resistance to disinfection products

4.17 Fire hydrants supplied with non-drinking water

4.18 Hydraulic characteristics

4.19 Anti-pollution device (added)

In its technical documentation and in the product's description, the manufacturer shall indicate whether the fire hydrant is equipped with an anti-pollution system.

Anti-pollution systems incorporated in the fire hydrant shall hold the NF Mark - ANTIPOLLUTION OF WATER INSTALLATIONS or shall comply with the technical requirements for the NF045 mark.

4.20 Specific suitability for use (added)

The fire hydrants shall have minimal performances, so as to be compatible with the particular extreme applications, specific to fire fighting.

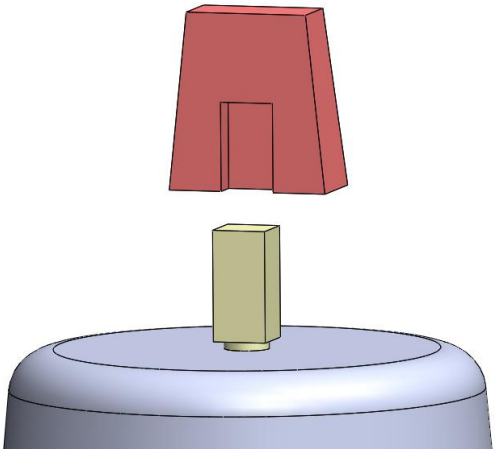
To prevent water hammer, in case of rapid positioning, the fire hydrants shall have flows that increase gradually at opening and decrease gradually at closing.

At half-opening, the Kv of the fire hydrants shall be:

- greater than 0.25 Kv at full opening (Kv measured on the fire hydrant);
- less than 0.8 Kv at full opening (Kv measured on the fire hydrant).

4.21 Stem square (added)

Type profile for an operating device:



5. Test method

5.1 General

5.2 General dimensions

5.3 Functional characteristics

6. Marking and complementary data

6.1 Marking

The information concerning the opening direction and the number of turns for opening shall appear indelibly in the metal near the stem square.

6.1.1 CE marking

To be eligible for this certification mark, the fire hydrants must be marked CE.

6.2 Complementary data for fire hydrants

6.3 Designation (added)

The fire hydrants are described according to the description in Standard NF EN 14339/CN and with the following indications:

- the mention "freeze-proof"
- the method for connecting the inlet opening – fixed or orientable flange.

Example of description:

*Freeze-proof fire hydrant, **with fixed flange** DN 100, NF EN 14339/CN, Pc 1000, Drinking water.*

6.4 Delivery state (added)

The fire hydrant shall come ready to use with operating direction identified. The fire hydrant's cover shall be attached to the housing to prevent damage of the parts during transportation.

Each fire hydrant shall come with an installation manual in French, indicating the risks of pollution of drinking water systems by feedback of contaminated fluids.

7. Assessment of compliance

8. Additional specifications regarding service (added)

To meet the needs of the users of the systems in keeping their installation operational, the holder shall ensure a minimal service level.

8.1 Product availability

8.1.1 New fire hydrants

To ensure continuity of the service, for all products intended to be installed on the territory of metropolitan France, the holder shall have a logistics system making it possible to deliver in less than 24 hours on working days.

These deliveries shall be made from one or several depots, located on metropolitan French territory, based on a minimum overall inventory equal to:

- 50 fire hydrants
- or 10% of sales from the previous calendar year

During the 12 months following admission, the holder will build their stock in line with their sales in order to meet the above requirements.

8.1.2 Spare parts

The holder shall keep the following available to the applicant:

- books in which the list of spare parts and the list of any special tools are given
- and notes about maintenance instructions.

These documents may be written in several languages, necessarily including French, and they must be available in paper form at least.

The holder must justify that he has a special organisation for processing orders and for supplying requested spare parts for urgent repairs, for parts that could affect product functions:

- either by having a minimum stock of 20 units of spare parts that cannot be fabricated on the production site (seals, sets of fasteners, etc.)
- or by being capable of fabricating them in 24 hours.

These parts must be made available to the shipper within 24 working hours.

The holder shall be responsible for management of parts that do not affect product functions.

The holder commits itself to provide this service during at least 30 years after the sale of the products.

8.1.3 Technical and sales documentation

The holder shall keep documentation in French available for all the variants of the fire hydrants covered by the mark.

This documentation shall include, as a minimum, the following elements:

- overall drawing of the fire hydrant;
- the dimensional characteristics;
- weight information;
- curve of the evolution of the Kv as a function of the opening;
- allowable operating pressure (PFA) and the dimensions of the ISO PN flanges;
- application precautions;
- existence or not of a backflow prevention system;
- reference to the French product standard (NF EN 14339/CN);
- reference to any applicable French and European Standards;
- the information given in § 2.5.2.3 of the NF197 Certification reference system, Part 2.

In its catalogue, the holder shall propose S-shaped adjusting implements for connecting the fire hydrants to conduits, the cover heights of which are from +0.5 m to -0.5 m with relation to the height specified for the fire hydrant alone, while ensuring the correct positioning of the fire hydrant with relation to ground level.