
CODE AND STANDARD COMPLIANCE FOR PIRANHA™ WET AGENT SYSTEM

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INTRODUCTION

The new PIRANHA™ hybrid wet agent system is a pre-engineered, fixed, automatic fire suppression system developed specifically for improved fire protection of commercial and institutional restaurant cooking appliances, exhaust hoods and ducts. When actuated, the system discharges a fixed amount of proprietary wet chemical extinguishing agent followed immediately by a continuous spray of water through the same nozzles. Water is provided by a connection to the building water supply. Advantages of the hybrid system over single wet agent systems include: 1) more robust suppression of even the most hostile fires in protected restaurant hazards; 2) greater hazard area protection; 3) faster flame extinguishment and securement; 4) much more rapid cool down of the hot fuels, such as cooking oil and shortening, to prevent re-ignition; 5) overlapping protection of cooking appliances from fixed nozzle spacings, allowing appliances to be interchanged freely without changing nozzles; 6) simplicity of design and installation.

CODES AND STANDARDS

The PIRANHA hybrid wet agent system and its components meet the following codes, standards and recommended practices:

1. Underwriters Laboratories, Inc. (UL): Standard 300 – *Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas.*
2. Underwriters Laboratories, Inc. (UL): Standard 2092 – *Pre-Engineered Wet Chemical Extinguishing Units.*
3. Underwriters Laboratory of Canada (ULC): Standard ORD-C1254.6 – *Pre-Engineered Wet Chemical Extinguishing System Units.*
4. National Fire Protection Association (NFPA): Standard 17A – *Wet Chemical Extinguishing Systems.*
5. National Fire Protection Association (NFPA): Standard 96 – *Ventilation Control and Fire Protection of Commercial Cooking Operations.*
6. American Society of Sanitary Engineers (ASSE): Standard 1001 – *Cross Connection Protection Devices: Guidelines for Selection of the Proper Type of Backflow Preventor – Piped Applied Atmospheric Vacuum Breakers.*

7. International Association of Plumbing and Mechanical Officials (IAPMO): *Installation, Material and Property Standard PS 98-98 – Grease Fire Suppression Systems.*

NFPA STANDARDS

The PIRANHA hybrid wet agent system conforms to the standards set forth in NFPA 17A, *Standard for Wet Chemical Extinguishing Systems*, and in NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*. The hybrid system is a pre-engineered system as defined in NFPA 17A, with pre-determined flow rates, nozzle pressures, and quantities of wet chemical agent. The hazards protected by a pre-engineered system are to be specifically limited as to type and size by a testing laboratory based on actual fire tests, which is evidenced for the PIRANHA system by its UL listing as described below. NFPA 17A covers the system requirements, plans and acceptance tests, inspection, maintenance and recharging, all of which correspond to the listings and design manual for the PIRANHA hybrid system.

The PIRANHA system also complies fully with NFPA 96, in particular Chapter 7 – Fire Extinguishing Equipment. This standard specifically references the use of systems which comply with NFPA 17A, and includes a separate section on protection of solid fuel cooking operations. The PIRANHA system has been thoroughly tested and listed for protection of solid fuel cooking appliances.

UNDERWRITERS LABORATORIES (UL) STANDARDS

UL Standard 300, *Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas*, is the governing document establishing fire test requirements for pre-engineered restaurant systems. It includes an extensive series of fire tests covering all types of cooking appliances, as well as the plenum and duct areas. UL 300 specifies that fires be extinguished and that reignition not occur. Conventional wet chemical systems need a considerable amount of extinguishing agent to cool the appliance to prevent reignition. By utilizing a water spray for cooling following the rapid extinguishment with the PRX™ extinguishing agent, the PIRANHA system achieves both fire suppression and prevention of reignition with maximum efficiency.

The full implementation of UL 300 several years ago led to changes in the design of all conventional wet chemical systems to meet the more rigorous test requirements of the new standard. These changes made the average system larger and more complex, both to design and to install. The PIRANHA system is the first totally new system designed to simplify design and installation and to reduce the agent tank sizes required. The system has been fully tested to the requirements of UL 300, and has been listed by UL in a new category that acknowledges the unique technology of the hybrid concept: *Water-Assisted Wet Chemical Extinguishing Systems*.

UL has recently released a draft of a new standard covering the testing of the components of a pre-engineered restaurant system for temperature, pressure, operation, construction and corrosion, entitled UL Standard 2092, *Pre-Engineered Wet Chemical Extinguishing System Units*. In anticipation of this new standard, Ansul has successfully tested the PIRANHA system to the requirements of the draft standard.

BACKFLOW PREVENTION

In general, authorities having jurisdiction over cross-connection controls for water supplies follow national guidelines such as ASSE Cross Connection Control document, and model codes such as International Plumbing Code (IPC) and Uniform Plumbing Code (UPC).

However, these guidelines and model codes currently reference only "direct connection" fire systems that require both backpressure and backsiphonage protection. The PIRANHA system is an "indirect cross-connection" subject only to backflow potential due to back siphonage. Since there are no direct references in the model codes for a fire suppression system that is an indirect cross-connection, the PIRANHA system conforms with the national guideline for backflow protection using degree of hazard and potential for backflow just as would be done for any other water connected equipment.

Third party testing of the PIRANHA system has demonstrated compliance with the *Installation, Material and Property Standard PS 98-98 for Grease Fire Suppression Systems*, and Ansul has received approval from IAPMO to utilize the UPC logo on all PIRANHA systems.

The system has an integral ASSE approved atmospheric vacuum breaker to prevent back siphonage (backflow induced by a drop in the water supply pressure). The PIRANHA system itself is unpressurized and is open to the atmosphere, thus eliminating the potential for backflow caused by backpressure.

The AWWA M14 document and USC Manual of Cross-Connection Control both classify potential backflow hazards as either a high hazard contaminant which is hazardous to human health, or a low hazard pollutant which is not hazardous to human health but would constitute a nuisance or be objectionable for odor, taste or appearance.

Although the ASSE approved atmospheric vacuum breaker is rated for protection against backflow of high hazard materials, the PRX extinguishing agent is, in fact, a low hazard material. Toxicology testing conducted by Springborn Laboratories, Inc. of Spencerville, Ohio, found the PRX extinguishing agent to have no negative effects on the test animals at dosages meeting the OSHA definition of toxic or hazardous.

The majority of state and local authorities recognize and accept either ASSE or UPC approved backflow prevention devices. The UPC logo on the PIRANHA system and the ASSE approved vacuum breaker demonstrates compliance to both ASSE and UPC requirements. The IAPMO PS and third party test reports for compliance to the PS are available from Ansul if requested by an authority having jurisdiction.

