

## THE DENLAR D1000

*A FULLY INTEGRATED PRE-ENGINEERED FIRE SUPPRESSION RANGE HOOD SYSTEM*



## WHITE PAPER SUBMITTAL FOR CODE OFFICIAL REVIEW AND APPROVAL

### INTRODUCTION

The D1000 fulfills all of the theory and intent behind a Type I commercial hood with fire suppression (NFPA 96, 17A, & UL/ETL 300) in a system designed for use over a residential grade appliance. Systems in this product category are listed to UL/ETL 300A. The term residential grade fire suppression is a bit of a contradiction- simply put, these types of systems are intended to be used in within a commercial space, when a residential-grade appliance is used in a “not for profit” cooking application.

### TECHNOLOGY

The D1000 is the industry’s first fully integrated, pre-engineered system. The suppressant canister is located within the hood and ships from the factory pre-charged. There is no interaction with the fire suppression system at installation other than removing the safety pin and the safety key. Because of this it is often installed by mechanical equipment contractors. Listed below are the commercial system guidelines and how the DENLAR D1000 meets (or exceeds) these areas:

#### **Fusible Link Actuation**

- The D1000 uses GLOBE style fusible links to trigger the suppression system.

#### **Wet Chemical Fire Suppression Agent**

- The D1000 uses AMEREX 660, a low PH version of the commercial suppressant. AMEREX 660 has the same knockdown and saponification capabilities as the commercial agent, but can be cleaned up with soap and water and will not harm appliances or countertop finishes.

### **Alarm System Communication**

- The D1000 Features multiple contact points for tying into a fire alarm panel. The system is also able to communicate a maintenance code if a problem occurs – this can also be tied into a buildings management system.

### **Cooking Element Disconnect**

- All DENLAR hood systems feature hard wired disconnect options for gas, electric and dual fuel devices. These are hardwire connected modules and cannot be bypassed.

### **Grease Screening & Capture**

- The D1000 features a commercial style grease baffle and drip cup, both are stainless steel and are dishwasher safe.

### **Duct & Plenum Suppression**

- In addition to the nozzles and fusible links within the bell of the hood, there is an additional nozzle and link within the plenum of the hood, at the access point to the duct run. In the event of a duct driven fire, the system will actuate and suppress onto the range and into the duct.

## **DEMONSTRATION**

DENLAR fire suppression range hoods are the only 300A systems that can be demonstrated similarly to a Commercial system. They can be functionally demonstrated or, puff tested by replacing the fully charged tank with Nitrogen only filled cylinder.

## **ADDITIONAL PROTECTION**

The D1000 also includes an environmental monitoring system, designed to interact with the cooking environment and minimize the likelihood of a fire event. This is a two stage temperature monitoring system. At a mid-temperature set point, the system will automatically engage the fan on high in an effort to dissipate heat from the area. At a high temperature set point, the system will preemptively disconnect the cooking element to the appliance PRIOR TO suppression system release. If these two stages of “pre-suppression” do not stem the tide of a growing fire event, the fusible links will melt, causing the system to actuate mechanically consistent with other commercial fire suppression systems.

## **CODE BASED APPLICATIONS**

The D1000 is engineered to offer a commercial level of protection for a residential-grade cooking appliance used in a commercial space. DFP maintains that the system should not be used in a production cooking environment. However, when a 30” or 36” range is used within a light to medium-duty “not for profit” commercial application like a church kitchen, managed care facility, fire houses, etc. – the nature of the space will still require a high level of protection. Here, the D1000 is suitable for the use of the appliance and the lower risk level associated with the equipment in these applications.

## **LISTINGS, CERTIFICATIONS & CODE ACCEPTANCE**

### **300 vs 300A**

- The testing standards used in evaluating and listing a 300A system are exactly the same as those used for the 300 Commercial system, only a residential grade appliance is substituted as the heat source. Bear in mind, a residential grade appliance produces a significantly lower BTU output when compared to a similarly sized commercial-grade unit. Both UL & ETL list products to the 300A standard. The 2017 Edition of the NFPA 96 contains an Annex (A.1.1) which lists 300A as an alternative to a full commercial hood for use over a residential grade range. The 2017 Edition of NFPA 17's Annex C also recognizes 300A products as an alternative for use to protect a residential range used in a commercial space.

### **LC1031**

- The D1000 is the only 300A system recognized for use by the ICC. Listing criteria #1031 officially defines the system as "a Type 2 hood with Type I capabilities designed to protect a residential-grade appliance used in a commercial space".

### **PMG 1122**

- The D1000 carries a listing provided by the ICC's Evaluation Services division. This listing officially recognizes the system for use within the I-codes and specifically states that the installation will comply with the 2009 and 2012 IMC, UMC and IFC. The D1000 is the only product of its kind with this certification.

### **NFPA101**

- In a 2012 amendment to the NFPA Life Safety Code, the National Fire Protection Association created a standard for the operation and application of a 300A system. The D1000 was the basis of design behind this requirement. The language used specifically refers to residential health care facilities, but where NFPA101 is often used as an alternative means of protection, applications of the D1000 span for beyond this limited scope.

## **DUCTING, PROXIMITY TO COMBUSTIBLES, ETC.**

It is important to recognize the differences between a residential grade appliance and a similarly sized commercial unit. With a lower BTU output and greatly reduced airflow requirements; grease will not nebulize into as fine of a mist, nor will it be drawn as far into the duct run. When considering the other downstream requirements attached to a commercial hood system, these lower risk factors should denote acceptance of a more residentially-styled space.

## **SERVICE & RECERTIFICATION**

DENLAR recommends a semi-annual recertification schedule. This process will involve verifying the condition of the pressurized suppressant canister and changing the fusible links within the actuation line. While the process could be completed by an end-user, often times a licensed fire suppression contractor will perform the function.

## **WARRANTY**

DENLAR warranties the D1000 to be free of operational and construction defects for two (2) years from the date of shipment.

## **SYNOPSIS**

The DENLAR D1000 is designed to fulfill all of the theory and intent behind an otherwise required commercial hood system while also incorporating industry leading environmental monitoring technology. The D1000 will not only automatically suppress a cooking fire event – it will work to minimize overall fire risk in the space. Engineers, designers, facilities managers and code officials should be confident in recommending and approving the D1000 in all applications where a residential-grade appliance is used in a “not for profit” capacity within a commercial space.

For additional information contact the manufacturer:

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