

# PRODUCT SPECIFICATION SHEET NATURAL SMOKE AND HEAT EXHAUST VENTILATOR

## 1. Introduction

### 1.1 General description

The geographical location of South Africa is vast, roofs are built in coastal and inland regions. Research into climatic conditions must be entered into when specifying a product which is required to perform a life safety function. On completion of the engineering calculations, due care and diligence is required to determine the wind load (coastal or inland) and overriding fusible link opening mechanism temperature requirements to ensure the specified product is fit for purpose.

## 2. Product Specification

### 2.1 Specifying the product

#### 2.1.1 Inland Regions (Failsafe)

One off electrically operated smoke and heat exhaust dual-purpose ventilator manufactured from (galvanised [or] chromadek [or] zincaluminium [or] colour plus) material, complete with a failsafe (24V DC power to close spring to open actuator). Each ventilator shall be fitted with a back-up fusible link system selected to activate at (74°C; 100°C; 138°C; 182°C & 232°C). The ventilator shall have an  $A_V C_V$  of  $x.xx \text{ m}^2$ . The ventilator is required to span a purlin spacing of  $xxxx \text{ mm}$ , or "H-Frames" and shall be included at an additional cost. The ventilator shall be certified EN 12101:2 compliant with the minimum test results achieved: WL (1700); SL (0); T(00); Re (100) and B300.

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#### 2.1.2 Inland Regions (Powered)

One off electrically operated smoke and heat exhaust dual-purpose ventilator manufactured from (galvanised [or] chromadek [or] zincaluminium [or] colour plus) material, complete with a failsafe (24V DC power to open and power to close actuator). Each ventilator shall be fitted with a back-up fusible link system selected to activate at (74°C; 100°C; 138°C; 182°C & 232°C). The ventilator shall have an  $A_V C_V$  of  $x.xx \text{ m}^2$ . The ventilator is required to span a purlin spacing of  $xxxx \text{ mm}$ , or "H-Frames" shall be included at an additional cost. The ventilator shall be certified EN 12101:2 compliant with the minimum test results achieved: WL (1700); SL (0); T(00); Re (100) and B300.

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#### 2.1.3 Coastal Regions (Failsafe)

One off electrically operated smoke and heat exhaust dual-purpose ventilator manufactured from (galvanised [or] chromadek [or] zincaluminium [or] colour plus) material, complete with a failsafe (24V DC power to close spring to open actuator). Each ventilator shall be fitted with a back-up fusible link system selected to activate at (74°C; 100°C; 138°C; 182°C & 232°C). The ventilator shall have an  $A_V C_V$  of  $x.xx \text{ m}^2$ . The ventilator is required to span a purlin spacing of  $xxxx \text{ mm}$ , or "H-Frames" shall be included at an additional cost. The ventilator shall be certified EN 12101:2 compliant with the minimum test results achieved: WL (2300); SL (0); T(00); Re (100) and B300.

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### 2.1.4 Coastal Regions (Powered)

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### 2.2 Selection Criteria

Material for manufacturing to suit a variety of roof sheet materials. Each ventilator has been independently tested and found compliant when manufactured from galvanised [or] chromadek [or] zincaluminum [or] colour plus material.

Aerodynamic-free area ( $A_v C_v$ ), this is the tested aerodynamic-free area of the ventilator based on internal and external wind currents. This takes into account all restrictions in the throat of the ventilator; motors, control arms and drainage channels. Additional items like burglar bars and bird mesh also have an impact on the  $A_v C_v$  of the ventilator.

The fusible link temperature options are 74°C; 100°C; 138°C; 182°C & 232°C. This is a device fitted into the ventilator which allows automatic opening if the fusible link device reaches the selected temperature.

Wind loading (WL): this is the force the ventilator is tested to, which determines the wind suction pressure, the blades and control mechanism. This testing will determine if the above mentioned factors can withstand the certain degree of force without failing. A failed blade or control mechanism will prevent the ventilator from operating in a fire incident. Coastal regions require 2300N, inland regions require 1700N.

Ambient Temperature Range (T): this is the lowest temperature the ventilator is tested to and this gives the designer peace of mind that the ventilator will operate at low temperatures.

Reliability (Re): this is the number of times a ventilator has been tested to open after the standard opening cycles for a dual-purpose ventilator (10,000). All dual-purpose ventilators must be cycle tested 10,000 times before the reliability test commences.

Snow Loading (SL): the uniformly distributed load placed on the ventilator in Newtons in the closed position, this demonstrates the ability of the ventilator to overcome the load of foreign objects on the ventilator whilst in the closed position.

Reaction to fire (B): the fire resistance of the materials the ventilator is tested to, generally 300°C. The ventilator is then heated up to 600°C and allowed to cool. Thereafter deflection of the ventilator opening is measured and may not deflect more than 10% from the manufactured size.