Smoke Doors

Selecting the correct sealing system

Smoke seals are designed to contain smoke within a room or corridor and can be a combination of mechanical, compression and sweep seals.

Ambient (Cold) Smoke

Smoke that has come down to ambient temperature after drifting from the fire can be a life threatening concoction. The majority of Raven door seals contain cold smoke and therefore can be used to upgrade existing doors. Seals are normally tested to AS 1530.7 and EN 1634-3 (BS 426 Sect. 31.1). Smoke leakage rates from these standards of up to 3 m^3/m/h of the door perimeter gap at 25 pascals excluding the threshold, is normally required. Raven seals easily exceed this criteria.

Medium Temp. Smoke (200°C for 30 minutes)

Smoke doors require seals to withstand greater temperatures (200 degrees Celsius for 30 minutes) to conform to the NCC specification C3.4 requirement for "Smoke Doors". Medium temperature smoke seals are required where the smoke is closer to the source of the fire and consequently at a higher temperature.

Sealing components are generally made from extruded silicon or tested high temperature PVC's and TPE's, and in the case of brush strip seals, nylon with a high temperature resistant barrier fin.

Fire & Hot Smoke Intumescent Seals

For fire engineered solutions (referred to as "performance solutions" in the NCC), fire engineers may require hot smoke seals. Intumescent seals are used for this purpose to seal against hot gases above 200°C.

Refer to page 103 for intumescent seals.


Unsealed Door

Smoke Seal Testing

Raven smoke seals are tested in accordance with AS/NZS 1530.7 & BS EN 1634-3. The seals are required to meet accepted smoke leakage rates at various pressure differentials.

Tested systems to AS 1530.7 meeting the smoke leakage rates specified in AS 6905 Pt. 2.4 parts (a) & (b) meet the requirements of NCC specification C3.4 Deemed-to-Satisfy, i.e. smoke door assemblies having been exposed for 30 minutes or greater at 200°C, with leakage rates of up to 25 m^3/h at 25 Pa for single doors and 40 m^3/h for pairs of doors. Leakage rates are corrected to standard reference conditions. These leakage rates or better are commonly specified in fire engineered solutions. Raven have many tested solutions on proprietary doors to meet these requirements.

In the UK and EU Sa and Sm ratings to BS EN 13501-2 may be required. These ratings require tested smoke door assemblies to have met the leakage rates of up to 3 m^3/m/h of the door perimeter gap at 25 Pa for ambient temperatures "Sa". For medium temperature 20 m^3/h for single doors and 30 m^3/h for pairs of doors at a pressure differential of 50 Pa at 200°C "Sm". Tests are conducted to EN 1634-3.

Threshold Plates in Sealing Systems

Aluminium threshold plates can be used under a smoke door when the gap exceeds the specifications of the door bottom seal or to provide an optimum sealing surface for the door bottom seal.

Refer to page 66 for fire approved threshold plates.