4. Fire Scenario Description

4.1 Fire Source Characteristics

The fire scenario includes combustible materials configured with heat release rate per unit area (HRRPUA) specifications. The fire growth follows the defined ramp function or constant heat release rate.

4.2 Heat Release Rate (HRR)

The heat release rate is the single most important parameter in fire hazard analysis. It represents the rate of energy release due to combustion and drives the fire-induced flows:

Total Heat Release Rate

$$Q(t) = HRRPUA \times A_{burn} \times f(t)$$

$Q(t)$	Time-dependent heat release rate (kW)
$HRRPUA$	Heat release rate per unit area (kW/m^2)
A_{burn}	Burning surface area (m^2)
$f(t)$	Time-dependent ramp function (0 to 1)

4.3 Combustion Products

The combustion process generates products that affect tenability: