# Kitchen Hood Exhaust Air Flow

Exhaust air flow for a kitchen or process hood from its length and a flow per metre, or from the open face area and capture velocity, whichever is larger.

**Method:** Q = L q_L or Q = A v_c (hood design practice with the user's rates from the applicable code or the hood maker, e.g. ASHRAE Standard 154)

## Input parameters

Unit system: SI

| Parameter | Value | Unit |
|---|---|---|
| Hood length | 3.0000 | m |
| Exhaust per metre of hood<br>From your hood guide for the cooking duty and hood type. | 300.00 | L/(s·m) |
| Hood depth (open face) | 1.2000 | m |
| Capture velocity across the open face | 0.25000 | m/s |
| Make-up air share of exhaust | 85.000 | % |

## Calculated results

| Parameter | Value | Unit |
|---|---|---|
| By length | 3,240.0 | m³/h |
| By face area and velocity | 3,240.0 | m³/h |
| Exhaust (larger) | 3,240.0 | m³/h |
| Make-up air | 2,754.0 | m³/h |

**Notes for this case**

- Make-up air below the exhaust keeps the kitchen slightly negative so smells do not escape.

## Formula and method

$$\dot{V} = \max(L q_L,\ L W v_c)$$

### Variables

| | | |
|---|---|---|
| $L$ | Hood length | m |
| $q_L$ | Exhaust per metre of hood | m³/(s·m) |
| $W$ | Hood depth (open face) | m |
| $v_c$ | Capture velocity across the open face | m/s |
| $k_m$ | Make-up air share of exhaust | - |
| $\dot{V}_L$ | By length | m³/s |
| $\dot{V}_A$ | By face area and velocity | m³/s |
| $\dot{V}$ | Exhaust (larger) | m³/s |
| $\dot{V}_m$ | Make-up air | m³/s |

### Method and standards

Flow rules.

### Assumptions and limits

- Wall canopy hood (face area L × W). An island hood is open on all sides: use its perimeter-based rate from the code or maker; the face rule here understates it.
- The default rates are illustrative, not from a standard: enter your code's or the maker's figures for the appliance duty.

### References

- Q = L q_L or Q = A v_c (hood design practice with the user's rates from the applicable code or the hood maker, e.g. ASHRAE

Standard 154)

## Report details

| | |
|---|---|
| Report reference | FCC-9HP3-M77H (the same inputs always give the same reference) |
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| Calculator | Kitchen Hood Exhaust Air Flow |
| Method last reviewed | 12 November 2026 |
| Software release | FireCAD Calc, release of 17 November 2026 |
| Release checks | 2 reference cases of this calculator, computed independently, are checked on every release |

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

### This calculator online

https://calc.firecad.com/hvac/loads/kitchen-hood-exhaust

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.