What is the Extraction Rate?

Extraction Rate refers to the volume of air removed from a space by a ventilation system over a specific period. It is typically measured in metres cubed per hour (m^3/hr) or litres per second (L/s). This metric is crucial for ensuring adequate ventilation in residential and commercial buildings, particularly in areas prone to moisture or pollutants, such as kitchens, bathrooms, and utility rooms.

The extraction rate is a key performance indicator for ventilation systems, ensuring that indoor air quality (IAQ) is maintained by removing stale, humid, or contaminated air. For example, in a kitchen, an extractor fan with a high extraction rate can effectively remove cooking fumes and moisture, preventing condensation and mould growth. Similarly, in a bathroom, a fan with an appropriate extraction rate can reduce humidity levels, protecting the building fabric and improving occupant comfort.

The Building Regulations 2010, **Approved Document F: Ventilation**, provides specific guidance on minimum extraction rates for different types of rooms in dwellings. Below are the extraction rate tables directly from **Approved Document F (2021 edition)**:

Extraction Rate Tables

Table 1.1: Minimum Extract Ventilation Rates for Intermittent Extract Systems

Table 1.1 Minimum extract ventilation rates for intermittent extract systems

Room	Intermittent extract rate (l/s)
Kitchen (cooker hood extracting to the outside)[1]	30
Kitchen (no cooker hood or cooker hood does not extract to the outside)[2]	60
Utility room	30
Bathroom	15
Sanitary accommodation[3]	6

NOTES:

1. See Diagram 1.1.
2. See Diagram 1.2.
3. As an alternative for sanitary accommodation, the purge ventilation guidance may be used.

Table 1.2: Minimum Extract Ventilation Rates for Continuous Extract Systems

Table 1.2 Minimum extract ventilation rates for continuous extract systems[1]

Room	High rate (l/s)	Continuous rate
Kitchen	13	The sum of all extract ventilation in the dwelling on its continuous rate should be at least the whole dwelling ventilation rate given in Table 1.3
Utility room	8	
Bathroom	8	
Sanitary accommodation	6	

NOTE:

1. If the continuous rate of ventilation provided in a room is equal to or higher than the minimum high rate specified in the table, no extra ventilation is needed.

Practical Example

In a residential retrofit project, replacing an old extractor fan in a bathroom with a modern unit that meets the minimum extraction rate of **15 L/s** ensures compliance with **Approved Document F** and improves the room's ventilation performance. This reduces the risk of damp and mould, which are common issues in poorly ventilated spaces.

Synonyms

- Airflow rate
- Ventilation rate
- Exhaust rate

Related Terms

1. **Air Permeability**: A measure of a building's airtightness, indicating how much air leaks through the building envelope. Lower air permeability values are associated with more energy-efficient buildings.
2. **Whole Dwelling Ventilation**: A continuous ventilation strategy that provides fresh air to all habitable rooms in a dwelling, as outlined in **Approved Document F**.
3. **Purge Ventilation**: Short-term, high-rate ventilation used to rapidly remove pollutants or moisture, often achieved by opening windows or using mechanical fans.
4. **Mechanical Ventilation with Heat Recovery (MVHR)**: A system that extracts stale air and supplies fresh air while recovering heat from the extracted air, improving energy efficiency.
5. **Intermittent Extract Ventilation**: A ventilation method where extract fans operate only when needed, such as during cooking or bathing, as opposed to continuous operation.