

Clean agents — Novec 1230, FM-200 and the F-gas phase-down

suppression

Halocarbon clean-agent suppression — properties, environmental impact, and the impact of the EU F-gas regulation phase-down.

FK-5-1-12 (Novec 1230 / Sapphire)

Fluoroketone, design concentration 4.2–5.9% v/v. Zero ODP, GWP < 1, 5-day atmospheric lifetime. The preferred halocarbon agent post-2025 because it sits outside the F-gas phase-down.

HFC-227ea (FM-200 / FE-227)

Design concentration 6.7–9% v/v. GWP 3220 — captured by EU F-gas Regulation 517/2014 and its 2024 recast. Service refills increasingly constrained.

F-gas phase-down impact

EU F-gas Regulation (2024/573) cuts HFC quota by 95% by 2030 vs 2015. HFC-227ea and HFC-125 systems remain legal but refill agents become scarce and expensive. Many specifiers now require FK-5-1-12 or inert gas for new installations.

Selecting clean agent vs inert gas

Clean agents: smaller cylinder bank, faster discharge (10 s), lower room overpressure. Inert gas: longer hold-time forgiving, no GWP, simpler logistics, but bigger storage and higher discharge pressure. Both safe for occupied spaces at design concentration.

Source: NFPA 2001 (2022); ISO 14520-9 (FK-5-1-12); EU Regulation 2024/573