

Electrical and Lithium Battery Fires in Austrian Households: Risk Analysis, Incident Patterns, and Prevention Strategies

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Abstract

In 2024, Austria recorded 8,126 fire incidents (€478 million in losses), with electrical energy responsible for 1,153 cases (14%), ranking among the leading identified ignition sources.

This study analyzes electrical and lithium-ion battery fires in households in Austria through an integrated fire risk assessment combining national fire statistics with a representative survey of 4,564 residents. The results reveal a marked discrepancy between perceived safety and technical competence: although nearly all respondents report feeling confident in handling electrical devices, 60% do not know the load limits of multiple socket outlets and only 44% correctly understand the unit watt. Electrical devices, cables, and technical defects account for 27.6% of reported household fire incidents, making them the most frequently cited cause.

Risk-relevant practices are common: 88% regularly use multiple socket outlets, 14.6% connect them in series, and 7.3% operate three or more high-load devices simultaneously. Overload-related tripping of circuit breakers has already been experienced by 30% of respondents. Lithium-ion batteries represent a distinct thermal hazard, particularly during unattended charging, improper storage, or use of non-original chargers.

A nationwide follow-up survey focusing specifically on lithium battery handling, storage, charging behavior, and incident experience is underway; finalized results will be available in March 2026 to support evidence-based fire prevention strategies and thermal safety protocols.