

Lithium Battery Fire in the Cabin or in the Cockpit



A lithium battery fire during flight is a significantly growing threat due to the increasing number of portable electronic devices carried by aircraft occupants.

Recent events illustrate the critical importance of adhering to the procedures to timely and efficiently react to a lithium battery fire.

This article explains the specific firefighting steps to fight a lithium battery fire. It also recalls the various procedures that must be followed to deal with a fire in the cabin or in the cockpit.

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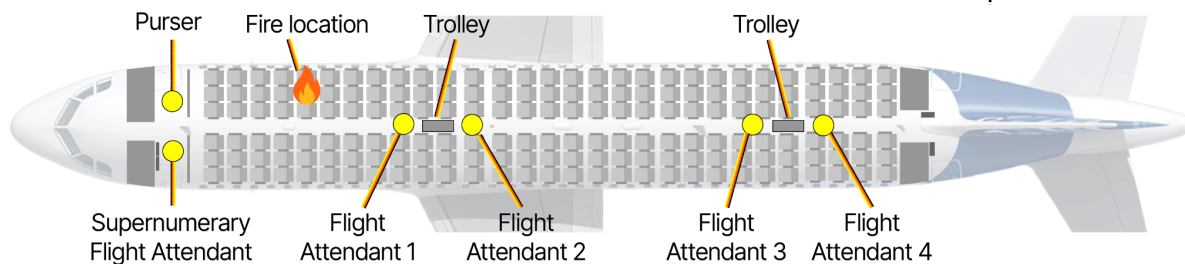


CASE STUDY

Event Description

An A320 aircraft was in cruise at FL 300. The purser had just finished delivering beverages to the cockpit and was about to join a supernumerary flight attendant that was seated in the front galley. The four remaining cabin crew members were delivering meals to passengers, when some passengers started screaming in the front of the aircraft. A fire appeared to originate in the right overhead bin above the 5th row seats.

(fig.1) Location of the cabin crew members at the start of the event



The supernumerary flight attendant retrieved a fire extinguisher and fireproof gloves and initially took on the Firefighter role. Meanwhile, the purser took on the Communicator role and alerted the flight crew. Flight attendant 1 moved passengers away from the affected area and then took on the Assistant Firefighter role by collecting water and non-alcoholic liquids. Flight attendants 2, 3, and 4 moved the trolleys to the aft galley and managed passengers. Flight attendant 3 put on fireproof gloves from the aft galley and brought two additional fire extinguishers to the fire area. The Firefighter role then rotated between the supernumerary flight attendant and flight attendant 3.

The three extinguishers were used. The cabin crew then poured water and other non-alcoholic liquids on the remains of the backpack holding the affected device.

Meanwhile, the flight crew had initiated a diversion to a nearby airport. They made an announcement on the passenger address system that the cabin crew should prepare the cabin for landing. Some cabin crew members remained near the fire zone to continue pouring water on the device, while others prepared the cabin for landing. The flight crew then announced 5 minutes to landing, enabling all cabin crew members to prepare for landing. The aircraft safely landed and the passengers disembarked via stairs.

Event Analysis

Thermal runaway of a power bank

Analysis showed that a power bank from a passenger's backpack, stored in the overhead bin, suffered a thermal runaway.

No time for storage procedure

The cabin crew did not have the time to perform the storage procedure after extinguishing the fire due to the announcement from the flight crew that they were close to landing.

Firefighting operations disturbed by passengers

During the firefighting procedure, some passengers tried to get involved in the procedure, disturbing the cabin crew members in their mission. Relocated passengers were standing in the aisle, preventing the cabin crew from easily retrieving firefighting equipment from the aft galley. ■

REINFORCING AWARENESS OF PASSENGERS, GROUND PERSONNEL, AND CREWS

In the Safety Information Bulletin (SIB) 2025-03 published in May 2025, the European Union Aviation Safety Agency (EASA) highlighted that the number of Portable Electronic Devices (PEDs) that passengers typically travel with, has increased to 4 or 5 items per passenger. This represents a significant exposure to the risk of a thermal runaway during flight. EASA strongly recommends carrying these lithium-battery-powered items, power banks, or e-cigarettes in the cabin so that the cabin crew can react quickly should a thermal runaway occur.

The SIB also recalls that it is essential to inform passengers about the risks of carrying lithium batteries or lithium-battery-powered devices, and about the limitations and restrictions that apply for their transportation and use onboard an aircraft. The document also highlights the essential need for cabin crews and flight crews to be trained and aware of the specificities of a lithium battery fire in order to timely and efficiently address it if it occurs in flight.



INFORMATION

For more information, refer to the following documents:

- [EASA SIB 2025-03](#) published in May 2025
- [FAA AC 120-80B](#) published in March 2023
- [EASA Dangerous goods](#) webpage
- [IATA "Lithium battery risk assessment guidance for operators"](#)

FIGHTING A LITHIUM BATTERY FIRE

Characteristics of a Lithium Battery Fire

Thermal runaway

In the case of internal degradation or damage, a battery cell rapidly releases its stored energy through a highly energetic venting reaction known as "thermal runaway." This can generate smoke, flammable gas, heat (up to 600 °C and 1 500 °C locally), fire, explosion, or a spray of flammable liquids.

A possible chain reaction

If one cell from a battery composed of several cells undergoes thermal runaway, it can damage adjacent cells and create a chain reaction that could lead to an explosion.



INFORMATION

For more information on the transportation of lithium batteries, refer to the article "[Lithium battery. Safe to fly?](#)" initially published in 2016 and updated in July 2025.

Two-Step Firefighting Procedure

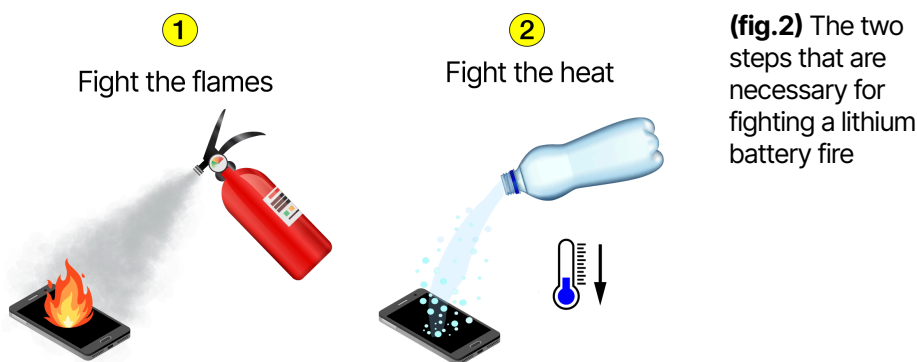
Conventional firefighting procedures and extinguishing agents are not sufficient to stop a lithium battery fire. A fire extinguisher can suppress open flames, but it is not effective in addressing the source of the fire, which is the thermal runaway. Therefore, two steps are necessary to fight a lithium battery fire.

① Fight the flames

The first step is to fight the flames using a fire extinguisher.

② Fight the heat to stop the thermal runaway

After the flames are extinguished, the firefighter must concentrate their effort on cooling the battery using water or a non-alcoholic liquid. This will stop the thermal runaway and prevent propagation to adjacent battery cells, if any. The best solution is to immerse the device in water. ■



LITHIUM BATTERY FIRE IN THE CABIN

The "**Lithium Battery Smoke/Fumes/Fire**" and "**Storage Procedure After a Lithium Battery Fire**" cabin crew procedures were developed for managing lithium battery fires. These two "basic" procedures can be referred to by other procedures, such as the "**PAX Seat Smoke/Fumes/Fire**" and the "**Overhead Bin Smoke/Fumes/Fire**", which may be applied if the affected device is located in a seat or in an overhead bin.

Recall of the Firefighting Roles

In any case, regardless of the type of fire, the firefighting roles defined in the CCOM "**Definition and Description of Fire Fighting Roles**" section must be followed.

Firefighter role

The Firefighter role is assigned to the first crew member who discovers the fire. The Firefighter must:

- Alert other cabin crew members
- Retrieve the nearest fire extinguisher
- Immediately locate the fire source
- Fight the fire.

In the presence of smoke, the Firefighter should consider using Portable Breathing Equipment (PBE) before fighting the fire. Note that if there is no smoke or a limited quantity of smoke, the Firefighter may initially fight the fire to save time and be replaced by the Assistant Firefighter who may have put on a PBE in the case of an increase in smoke quantity.

Communicator role

The Communicator role is assigned to the second crew member to arrive on the scene. The Communicator must:

- Alert the flight crew about the fire event
- Provide information about the fire to the flight crew, such as the location, source, and severity of the fire as well as the presence of smoke and its effect on occupants
- Maintain communication with the flight crew, provide updates on the situation, such as the firefighting progress, the number of extinguishers used and the situation in the cabin (e.g. smoke, injuries, etc.).

Assistant Firefighter role

The Assistant Firefighter role is assigned to the third crew member who arrives on the scene. The Assistant Firefighter must:

- Bring necessary additional firefighting equipment to the Firefighter
- Support and coordinate the firefighting effort
- Prevent fire propagation by ensuring that no flammable materials (fluids, gases, devices) are near the affected device
- Be prepared to exchange roles with the Firefighter.

Support Crew Members role

Other crew members must:

- Relocate passengers and keep them away from the affected area
- Reassure passengers
- Perform first-aid.



NOTE

As for any emergency situation, assertive management of passengers is key to prevent unnecessary disturbance to the accomplishment of the procedure.

"Lithium Battery Smoke/Fumes/Fire" CCOM Procedure

When the cabin crew are able to identify that the source of smoke/fumes/fire is from a lithium battery, the following procedure should be applied.

① Remove power source

The first step of the procedure is to unplug the device or switch off its power source, if applicable (**fig.3**). The use of fireproof gloves should also be considered, if available.

② Fight the fire

The Firefighter takes the fire extinguisher and discharges it at the base of the flames. Meanwhile, the Assistant Firefighter may collect additional firefighting equipment, if needed, and also water bottles or non-alcoholic liquids for the next step.

③ Fight the heat

When the flames are extinguished, the Assistant Firefighter pours water or non-alcoholic liquids on the device to cool it. The Assistant Firefighter should take care during this step, as liquids may turn into steam when poured on the hot device.

④ Apply the "Storage Procedure After a Lithium Battery Fire" or monitor the device

If the cooled device can be moved, the cabin crew should apply the **"Storage Procedure After a Lithium Battery Fire"**.

When the affected device is cooled but cannot be moved, a cabin crew member should be assigned to monitor it. As per the "Basic Firefighting Procedure", regular reports must be made to the chief purser.

(fig.3) "Lithium Battery Smoke/Fumes/Fire" CCOM Procedure



"Storage Procedure after a Lithium Battery Fire" CCOM Procedure

This procedure can be performed after the **"Lithium Battery Smoke/Fumes/Fire"** procedure or the **"Overhead Bin Smoke/Fumes/Fire"** procedure. The flight crew can also request that the procedure be initiated in the case of a lithium battery fire in the cockpit.

When the fire is contained and the device cooled, and if it can be safely moved, the cabin crew should apply the **"Storage Procedure after a Lithium Battery Fire"**.

① Put on fireproof gloves

The Firefighter must put on fireproof gloves.

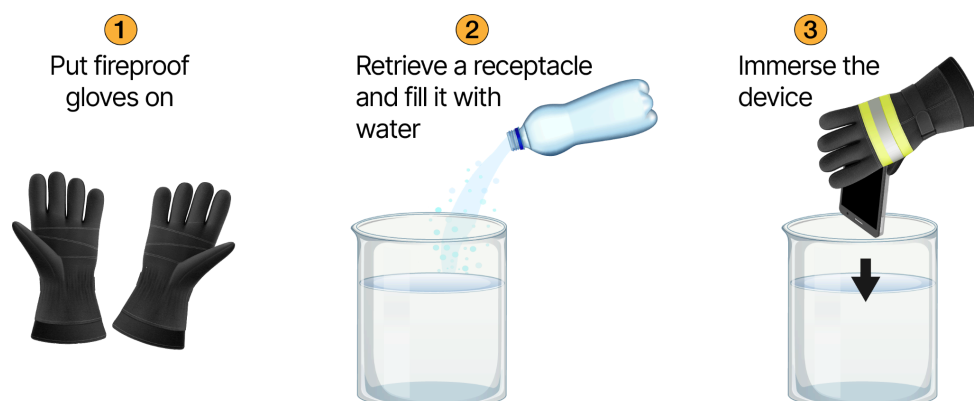
② Fill a receptacle with water

Meanwhile, the Assistant Firefighter retrieves a receptacle and fills it with water or non-alcoholic liquid.

③ Immerse the device

The Firefighter carefully takes the device and immerses it in the receptacle.

(fig.4) "Storage Procedure after a Lithium Battery Fire" CCOM Procedure - part 1



④ Transfer the receptacle to the nearest lavatory

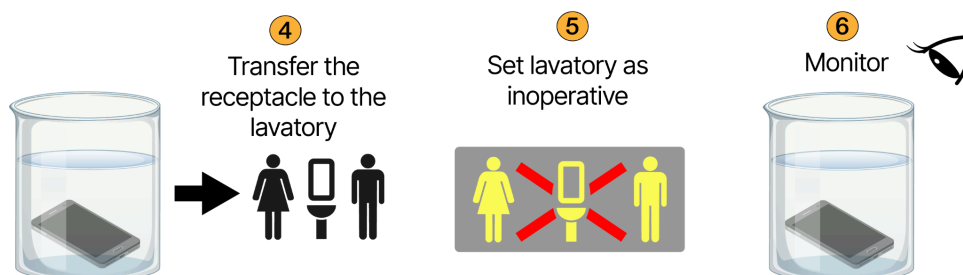
The Assistant Firefighter transfers the receptacle to the nearest lavatory. The lavatory is proposed as it contains smoke detection means. It is a secured location for the device, away from the passengers, and it provides a waterproof floor designed to receive water in case of turbulent conditions.

⑤ Set the lavatory containing the device as inoperative

The Assistant Firefighter should then set the lavatory containing the device as inoperative to prevent passengers from accessing it.

⑥ Monitor the lavatory containing the device

The lavatory containing the device must be regularly monitored for the remainder of the flight to ensure that the device remains immersed.



(fig.5) "Storage Procedure after a Lithium Battery Fire" CCOM Procedure - part 2

"PAX Seat Smoke/Fumes/Fire" CCOM Procedure

This procedure addresses the case where the fire or smoke comes from either:

- The In-Flight Entertainment (IFE) system
- A passenger Portable Electronic Device (PED) in the seat pocket or seat stowage
- A PED trapped in the seat mechanism
- A seat mounted battery

In the first case, the **"Basic Firefighting"** CCOM procedure applies.

In the three other cases, the **"Lithium Battery Smoke/Fumes/Fire"** CCOM procedure must be applied.

"Overhead Bin Smoke/Fumes/Fire" CCOM Procedure

It may not be easy to identify the type of fire occurring in the overhead bin (lithium battery fire or not). Therefore, based on in-service events, the **"Overhead Bin Smoke/Fumes/Fire" CCOM procedure assumes that a lithium battery-powered device may be the origin of the fire.**

Apply standard firefighting roles

Standard firefighting roles must be applied. The Firefighter and Assistant Firefighter should always consider the use of PBE since smoke may be expected when opening the affected overhead bin. The use of fireproof gloves should also be considered, if available. The Firefighter must then retrieve a fire extinguisher. Meanwhile, the Assistant Firefighter should get water or non-alcoholic liquid, the Communicator should notify the flight crew of the fire, and the Support Crew Members should relocate passengers away from the fire location.



NOTE

In order to save time, the firefighter may consider starting to fight the fire before putting on the PBE. The assistant firefighter should then, at the same time, put on the PBE and replace the firefighter when necessary.

① Check for heat

The Firefighter should use the back of their hand to check the heat of the overhead bin to determine the presence of fire and identify its approximate location.

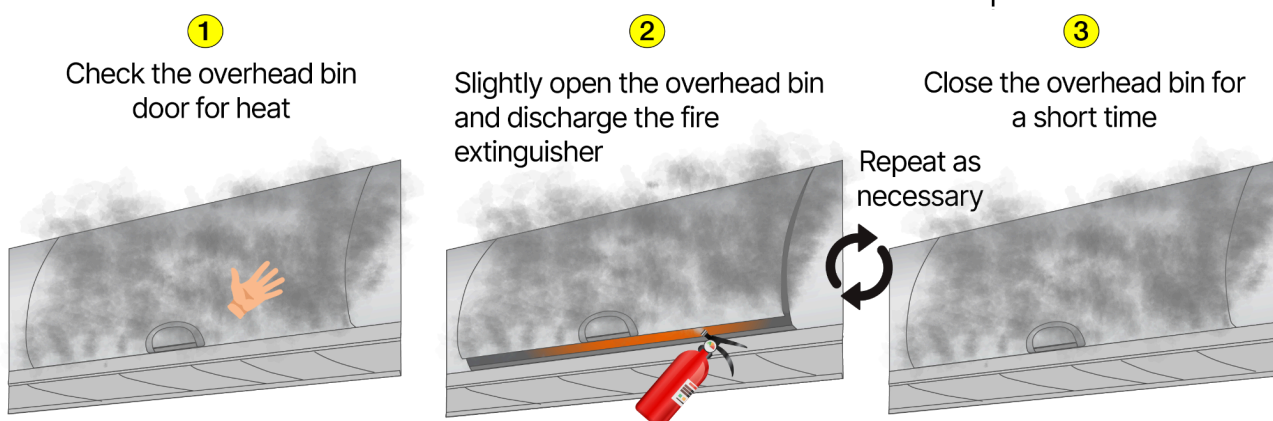
② Open the overhead bin slightly and discharge the fire extinguisher

The Firefighter should slightly open the overhead bin to prevent smoke from spreading into the cabin and introduce the nozzle of the fire extinguisher. The extinguisher must then be discharged.

③ Close the bin for a short time

The overhead bin can be closed and latched for a short time to let the extinguishing agent act. This sequence should be repeated as necessary with additional fire extinguishers until the flames are extinguished.

(fig.6) "Overhead Bin Smoke/Fumes/Fire"
CCOM Procedure - part 1



④ Identify the source of fire and remove nearby objects

When there are no more flames, the Firefighter must carefully open the overhead bin, try to identify the source of fire and remove nearby objects. If the source of fire cannot be easily located, the Firefighter should carefully empty the overhead bin to find it. As per the "Basic Firefighting procedure", the Assistant Firefighter should be prepared to use the fire extinguisher in case flames reappear.

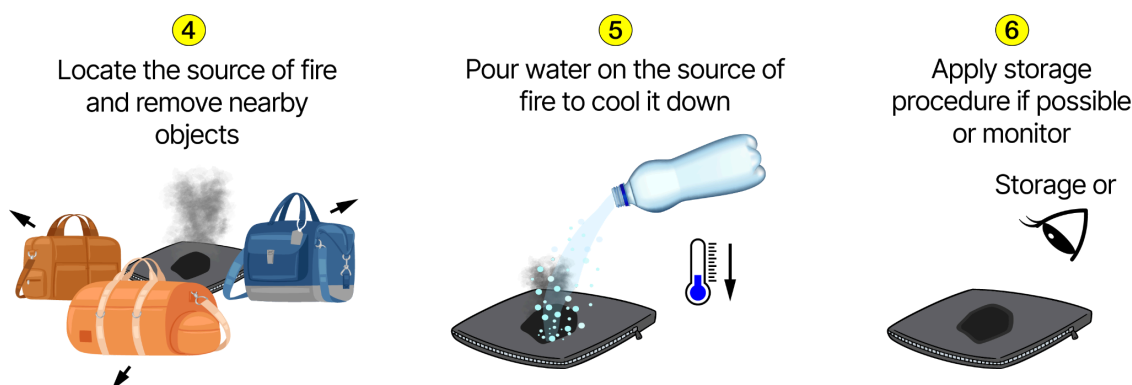
⑤ Cool down the source of fire

When the source of fire is located, the Firefighter must pour water or non-alcoholic liquid on it to cool it down.

⑥ Apply "Storage Procedure after a Lithium Battery Fire" if possible

When the source of fire is cooled down and can be safely moved, the "Storage Procedure after a Lithium Battery Fire" procedure should be applied. If it is not possible to move the affected device, it must be monitored.

(fig.7) "Overhead Bin Smoke/Fumes/Fire"
CCOM Procedure - part 2





INFORMATION

To know more about managing lithium battery fires in the cabin, and other cabin safety subjects, read the **"Getting to grips with cabin safety"** brochure, available on Airbus World.



LITHIUM BATTERY FIRE IN THE COCKPIT

The majority of electronic flight bags, which are widely used by flight crews, contain lithium batteries as a primary source of power. Lithium batteries can also be present in the cockpit in laptops, tablets, cameras, mobile phones, or any PEDs.

"Smoke/Fire from Lithium Battery" FCOM/QRH Procedure

The flight crew procedure to address a lithium battery fire in the cockpit was developed on the basis of key principles: **Fly, navigate, communicate, with appropriate tasksharing.**

As mentioned in the procedure, if at any time of the application of the procedure, the smoke becomes the greatest threat, the flight crew should consider applying the "Removal of Smoke / Fumes" procedure.

Similarly, if the situation becomes unmanageable, the flight crew should consider an immediate landing. Depending on the situation, the captain can consider an overweight landing, a tailwind landing, ditching, or a forced landing.

① Transfer control if necessary

One pilot needs to continue flying the aircraft, while the second pilot addresses the detected fire. The Firefighter must be the flight crew member who is nearest the fire. As a consequence, a transfer of control may be necessary.

② Request initiation of the "Storage Procedure After a Lithium Battery Fire" procedure by the cabin crew

The flight crew must establish communication with the cabin to request them to initiate the **"Storage Procedure After a Lithium Battery Fire"** CCOM procedure.

③ Secure the safety of the flight crew

If flames are present, the Pilot Flying (PF) should put on the oxygen mask and focus on flying the aircraft, while the Firefighter puts on the Portable Breathing Equipment (PBE) and starts fighting the fire.



(fig.8) "Smoke/Fire from Lithium Battery"
FCOM/QRH Procedure - part 1

④ Fight the fire

The Firefighter should use the fire extinguisher to extinguish any open flames.

⑤ If not possible to remove the device, fight the heat in the cockpit

If there are no flames or after the flames are extinguished, the device must be cooled down.

If it is not possible to remove the affected device from the cockpit, the Firefighter or the cabin crew assisting the flight crew should pour water or non-alcoholic liquid on the device to cool it down.

As stated in the FCTM, if the device is attached to a cable that cannot be easily disconnected, then it must be considered that the device is not removable from the cockpit, and water or non-alcoholic liquid must be poured on it.

⑥ If possible to remove the device, transfer the affected device to the cabin

If it is possible to move the device, the cabin crew assisting the Firefighter should transfer it to the cabin and apply the "**Storage Procedure after a Lithium Battery Fire**" procedure. In the case of a flight where no cabin crew is onboard (e.g. freighter aircraft or ferry flight), it is the duty of the Firefighter to perform the storage procedure themselves. ■

(fig.9) "Smoke/Fire from Lithium Battery"
FCOM/QRH Procedure - part 2



Lithium battery fire resilient stowage in the cockpit

Stowage boxes resilient to lithium battery fire are available in the cockpit of A320 family, A330, A340, A350 and A380 aircraft. These stowage boxes have been tested as resilient to a lithium battery fire for 3 minutes. They can be filled with water or non-alcoholic liquid, if needed. **When available, these resilient stowage boxes should be used by the flight crew to safely store their PED during flight** as explained in the FCTM "Procedures - Normal Procedures - General - Clean Cockpit" chapter.

Depending on the aircraft type, one or two types of resilient stowage boxes are available (**Table 1**):

- All **A300-600 and A310 aircraft** are fitted with a resilient flight document stowage box
- All **A320 family aircraft** are fitted with resilient flight document stowage boxes. Resilient checklist & operation manual stowage boxes are installed on newly manufactured aircraft (linefit) from September 2019. A Service Bulletin (SB 25-1BPJ or 25-1BPK) can be applied to replace the checklist and operation manual stowage boxes by resilient ones on previously manufactured aircraft
- All **A330 and A340 aircraft** are fitted with two resilient checklist stowage boxes. A resilient flight document stowage box is installed on newly manufactured A330 aircraft (linefit) from September 2021. It can be installed on previously manufactured aircraft via SB 25-3768 and on A340 aircraft via SB 25-4384 or SB 25-5245
- **A350 aircraft** manufactured from September 2019 are fitted with resilient laptop stowage boxes. Previously manufactured aircraft can be retrofitted with the resilient stowage boxes via SB 25-P147
- **A380 aircraft** manufactured from October 2021 are fitted with resilient laptop stowage boxes. Previously manufactured aircraft can be retrofitted with the resilient stowage boxes via SB 25-8283
- Development is planned on **A220 aircraft** to also add resilient stowages in the cockpit.

Monitored retrofit campaigns are ongoing to install the resilient stowage on in-service aircraft. For more information on the monitored retrofit campaign, please contact the Retrofit Operations team at monitored.retrofit@airbus.com.



(fig.10) Stowage available in the left hand lateral console of an A320 family aircraft

Aircraft	A300-600 /A310	A320 Family	A330	A340	A350	A380
Resilient checklist & operation manual/ laptop stowage	No checklist & operation manual stowage	Linefit from Sept 2019 Retrofit: SB 25-1BPJ (ceo) SB 25-1BPK (neo)	Installed	Installed	Linefit from Sept 2019 Retrofit: SB 25-P147	Linefit from Oct 2021 Retrofit: SB 25-8283
Resilient flight document stowage	Installed	Installed	Linefit from Sept 2021 Retrofit: SB 25-3768	Retrofit: SB 25-4384 (A340-200/300) SB 25-5245 (A340-500/600)	No flight document stowage	No flight document stowage

Table 1: Availability of the resilient stowage boxes on Airbus aircraft

Is my aircraft equipped with resilient stowage?

The flight crew can check if the aircraft they are flying is equipped with a resilient stowage in the "Aircraft Configuration Summary" table of the FCOM/QRH.

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Commercial aviation is significantly exposed to the risk of lithium battery fire. EASA's Safety Information Bulletin published in May 2025 recalls the essential need to inform passengers about the risks of carrying lithium batteries or lithium-battery-powered devices. Passengers should be aware of the limitations and restrictions that apply for the transportation and use of lithium battery-powered-devices onboard an aircraft. The bulletin also highlights the importance of flight crew and cabin crew training.

Lithium battery fires must be treated with an additional step to conventional fires. The first step is to fight the flames with a fire extinguisher. The second step is to cool down the device to stop the thermal runaway of the battery.

Fighting a fire in the cabin or in the cockpit during a flight is a complex task that must be accomplished as a team. It is therefore essential that flight crews and cabin crews are familiar with the FCOM/QRH and CCOM procedures related to lithium battery fires in order to react quickly and appropriately, if needed.

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