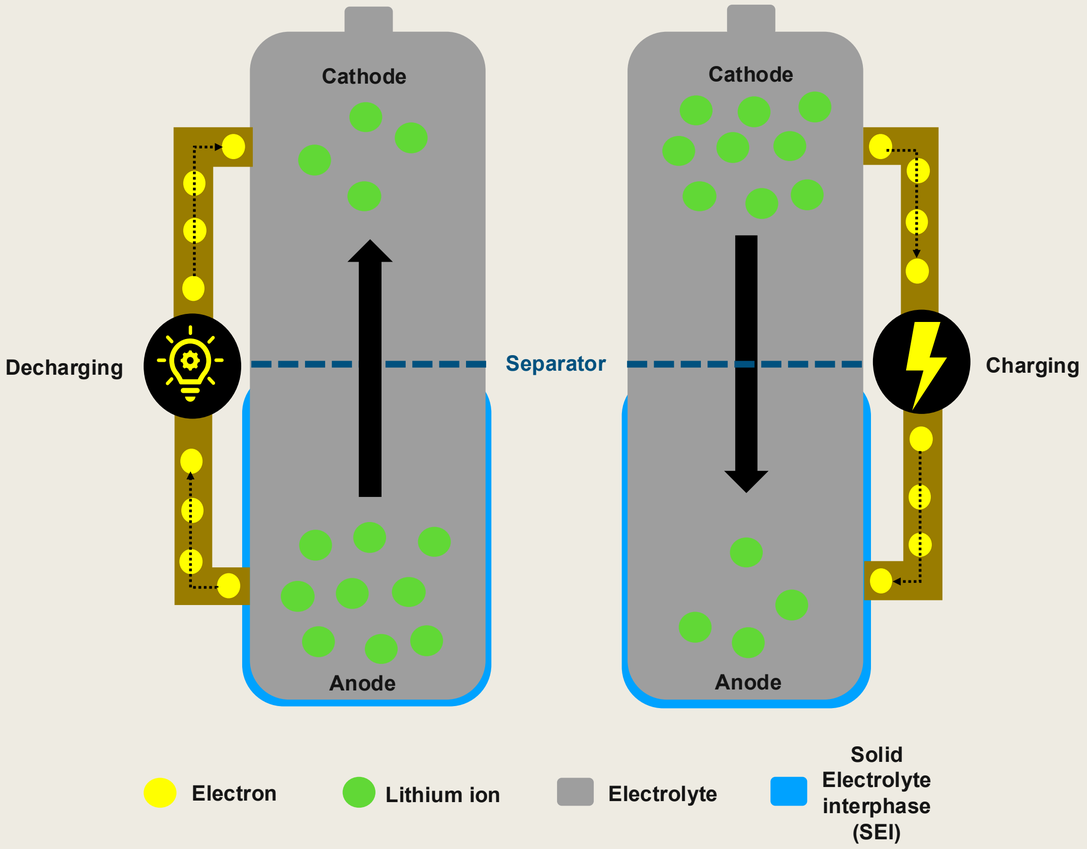
LITHIUM-ION BATTERY EXPLAINED

Anogas
Hydrogel

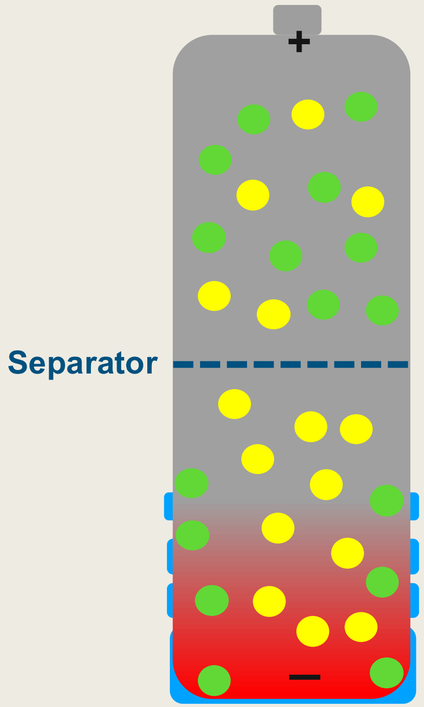


Important components:

1. Solid electrolyte interphase (SEI) layer is formed on the anode due to the decomposition of electrolyte. The SEI protects the electrolyte from further decomposition due to the high reactivity of lithium.

2.The separator is a thin, porous membrane placed between the anode and cathode. Main Functions are to prevent electrical short circuit and allow Li-ion transport.

STAGES OF A THERMAL RUNAWAY – STAGE 1

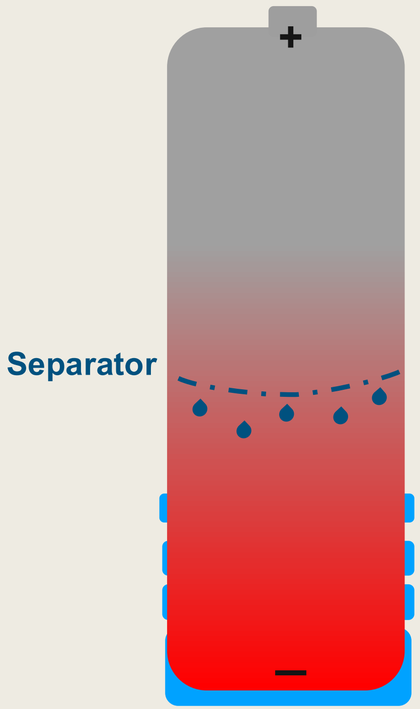


1 Self-Heating Stage (70–160 °C)

- SEI film begins to decompose (~90 °C)
- Anode reacts with electrolyte
- Heat generation accelerates

→ **Still potentially controllable with cooling**

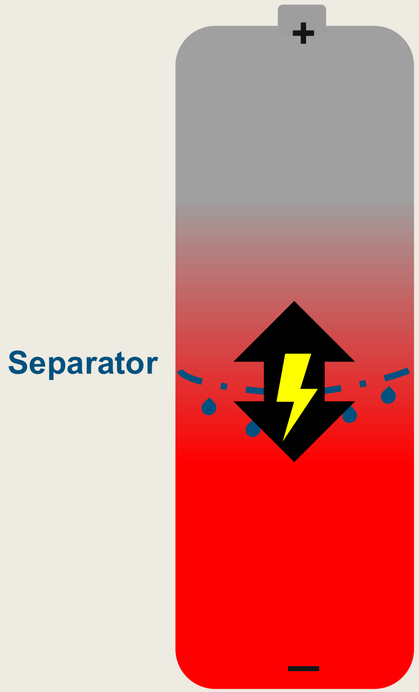
STAGES OF A THERMAL RUNAWAY – STAGE 2



Separator melts (~160 °C)

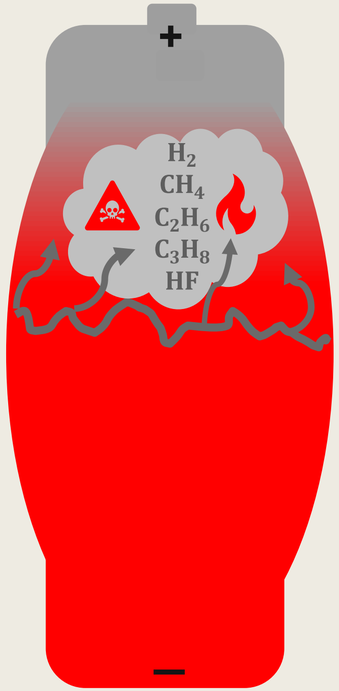
Irreversible once started: battery will explode!

STAGES OF A THERMAL RUNAWAY – STAGE 3



Internal short circuit forms rapid heat generation

STAGES OF A THERMAL RUNAWAY – STAGE 4

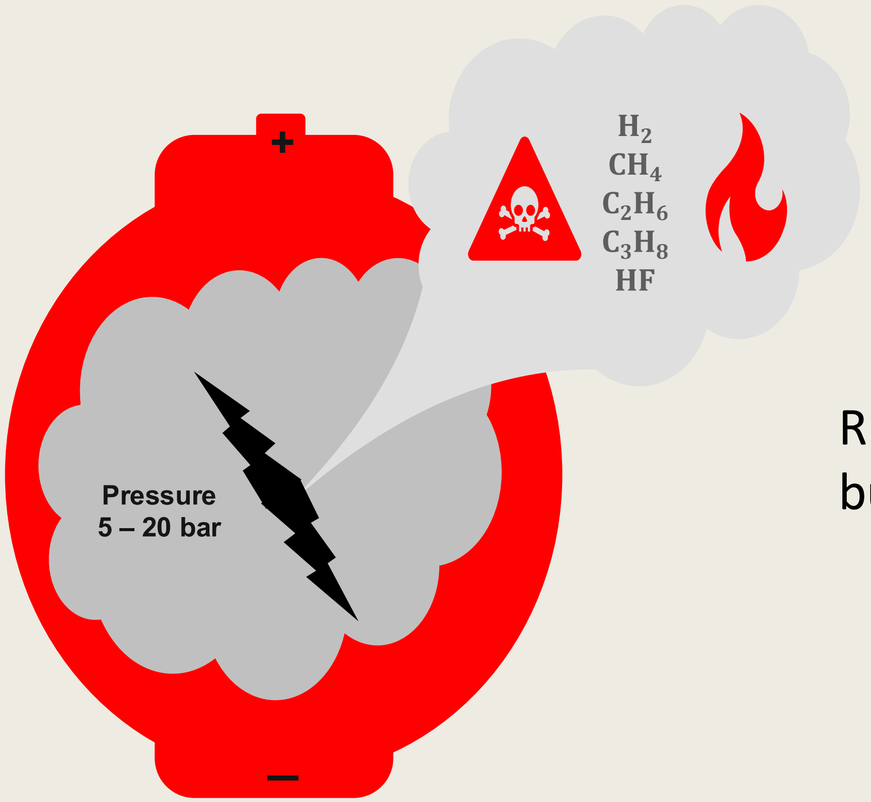


Electrolyte vapourizes and decomposes into burnable and toxic gasses

STAGES OF A THERMAL RUNAWAY – STAGE 5

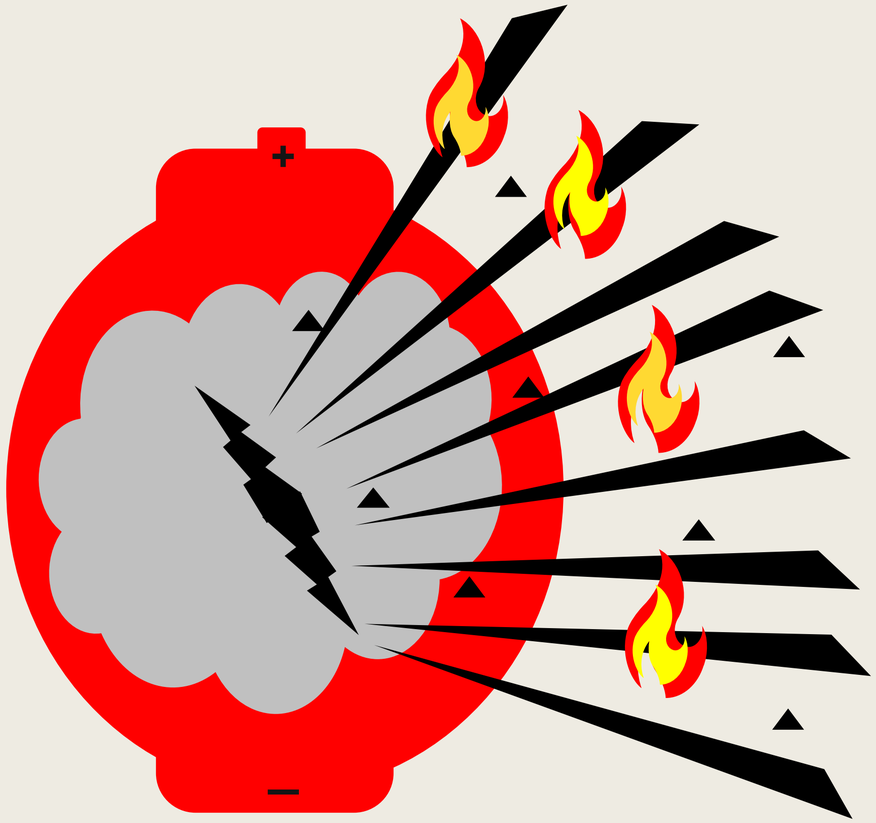
internal pressure builts up by generated gasses

STAGES OF A THERMAL RUNAWAY – STAGE 6



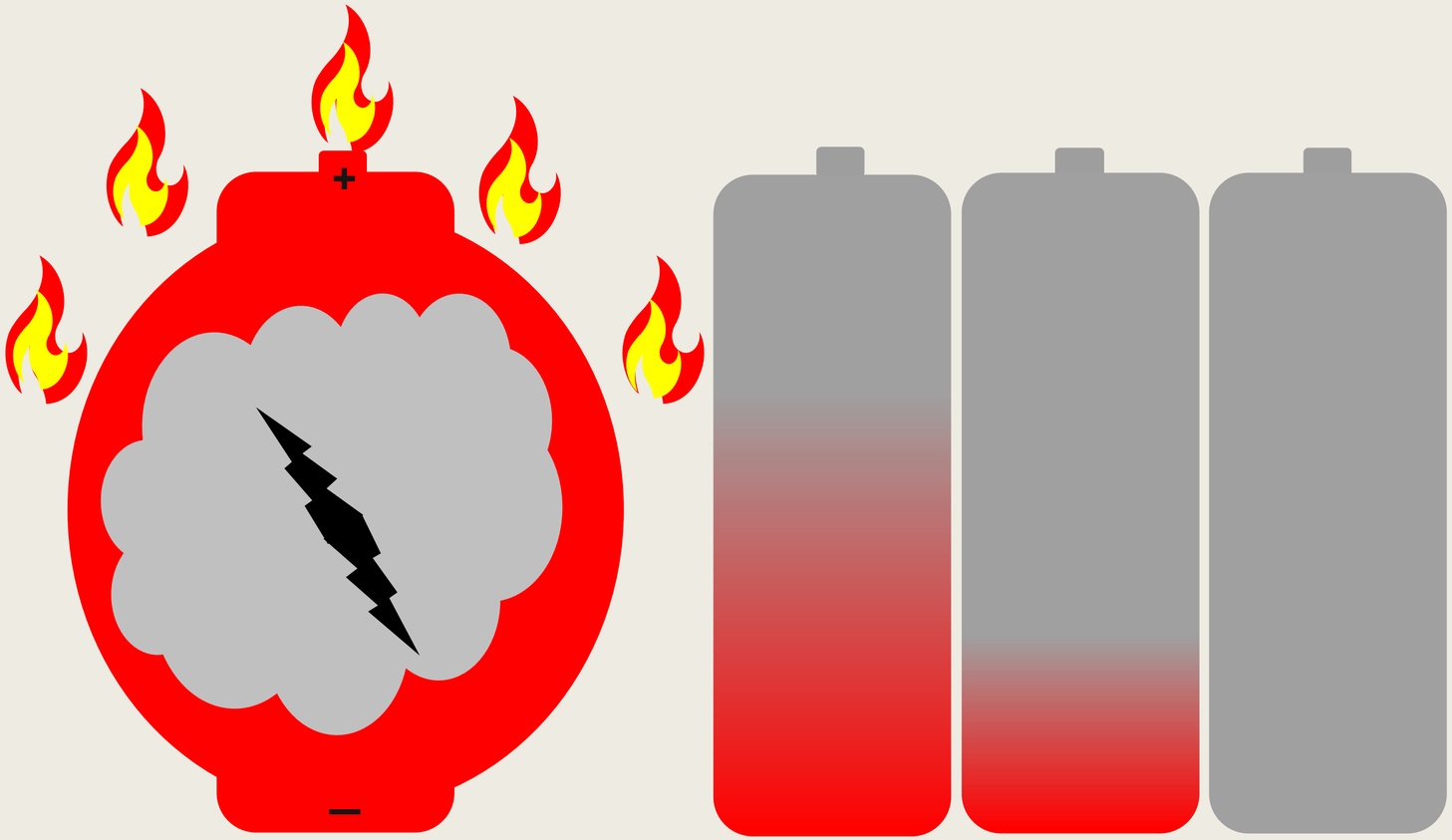
Rupture of battery casing and venting of toxic and burnable gasses

STAGES OF A THERMAL RUNAWAY – STAGE 7



Fire or explosion (short circuit, hot gasses, hot debris)

STAGES OF A THERMAL RUNAWAY – STAGE 8



Immense heat of fire infects adjecent batteries and fire intensifies and spreads rapidly