DGP-WG/24-IP/7
24/10/24

DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/24)

Montreal, 21 to 25 October 2024

Agenda Item 4: Managing safety risks posed by the carriage of lithium batteries by air (Ref: Job Card DGP.003.05)

UPDATE ON PROGRESS MADE BY THE UN SUB-COMMITTEE'S INFORMAL WORKING GROUP ON LITHIUM BATTERIES IN THE DEVELOPMENT OF A HAZARD-BASED CLASSIFICATION SYSTEM FOR LITHIUM BATTERIES AND CELLS

(Presented by the Secretary)

SUMMARY

Attached is a presentation delivered to DGP-WG/24 by the chairman of the UN Sub-Committee's Informal Working Group on Lithium Batteries on progress made in the development of a hazard-based classification system for lithium batteries and cells. It supplements the information provided in DGP-WG/24-IP/3.

(13 pages)
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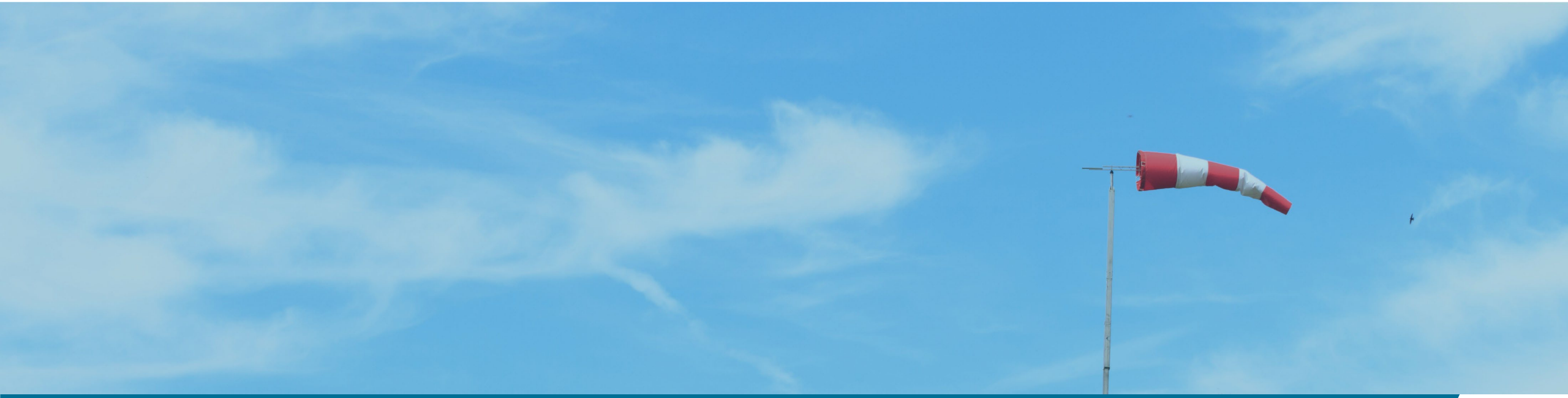

UN RECLASSIFICATION OF LITHIUM BATTERIES

3/11/2024

Remko Dardenne - Dangerous Goods Coordinator BCAA

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STRUCTURE

- History
- Basic Principles
- Test Protocol
- Classification Scheme
- Update of work

HISTORY

Start in 2016

- UNSCETDG agreed to this work at the request of ICAO with the following mandate:
  - Prepare a hazard-based system to classify lithium batteries and cells for transport
  - Determining the inherent hazards represented by lithium batteries and the types of reaction that may result.
  - Destructive testing should be considered.
    - IWG Chairman Claude Pfauvadel (France)
    - IWG Secretary Claude Chanson (Recharge)

HISTORY

Status update June 2024

- Working paper introduced at UNSCETDG ST/SG/AC.10/C.3/2024/13
  - Feedback from UNSCETDG
  - New IWG meeting August 2024
    - Chairman Remko Dardenne (Belgium)
    - Secretary Claude Chanson (Recharge)

BASIC PRINCIPLES

- The hazards applicable to lithium cells/batteries:
  - The capability for a thermal runaway to propagate from cell to cell, and battery to battery
  - The capability to generate a flame
  - The capability to generate significant quantities of toxic and/or flammable gas
  - The capability to produce high temperature

- Based on these hazards a new classification scheme was proposed

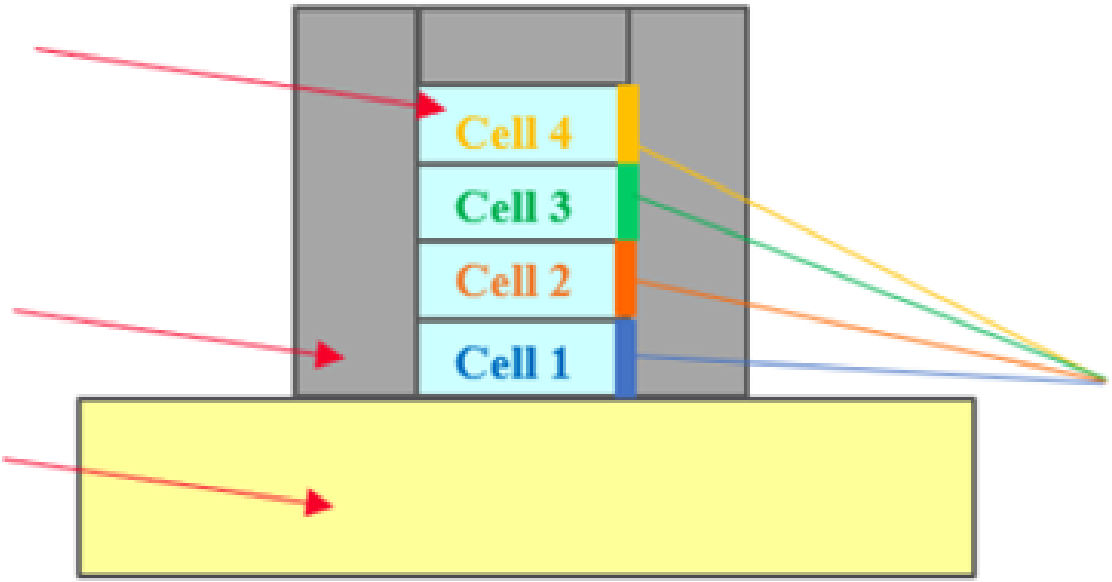
TEST PROTOCOL

Configuration

4 pieces of all-solid-state cells

Insulation

Hot plate

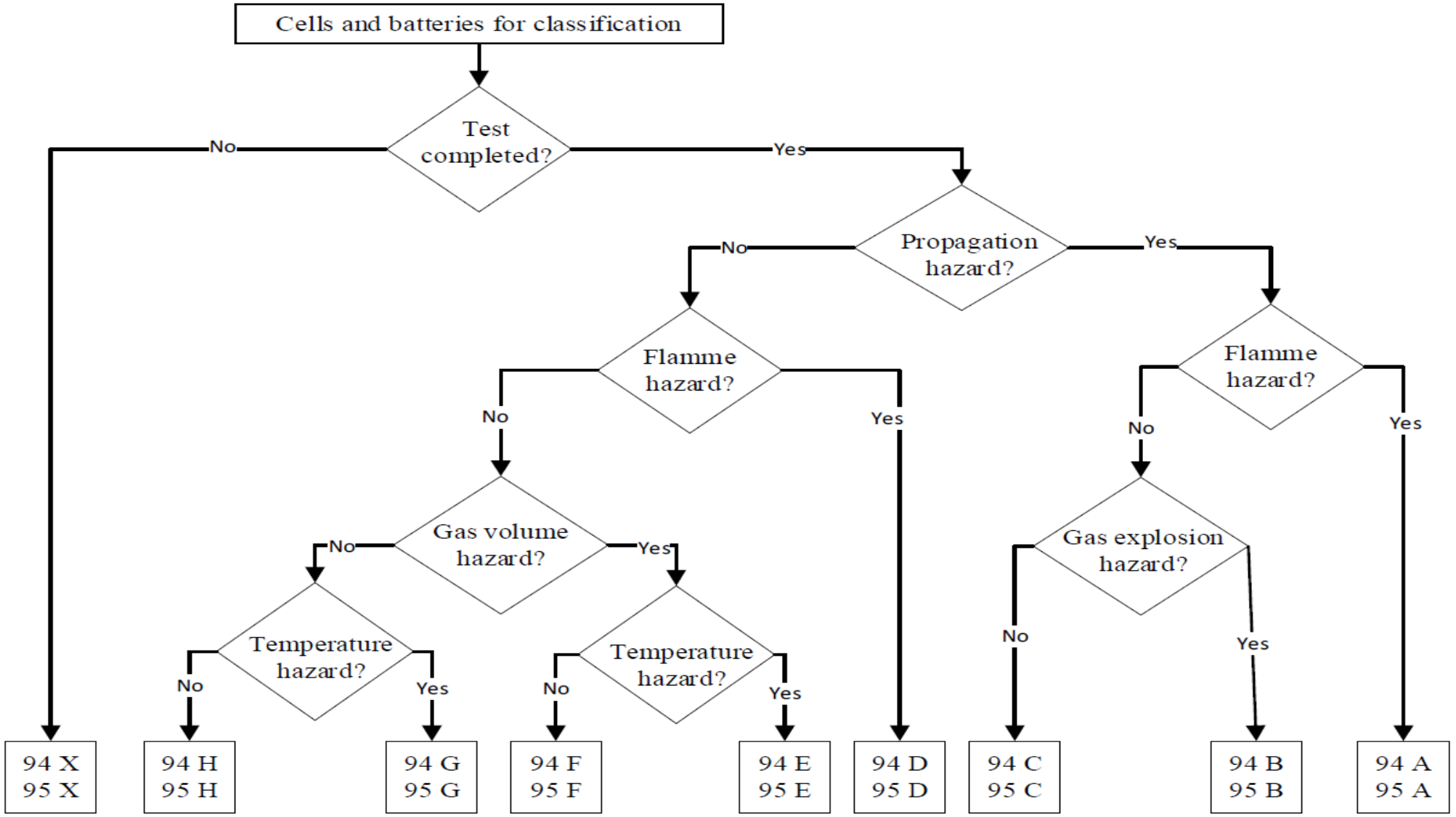


- SOC 100% charged
- the starting temperature 25°C
- the finishing temperature 350°C
- 15°C ± 10 °C/min
- keeping 30min after reach 350°C

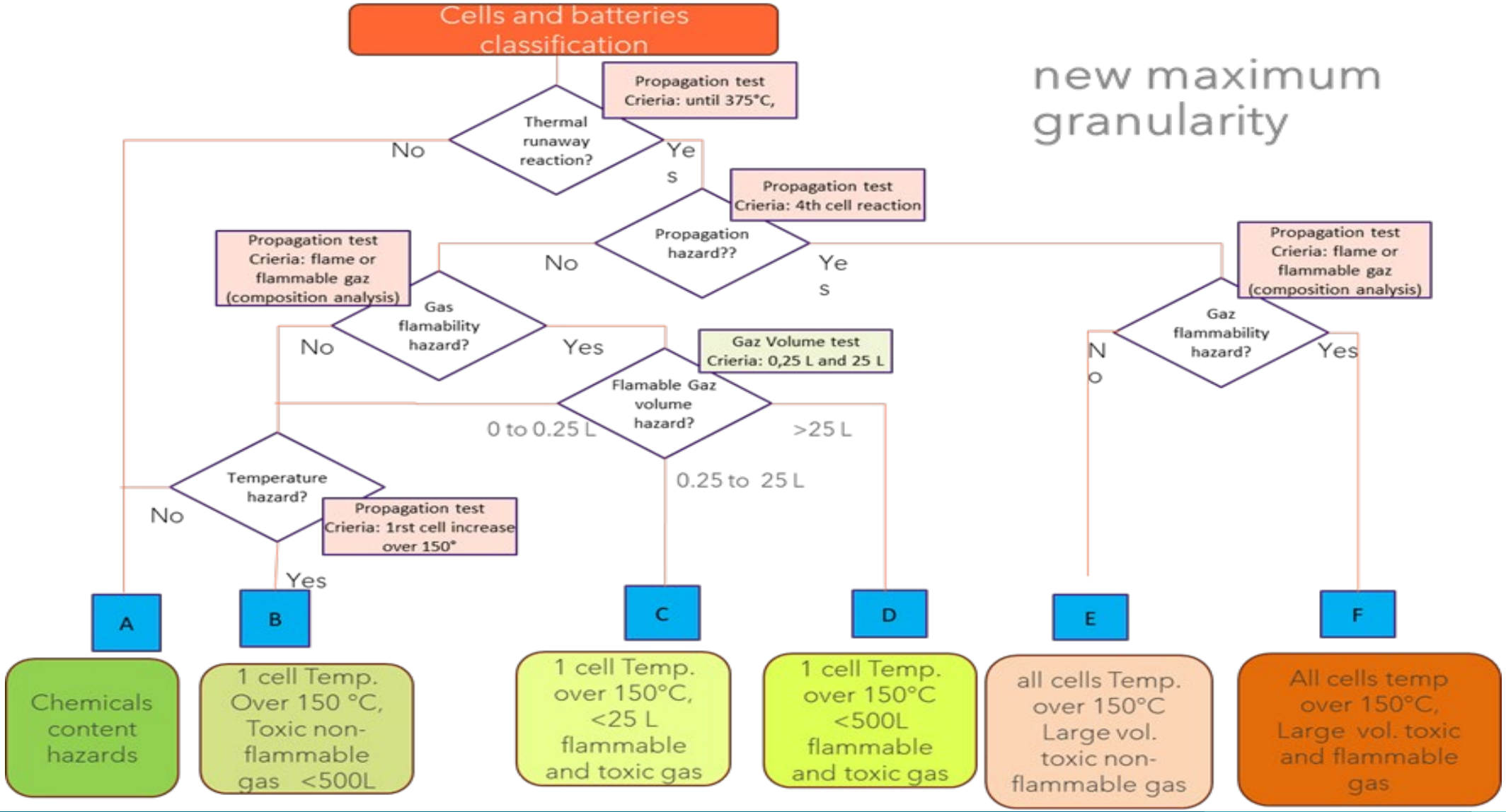
Temperature measurement points each cell / hot plate
Cell 1 is called as an initiation cell.

Fig. 5: Type A - Outlook of propagation test according to the hazard-based classification testing protocol.

CLASSIFICATION SCHEME

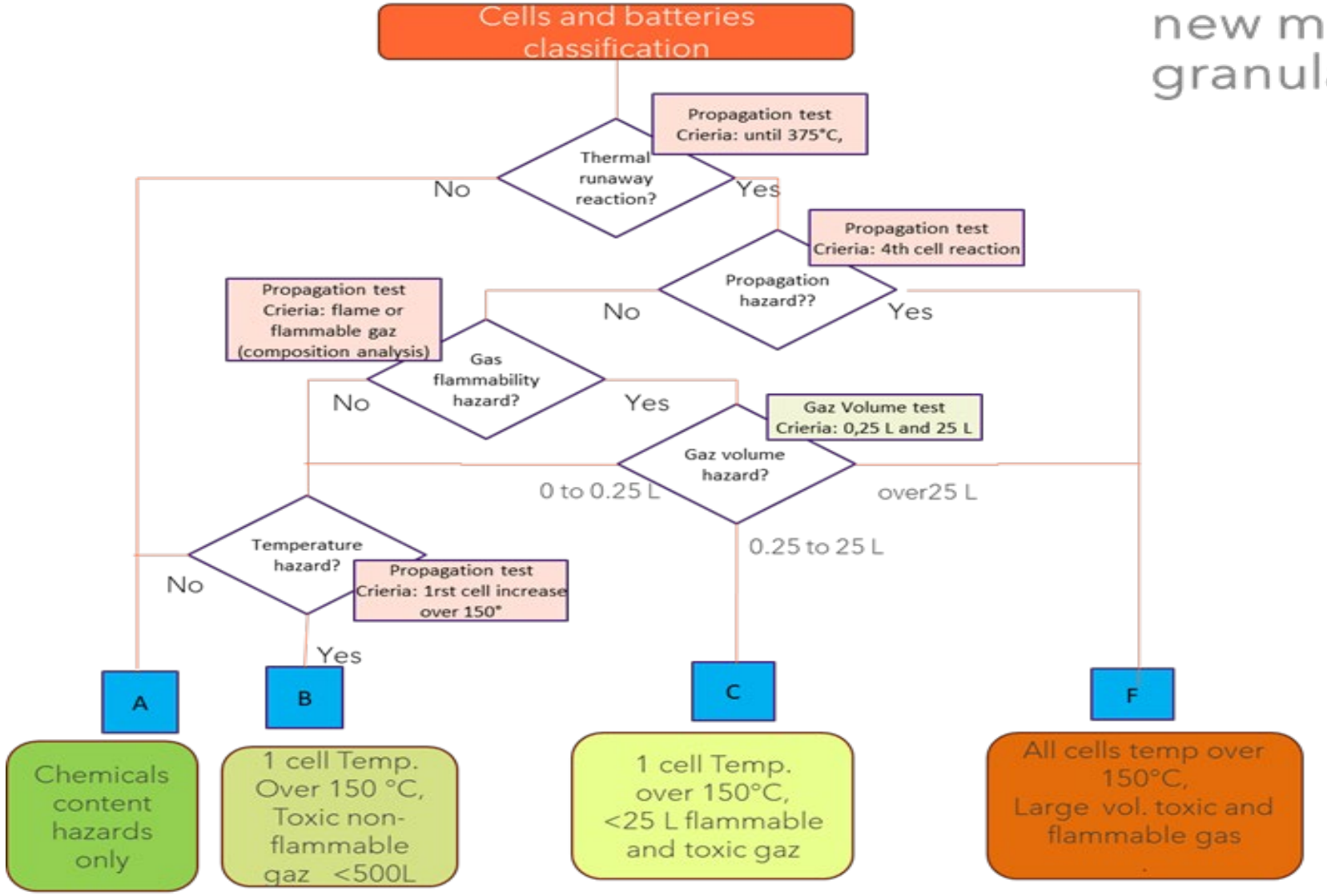


UPDATE OF WORK



new maximum granularity

UPDATE OF WORK



new minimum granularity

UPDATE OF WORK

- Testing will be mandatory
- Baseline testing will be conducted at 100% SoC
- Sodium ion batteries will be included in the testing scheme, recognizing there may be additional considerations for non-reactive batteries
- Informal paper introduced at UNSCETDG December 2024 UN/SCETDG/65/INF.16

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Thank you for your attention!

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