

## Rule 26-506 Ventilation requirements for vented lead acid batteries room or areas

### **Background:**

Questions have been raised about ventilation requirements for lead acid batteries. There are two types of lead acid batteries: vented (known as “flooded” or “wet cells”) and valve regulated batteries (VRLA, known as “sealed”). The vented cell batteries release hydrogen continuously during charging while the VRLA batteries release hydrogen only when overheated and/or overcharged. The vented cell batteries emit approximately 60 times more hydrogen than comparably rated VRLA batteries.

The battery rooms must be adequately ventilated to keep the concentration of hydrogen gas within safe limits, this is especially important for vented batteries. Below is a picture depicting the extent of damage due to a ventilation failure



### **Question:**

What is considered as “adequate ventilation” for vented lead acid batteries room or areas as per Rule 26-506 1)?

### **Answer:**

Unless exempted below, ventilation requirements for a room or area housing batteries are required to be as per manufacturer installation instruction, or calculated by a competent person (such as mechanical designer).

The following installations are considered adequately ventilated:

1. Vented type batteries connected to a charging device with a power output of less than 200 Watt.
2. Installations with not more than three 12 V vented type lead acid (automotive) when installed in a space not less than 74 m<sup>2</sup> (800 ft<sup>2</sup>), with a minimum height of 2.4 m (8 ft); or
3. Vented type batteries installed within a certified assembly, such as Energy storage system (ESS) or Uninterruptable Power Supply (UPS).

Note: Valve regulated batteries (VRLA) or sealed batteries do not need to meet the requirements of 26-506 1)

***Rationale:***

This direction is based on the Canadian standard for ships, “Ships Electrical Standards (2018) - TP 127 E” that has the following requirement for vented batteries:

“Vented batteries connected to a charging device with a power output of less than 0.2 kW (calculated as in subsection 19.4.6) may be installed open, if protected from above from falling objects, or in a battery box in any suitable space.”

The simplified calculation of the produced hydrogen for three 12 V (automotive) type batteries is based on 200 W charger, forced ventilation is not required since the calculated hydrogen level is well below 1% limit after 1 hour at maximum charging