Estates and Facilities Notice

Reference: EFN2501 **Issued:** 21 May 2025

GS Yuasa SWL1100FR Lead Acid Battery: reports of smoking and electrical fires in UPS systems

Summary

GS Yuasa were made aware that a small number of UK manufactured SWL1100FR lead acid batteries were found with a fissure on the corner of the battery container. Electrolyte leakage via this fissure results in localised corrosion to the battery shelf or tray. On occasion this has resulted in earthing (a "short"), causing blackening of the battery container and smoke.

Action

1. **Customer Recommended Preventive Action** - At maintenance visits check each battery shelf visually for signs of corrosion and additionally test for earthing by looking for either voltage or continuity between the battery string and the shelf it is placed upon. If any earthing, smoke or blackening is observed, the system should be isolated and reported to your local GS Yuasa contact (see Enquiries section for contact details).

Equipment details

Manufacturer name:	GS Yuasa
Brand name:	Yuasa
Device name:	SWL 1100FR lead acid battery
Product code:	(date code) 22120728 – 24051428
Manufacture dates:	May 2022 – May 2024

Background Information

Based on the testing carried out, GS Yuasa determined that the FR material used solely on SWL1100FR with a date code starting 22120728 until 24051428 is susceptible to impact damage. Impact could occur during storage, transit, positioning, handling & installation and can lead to a fissure even with no other evidence of damage to the container.

From 15th May 2024 the ABS material used on the SWL1100FR was changed to an alternative approved supplier. This material was tested and passed drop and impact testing. As an additional measure, the SWL1100FR container tooling has also been modified to help reduce stress in the component and 3D design software was utilised to compare the stress before and after the change. The container modifications increased the radius of the internal corners and thickness of the internal side walls. After carrying out internal stress testing it was clear that product produced after these actions is substantially less susceptible to any external forces.

Enquiries - manufacturer or supplier contact details

GS Yuasa technical on (+44) 01495 354 000 or in line with the GS Yuasa process of contacting your supplier.

Suggested onward distribution (may not include all affected departments)

Estates departments H&S Teams Supporting Hard FM suppliers

References and other resources

1. Technical Statement on SWL1100FR dated 10th October 2024 (see Appendix)
2. NAHFO Newsletter November 2024 - NAHFO Bulletin

About this notice

This notice has been compiled under a partnership arrangement by the organisations below and it has been distributed across the UK. Enquiries should be directed to the appropriate Regional Office quoting the reference number **EFN2501**.

Accessibility: please contact us using the details below if you have special requirements and would like to request this notice in a more suitable format.

England:

Enquires should be emailed to england.estatesandfacilities@nhs.net. Defects or failures should be reported on this system: https://efm.digital.nhs.uk/

The web-based D&F reporting system is managed by NHS England. For further information on this system, including obtaining login details, please contact the EFM-information Helpdesk. Tel 0300 303 5678.

Northern Ireland:

Enquiries and adverse incident reports in Northern Ireland should be addressed to:

Tel: 028 9052 3868,
Email: niaic@health-ni.gov.uk,
Web: Northern Ireland Adverse Incident Centre (NIAIC) | Department of Health

Please report adverse events in Northern Ireland to NIAIC here: how to report an adverse incident

Scotland

Incident Reporting & Investigation Centre (IRIC), Facilities Division, NHSScotland Assure
NHS National Services Scotland, 0131 275 7575, nss.iric@nhs.scot. Find our learning resources on Turas or visit our website to report an incident, find safety alerts, and watch our short video

Wales

Enquiries and adverse incident reports in Wales should be addressed to:

NHS Wales Shared Services Partnership – Specialist Estates Services
4th Floor, Companies House, Crown Way, Cardiff CF14 3UB
Tel: 029 2090 4118 or E-mail: efa.ses@wales.nhs.uk

Appendix

Technical Statement on SWL1100FR

10th October 2024

Dear Customer

Background

We have been made aware that a small number of UK manufactured SWL1100FR's have been found with a fissure on the corner of the battery container. A small quantity of electrolyte has passed through the fissure over time and this has resulted in localised corrosion to the battery shelf or tray and occasionally some earthing has occurred leading to blackening of the battery container and some smoke. Initially we put this failure mode down to transport / installation impact damage, and our product teardown analysis supported this root cause theory.
Despite this, GS Yuasa instigated an internal investigation to determine if our manufacturing processes or raw materials had an influence on the reported fissures or whether this is purely a transport/installation effect. To help us better understand the effects of potential impact damage to the batteries we carried out the following drop test & impact test.

- SWL1100FR's from April 2024 production were tested and passed the requirements of IEC60896 clause 6.21 "stability against mechanical abuse of units during installation", this test involves a 100mm drop onto the bottom of the container edge and corner with a close inspection for leakage after.
- An impact test was performed; A 500g steel ball was dropped through a graduated pipe from a height of 200mm onto the 4 corners of a sample of blocs also manufactured in April 2024, no indentation could be observed on the containers following the test but on 5% of the drops a fissure was generated. The indication from this test being that in certain circumstances a fissure could be generated from an impact that does not mark the battery container.

At the UK factory we have approved multiple ABS manufacturers for flame retardant (FR) material to ensure continuity of supply at our onsite injection moulding facility, predominantly we use two on a day to day basis. To become approved for manufacturing, a material is tested physically and chemically over a long period including a full accelerated life test to IEC60896 clause 6.16 at our UKAS laboratory, this process routinely takes 18 months to complete. As part of our ongoing investigations we have observed that product returned and tested has a correlation between an ABS change on 7th December 2022 and the 14th May 2024. The manufacturing process has remained unchanged on this battery model over the past 10 years and therefore determined not to be influencing the generation of fissures.

GS Yuasa Battery Manufacturing UK Ltd, Unit 22, Rassau Industrial Estate, Ebbw Vale, NP23 5SD
Tel. (+44) 01495 354 000
Registered Number: 1561536 VAT Number: 787449074

Certificate No: FM 10626 Certificate No: EMS 55229 Certificate No: OHS 532991

Technical Statement on SWL1100FR

Conclusion and Preventative Action

- Based on the testing summarised above we have determined that the FR material used solely on SWL1100FR with a date code starting 22120728 until 24051428 is more susceptible to impact damage. The impact which could occur during storage, transit, positioning, handling & installation can lead to a fissure even with no other evidence of damage to the container. From the 15th May 2024 the ABS material used on the SWL1100FR was changed to an alternative approved supplier. This material was tested and proved resistant to the drop and impact testing as referenced earlier in this statement. As an additional measure, the SWL1100FR container tooling has also been modified to help reduce stress in the component, 3D design software was utilised to compare the stress before and after the change. The container modifications increased the radius of the internal corners and thickness of the internal side walls.

- After carrying out internal stress testing it was clear that product produced after these actions is substantially less susceptible to any external forces. As with all VRLA batteries, if the product is handled correctly, we can state with confidence that the SWL1100FR battery has no risk of this failure mode occurring.

Customer Recommended Preventive Action

- At maintenance visits check each battery shelf visually for signs of corrosion and additionally test for earthing by looking for either voltage or continuity between the battery string and the shelf it is placed upon. If any earthing, smoke or blackening is observed, the system should be isolated and reported to your local GS Yuasa contact.

Yours sincerely

Shaun Gardner
Managing Director
GS Yuasa Battery Manufacturing UK Ltd