November 5, 2019

Associated MSA Product(s): Altair® 2X Gas Detection Monitors

The attached test summary report(s) have been provided by the cell manufacturer(s) and have been prepared in accordance with The UN Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria, Amendment to the 6th Edition, Section 38.3.5 – Lithium cell or battery test summary. The attached summary report(s) indicates the successful completion of tests as required in the UN Manual of Tests and Criteria for the lithium metal cell(s) that may be used in all configurations of MSA Altair® 2X Gas Detection Monitors. The attached summary applies to all MSA Altair® 2X Gas Detection Monitor lithium metal batteries.

The attached test summary report(s) were provided by the cell manufacturer(s). A formal request for the original test data shall be made through the manufacturer of the cell.

Sincerely,

David F. Vogt

Global Environmental Program Manager
**UN 38.3 Test Summary Report**

Lithium Cell or Battery Test Summary in Accordance with Section 2.9.4 UN Model Regulations and Sub-section 38.3 of the UN Manual of Tests and Criteria, Part III, subsection 38.3.5

[a] ☑ Cell ☐ Battery ☐ Product
☑ Tested Type Part #: LS17330 (UK)
☐ Same Type Part #:

[b] Manufacturer
Saft Civil Electronics Division
Saft Ltd
River Drive, South Shields, Tyne and Wear,
NE33 2TR, UK
T. +44(0) 191 456 1451
Stephen.Clark@saftbatteries.com
https://www.saftbatteries.com

[c] Test Laboratory
Alphatech Environmental Test Laboratory
Alphatech Ltd, Green House,
Homefield Road Ind Est, Haverhill, Suffolk,
CB9 8QP
T. +44 (0) 1440 714 709
info@alphatech.co.uk
https://www.alphatech.co.uk


[f] (i) ☐ Li-ion ☑ Li-metal.

(iv) **Description:** Primary (non-rechargeable) Lithium-Thionyl Chloride (Li-SOCl2) "2/3 A" sized LS17330 cell.

(ii) Mass: 14.4g

(iii) ☐ Watt hour rating or ☑ Lithium content: 0.6g.

(v) ☑ Cell ☐ Battery ☐ Product. Model number/Part number: LS17330 (UK)

[g] List of Tests Conducted

<table>
<thead>
<tr>
<th>Test Conducted</th>
<th>Result (Pass / Fail / N.A.)</th>
<th>Test record reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.3.4.1 T.1: Attitude simulation</td>
<td>Pass</td>
<td>102102</td>
</tr>
<tr>
<td>38.3.4.2 T.2: Thermal test</td>
<td>Pass</td>
<td>102102</td>
</tr>
<tr>
<td>38.3.4.3 T.3: Vibration</td>
<td>Pass</td>
<td>102102</td>
</tr>
<tr>
<td>38.3.4.4 T.4: Shock</td>
<td>Pass</td>
<td>102102</td>
</tr>
<tr>
<td>38.3.4.5 T.5: External short circuit</td>
<td>Pass</td>
<td>102102</td>
</tr>
<tr>
<td>38.3.4.6 T.6: Impact/Crush (cell only test)</td>
<td>Pass</td>
<td>T0185-13</td>
</tr>
<tr>
<td>38.3.4.7 T.7: Overcharge (N.A for Li-metal only)</td>
<td>N.A.</td>
<td>N/A</td>
</tr>
<tr>
<td>38.3.4.8 T.8: Forced discharge (cell only test)</td>
<td>Pass</td>
<td>T0185-13</td>
</tr>
</tbody>
</table>

*h] Battery assembly: ☐ Not Applicable. ☑ UN38.3.3 (f) ☐ UN38.3.3 (g)


[j] Signatory A. Date: 05/11/2019

Name: Stephen Clark
Title: Saft CE, Senior Battery Engineer
Signature:

[j] Signatory B. Date: 05/11/2019

Name: Stephen Harrison
Title: Saft CE, Company Secretary
Signature:

**Important!** The above signatory / signatories affirm that this document is a true and correct summary of the original individual tests and test data. The original test data is confidential information available to competent State Authorities with valid identification and only upon their formal request. Disclosure of the original test data to any other entity upon its request will be considered by Saft and, should Saft consider this request is with merit, may be subject to the prior execution of a nondisclosure agreement.