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1 (855) ORS-LABS

Attn: Internal Vapor Analysis Group
E-mail: iva@orslabs.com

Internal Vapor Analysis™ Submission Form

Client: _____ Date: _____
 Company: _____ P.O. No.: _____
 Address: _____ Rel No.: _____
 _____ Tel: _____
 E-mail: _____ Fax: _____
 E-mail Results? Fax Results?

Package Type(s): _____ # of Samples: _____
 Do samples require ESD precautions during analysis? YES NO

PACKAGE HERMETICITY ANALYSIS

Hermeticity Testing

Helium Fine Leak Perfluorocarbon Gross Leak
 Radioisotope (Kr-85)*
 Fine Gross Reject Limit: _____ atm cc/sec Air

Leak Site Identification

Fluorescent Dye Impregnation/Cross-Sectioning
 Helium Sniff Testing

PACKAGE INTERNAL VAPOR ANALYSIS See reverse side for description of test methods.

SOP MEL-1053: Internal Vapor Analysis - Commercial Practice

IVA (sample volumes >0.01cc) High Resolution IVA (HR-IVA) (sample volumes <0.01cc or vacuum sealed)

SOP MEL-1018*: DLA Land and Maritime Suitability for Military Devices - Internal Gas Analysis

Qualification ATT attached? Yes No QCI Other
 IVA (sample volumes >0.01cc) High Resolution IVA (HR-IVA) (sample volumes <0.01cc or vacuum sealed)

*As part of the Laboratory Suitability program, ORS must include this data in its retention report to DLA Land and Maritime.

SOP MEL-1070: Gas Analysis of Sealing Chamber Atmosphere (sampling cylinders available from ORS).

SOP MEL-1080: Identification of UNKNOWN volatile organic compounds by IVA/GC/MS.

<u>Prebake</u> <input type="checkbox"/> None <input type="checkbox"/> 16-24 Hrs. @ 100°C <input type="checkbox"/> Other: _____	<u>Failure Criteria</u> <input type="checkbox"/> 5000 ppmv Moisture <input type="checkbox"/> Other: _____ <input type="checkbox"/> None	<u>Device Internal Pressure</u> <input type="checkbox"/> ~1 ATM <input type="checkbox"/> Other: _____
<u>Device Test Temperature</u> <input type="checkbox"/> 100°C <input type="checkbox"/> Other: _____	<u>Test Quantity</u> <input type="checkbox"/> All <input type="checkbox"/> 3 if no failures, 5 with any failures <input type="checkbox"/> 3 if no failures, 5 with 1 failure, stop after 2 failures <input type="checkbox"/> Other: _____	<u>Device Internal Volume</u> <input type="checkbox"/> _____ cc
<u>Special Puncture Site Required?</u> <input type="checkbox"/> No <input type="checkbox"/> Yes; Location: _____		<u>Device / Cylinder Fill Gas</u> <input type="checkbox"/> Nitrogen <input type="checkbox"/> Nitrogen/Helium <input type="checkbox"/> Air <input type="checkbox"/> Other: _____
<u>Wall Thickness at Puncture Site</u> <input type="checkbox"/> Mils: _____ <input type="checkbox"/> Unknown	<input type="checkbox"/> Mandatory test conditions for SOP MEL-1018	<u>Cylinder Pressure</u> <input type="checkbox"/> ~1 ATM <input type="checkbox"/> Other: _____

Additional Report Option - Mass Spectra Report (AMU vs. Intensity)

MATERIALS / ADHESIVE OUTGASSING STUDIES

Headspace GC/MS by Thermal Desorption Prebake / Test Conditions:
 Outgassing Analysis by ORS Glass Ampule Sealing Method
 Analytical Technique: IVA IVA/GC/MS

Return Shipment

UPS: Red Blue Ground
 Fed Ex: Pr. 1 Std. Econ.
 Other:
 Acct. #:

Additional Instructions or Restrictions

DESCRIPTION OF TEST METHODS

SOP MEL-1053: Internal Vapor Analysis – Commercial Practice

This test procedure is used for testing hermetic devices in accordance with ORS' Commercial Practice for Internal Vapor Analysis. This test method extends the scope and capabilities of traditional Mil-Std 883, Test Method 1018 analysis. It permits variations to the procedure and/or device test conditions to achieve the best test conditions for specific client applications. Client specific protocols may be established for maximum accuracy and sensitivity for product monitoring applications, process development, R&D, materials evaluations and Failure Analysis projects. The data is not subject to inclusion in the annual retention report to DLA Land and Maritime and all records regarding these tests are confidential. Contact ORS for a copy of this extended test method.

SOP MEL-1018: DLA Land and Maritime Suitability for Military Devices - Internal Gas Analysis

This test procedure is used exclusively for testing hermetic devices in accordance with Mil-Std 883 or 750, Test Method 1018, Procedure 1 per the conditions of "Suitability" status granted by DLA Land and Maritime. No variations are permitted to this procedure or to the device test conditions. Furthermore, all tests performed per this procedure are subject to inclusion in the annual retention report to DLA Land and Maritime and all records regarding these tests are subject to audit and inspection by the U.S. Government. Suitability range: 0.001cc to infinite volume.

- **IVA:** Internal Vapor Analysis utilizing a Quadrupole Mass Spectrometer for sample volumes greater than 0.01cc.
- **HR-IVA:** High Resolution Internal Vapor Analysis utilizing a custom compact Time-of-Flight (TOF) Mass Spectrometer designed specifically for sample volumes less than 0.01cc and/or vacuum sealed devices.

SOP MEL-1070: Gas Cylinder Analysis of Sealing Chamber Atmospheres

This test method quantitatively measures the process sealing gases sampled from sealing chambers and/or gas supply lines using a specially prepared sampling cylinder. Sampling procedures are described in the instructions provided with the sampling cylinders. Contact ORS for availability and retail sampling cylinders.

SOP MEL-1080: Identification of UNKNOWN Volatile Organic Compounds by IVA/GC/MS

This test method is used to identify unknown volatile compounds that may be detected in IVA test methods (identified as UNKNOWN compound(s)) but may not be conclusively identified due to the complexity or trace quantity of the mass spectra. The method uses IVA inlet technology interfaced with GC/MS. Standard hermetic devices or individual materials sealed in gas ampules may be analyzed. The technique is useful in understanding the chemical processes of material outgassing and chemical reactions from environmental stress.

SOME IMPORTANT REMINDERS

- Please provide a valid Purchase Order and, if requested by your company, a Release Number.
- Please be sure to specify all and any Additional Instructions or Restrictions that should be followed during sample handling, testing or shipment.
- Unless otherwise requested, test reports and samples will be returned via UPS Ground.
- All shipping and handling fees associated with the transportation of samples to and from our testing facility, as well as special courier fees for expediting test reports, are the responsibility of the client.
- Standard tests and analyses are typically completed within 1 - 2 working days. Methods development and extraordinary applications may extend this time frame.
- On-site visits are encouraged and we welcome your personal involvement during sample analysis.
- Volume discounts are available. Please contact our Sales Department for information.
- For further technical information, please contact the Internal Vapor Analysis Group at 1 (855) ORS-LABS.