



Air Liquide Electronics U.S. LP
46409 Landing Parkway, Fremont CA 94538
Telephone [REDACTED] Fax [REDACTED]

MR JUERGEN HAHN
LEVITRONIX TECHNOLOGIES
20 SPEEN STREET
SUITE 102
FRAMINGHAM MA 01701

Work Order: 21-06104
Revision: 2
Report Date: 16-Jun-21
Order Date: 26-May-21
P.O.: 21.005
Release:

Phone: [REDACTED]
Fax: [REDACTED]

TM **BALAZS TEST RESULTS**

If you have any questions regarding the results, please call Quynh Le at [REDACTED]

The information contained in this electronic or original document is confidential information for the intended recipient. If you are not the intended recipient, or the employee or agent responsible for delivering this document to the intended recipient, you are hereby notified that any disclosure, dissemination, distribution or copying of this communication is strictly prohibited. If you have received this document in error, please immediately notify the sender and destroy this document .

This report, including any attachments has been reviewed and approved by

Lilibeth Valenzuela

Laboratory Supervisor

These results were obtained by following standard laboratory procedures and are only representative of the samples as received by the laboratory. The liability of AIR LIQUIDE - BALAZS NanoAnalysis ("Balazs") shall not exceed the amount paid for this report. In no event shall Balazs be liable for special or consequential damages. Client agrees not to use Balazs' name in reporting results obtained from tests performed by Balazs without first obtaining Balazs written consent as to such use. Report shall not be reproduced except in full, without the written approval of Balazs.

Sample: #8-UBQ 021

Site: LPP-600.29

ID: PUMP HEAD

Component	Units	Detection Limit	Result Value
W0174-UPW-N-L-C Leachable Low Level 30 Elements in UPW			
Aluminum (Al)	µg/m ²	0.2	*
Antimony (Sb)	µg/m ²	0.07	*
Arsenic (As)	µg/m ²	0.7	*
Barium (Ba)	µg/m ²	0.03	*
Bismuth (Bi)	µg/m ²	0.1	*
Boron (B)	µg/m ²	2	5
Cadmium (Cd)	µg/m ²	0.1	*
Calcium (Ca)	µg/m ²	2	*
Chromium (Cr)	µg/m ²	0.1	*
Cobalt (Co)	µg/m ²	0.07	*
Copper (Cu)	µg/m ²	0.2	*
Gallium (Ga)	µg/m ²	0.1	*
Germanium (Ge)	µg/m ²	0.2	*
Iron (Fe)	µg/m ²	0.3	*
Lead (Pb)	µg/m ²	0.2	*
Lithium (Li)	µg/m ²	0.1	*
Magnesium (Mg)	µg/m ²	0.07	*
Manganese (Mn)	µg/m ²	0.1	*
Mercury (Hg)	µg/m ²	0.2	*
Molybdenum (Mo)	µg/m ²	0.2	*
Nickel (Ni)	µg/m ²	0.2	*
Potassium (K)	µg/m ²	0.3	1.0
Silver (Ag)	µg/m ²	0.1	*
Sodium (Na)	µg/m ²	0.2	4.8
Strontium (Sr)	µg/m ²	0.03	*
Tin (Sn)	µg/m ²	0.07	*
Titanium (Ti)	µg/m ²	0.2	*
Tungsten (W)	µg/m ²	0.07	*
Vanadium (V)	µg/m ²	0.1	*
Zinc (Zn)	µg/m ²	0.2	*

W0106-UPW-N-L-C Leachable Total Organic Carbon

Total Oxidizable Carbon (TOC)	µg/m ²	40	240
-------------------------------	-------------------	----	-----

TOC detection limit was increased due to inorganic carbon interference.

W0129-UPW-N-L-C Leachable Single Element (Neodymium) in UPW by ICP-MS

This report, including any attachments has been reviewed and approved by

Lilibeth Valenzuela

Laboratory Supervisor

These results were obtained by following standard laboratory procedures and are only representative of the samples as received by the laboratory. The liability of AIR LIQUIDE - BALAZS NanoAnalysis ("Balazs") shall not exceed the amount paid for this report. In no event shall Balazs be liable for special or consequential damages. Client agrees not to use Balazs' name in reporting results obtained from tests performed by Balazs without first obtaining Balazs written consent as to such use. Report shall not be reproduced except in full, without the written approval of Balazs.



Air Liquide Electronics U.S. LP
46409 Landing Parkway, Fremont CA 94538
Telephone [REDACTED] Fax [REDACTED]

MR JUERGEN HAHN
LEVITRONIX TECHNOLOGIES
20 SPEEN STREET
SUITE 102
FRAMINGHAM MA 01701

Report Date: 16-Jun-21
Order Date: 26-May-21
Work Order: 21-06104
P.O.: 21.005

Sample: #8-UBQ 021

Site: LPP-600.29

ID: PUMP HEAD

Component	Units	Detection Limit	Result Value
Neodymium (Nd)	µg/m ²	0.07	*

* = Analysis revealed that the element was not found at or above the detection limit.

This report, including any attachments has been reviewed and approved by

Lilibeth Valenzuela

Laboratory Supervisor

These results were obtained by following standard laboratory procedures and are only representative of the samples as received by the laboratory. The liability of AIR LIQUIDE - BALAZS NanoAnalysis ("Balazs") shall not exceed the amount paid for this report. In no event shall Balazs be liable for special or consequential damages. Client agrees not to use Balazs' name in reporting results obtained from tests performed by Balazs without first obtaining Balazs written consent as to such use. Report shall not be reproduced except in full, without the written approval of Balazs.

Sample: #9-UAX 021

Site: LPP-600.29

ID: PUMP HEAD

Component	Units	Detection Limit	Result Value
W0174-UPW-N-L-C Leachable Low Level 30 Elements in UPW			
Aluminum (Al)	µg/m ²	0.2	*
Antimony (Sb)	µg/m ²	0.07	*
Arsenic (As)	µg/m ²	0.7	*
Barium (Ba)	µg/m ²	0.03	*
Bismuth (Bi)	µg/m ²	0.1	*
Boron (B)	µg/m ²	2	*
Cadmium (Cd)	µg/m ²	0.1	*
Calcium (Ca)	µg/m ²	2	*
Chromium (Cr)	µg/m ²	0.1	*
Cobalt (Co)	µg/m ²	0.07	*
Copper (Cu)	µg/m ²	0.2	*
Gallium (Ga)	µg/m ²	0.1	*
Germanium (Ge)	µg/m ²	0.2	*
Iron (Fe)	µg/m ²	0.3	*
Lead (Pb)	µg/m ²	0.2	*
Lithium (Li)	µg/m ²	0.1	*
Magnesium (Mg)	µg/m ²	0.07	*
Manganese (Mn)	µg/m ²	0.1	*
Mercury (Hg)	µg/m ²	0.2	*
Molybdenum (Mo)	µg/m ²	0.2	*
Nickel (Ni)	µg/m ²	0.2	*
Potassium (K)	µg/m ²	0.3	*
Silver (Ag)	µg/m ²	0.1	*
Sodium (Na)	µg/m ²	0.2	*
Strontium (Sr)	µg/m ²	0.03	*
Tin (Sn)	µg/m ²	0.07	*
Titanium (Ti)	µg/m ²	0.2	*
Tungsten (W)	µg/m ²	0.07	*
Vanadium (V)	µg/m ²	0.1	*
Zinc (Zn)	µg/m ²	0.2	*

W0106-UPW-N-L-C Leachable Total Organic Carbon

Total Oxidizable Carbon (TOC)	µg/m ²	40	200
-------------------------------	-------------------	----	-----

TOC detection limit was increased due to inorganic carbon interference.

W0129-UPW-N-L-C Leachable Single Element (Neodymium) in UPW by ICP-MS

This report, including any attachments has been reviewed and approved by

Lilibeth Valenzuela

Laboratory Supervisor

These results were obtained by following standard laboratory procedures and are only representative of the samples as received by the laboratory. The liability of AIR LIQUIDE - BALAZS NanoAnalysis ("Balazs") shall not exceed the amount paid for this report. In no event shall Balazs be liable for special or consequential damages. Client agrees not to use Balazs' name in reporting results obtained from tests performed by Balazs without first obtaining Balazs written consent as to such use. Report shall not be reproduced except in full, without the written approval of Balazs.



Air Liquide Electronics U.S. LP
46409 Landing Parkway, Fremont CA 94538
Telephone [REDACTED] Fax [REDACTED]

MR JUERGEN HAHN
LEVITRONIX TECHNOLOGIES
20 SPEEN STREET
SUITE 102
FRAMINGHAM MA 01701

Report Date: 16-Jun-21
Order Date: 26-May-21
Work Order: 21-06104
P.O.: 21.005

Sample: #11-PERLAST

Site: LOT #

ID: O-RING (x4)

202009110225

Component	Units	Detection Limit	Result Value
W0129-UPW-N-L-C Leachable Single Element (Neodymium) in UPW by ICP-MS			
Neodymium (Nd)	µg/m ²	0.1	*

* = Analysis revealed that the element was not found at or above the detection limit.

This report, including any attachments has been reviewed and approved by

Lilibeth Valenzuela

Laboratory Supervisor

These results were obtained by following standard laboratory procedures and are only representative of the samples as received by the laboratory. The liability of AIR LIQUIDE - BALAZS NanoAnalysis ("Balazs") shall not exceed the amount paid for this report. In no event shall Balazs be liable for special or consequential damages. Client agrees not to use Balazs' name in reporting results obtained from tests performed by Balazs without first obtaining Balazs written consent as to such use. Report shall not be reproduced except in full, without the written approval of Balazs.

Sample: METHOD BLANK

Component	Units	Detection Limit	Result Value
W0174-UPW-N-L-C Leachable Low Level 30 Elements in UPW			
Aluminum (Al)	ppb (µg/L)	0.05	*
Antimony (Sb)	ppb (µg/L)	0.02	*
Arsenic (As)	ppb (µg/L)	0.2	*
Barium (Ba)	ppb (µg/L)	0.01	*
Bismuth (Bi)	ppb (µg/L)	0.04	*
Boron (B)	ppb (µg/L)	0.5	*
Cadmium (Cd)	ppb (µg/L)	0.03	*
Calcium (Ca)	ppb (µg/L)	0.5	*
Chromium (Cr)	ppb (µg/L)	0.03	*
Cobalt (Co)	ppb (µg/L)	0.02	*
Copper (Cu)	ppb (µg/L)	0.05	*
Gallium (Ga)	ppb (µg/L)	0.04	*
Germanium (Ge)	ppb (µg/L)	0.05	*
Iron (Fe)	ppb (µg/L)	0.1	*
Lead (Pb)	ppb (µg/L)	0.05	*
Lithium (Li)	ppb (µg/L)	0.03	*
Magnesium (Mg)	ppb (µg/L)	0.02	*
Manganese (Mn)	ppb (µg/L)	0.03	*
Mercury (Hg)	ppb (µg/L)	0.05	*
Molybdenum (Mo)	ppb (µg/L)	0.05	*
Nickel (Ni)	ppb (µg/L)	0.05	*
Potassium (K)	ppb (µg/L)	0.1	*
Silver (Ag)	ppb (µg/L)	0.03	*
Sodium (Na)	ppb (µg/L)	0.06	*
Strontium (Sr)	ppb (µg/L)	0.01	*
Tin (Sn)	ppb (µg/L)	0.02	*
Titanium (Ti)	ppb (µg/L)	0.05	*
Tungsten (W)	ppb (µg/L)	0.02	*
Vanadium (V)	ppb (µg/L)	0.03	*
Zinc (Zn)	ppb (µg/L)	0.06	*

W0106-UPW-N-L-C Leachable Total Organic Carbon

Total Oxidizable Carbon (TOC)	ppb (µg/L)	10	*
-------------------------------	------------	----	---

TOC detection limit was raised from 5 ppb due to inorganic carbon interference.

W0129-UPW-N-L-C Leachable Single Element (Neodymium) in UPW by ICP-MS

This report, including any attachments has been reviewed and approved by

Lilibeth Valenzuela

Laboratory Supervisor

These results were obtained by following standard laboratory procedures and are only representative of the samples as received by the laboratory. The liability of AIR LIQUIDE - BALAZS NanoAnalysis ("Balazs") shall not exceed the amount paid for this report. In no event shall Balazs be liable for special or consequential damages. Client agrees not to use Balazs' name in reporting results obtained from tests performed by Balazs without first obtaining Balazs written consent as to such use. Report shall not be reproduced except in full, without the written approval of Balazs.

Sample: METHOD BLANK

Component	Units	Detection Limit	Result Value
Neodymium (Nd)	ppb (µg/L)	0.02	*

* = Analysis revealed that the element was not found at or above the detection limit.

Report Note:

UPW Leach conditions:

The samples were prepared and leached in accordance with SEMI F57-0301 and SEMI F40-0699 protocols. Each sample was pre-cleaned with ultrapure water and leached using UPW at 85°C for 7 days per SEMI F40.

A method blank was prepared and leached under identical conditions. Sample results are blank subtracted and normalized to µg/m².

UPW Leach Volume (mL); Leach Surface Area (m²):

#1-UBR 025: 27mL; 0.0139m²
#2-UBR 019: 25mL; 0.0139m²
#3-UBR 019: 25mL; 0.0139m²
#4-UBR 005: 27mL; 0.0139m²
#6-UBR 005: 27.5mL; 0.0139m²
#7-10J: 29mL; 0.0169m²
#8-UBQ 021: 152mL; 0.0443m²
#9-UAX 021: 152mL; 0.0443m²
#10-KALREZ: 25mL; 0.00368m²
#11-PERLAST: 25mL; 0.00368m²

This report, including any attachments has been reviewed and approved by

Lilibeth Valenzuela

Laboratory Supervisor

These results were obtained by following standard laboratory procedures and are only representative of the samples as received by the laboratory. The liability of AIR LIQUIDE - BALAZS NanoAnalysis ("Balazs") shall not exceed the amount paid for this report. In no event shall Balazs be liable for special or consequential damages. Client agrees not to use Balazs' name in reporting results obtained from tests performed by Balazs without first obtaining Balazs written consent as to such use. Report shall not be reproduced except in full, without the written approval of Balazs.