

NOMINAL SOURCE CERTIFICATE

Customer: Idaho State University
Purchase Order No.: P0036726
Model No.: Cf2.N02
Catalog No.: CF230360500U
Capsule Type: A3036-2
Active Diameter: 0.125" (3.18 mm)
Cover: Stainless Steel
Backing: Stainless Steel

Certificate Date: 2021-09-29
Quantity: 1
SS&DR No.: CA0406S193S
ISO/ANSI Classification: ANSI 77C66545
Special Form No.: USA/0793/S-96 Rev 1
Nuclide Half Life: 2.645 ± 0.008 years
Recommended Working Life: 15 years

Nuclide	Source No.	Activity	Radiation Output	Reference Date
Cf-252	U2-622	500 µCi (18.5 MBq)	Not Applicable	2021-10-01

Impurities: See Technical Data Sheet

Leak Test Information is on Reverse Side:

Remarks:

- This document uses the numerical convention where 1.000 = 1 and 1,000 = 10³.
- This document uses the date convention YYYY-MM-DD in accordance with ISO 8601.
- Nuclear data were taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.
- ANSI classification is equivalent to ISO2919.

Matt Dey



2021-09-29

Name

Signature

Date

Notebook Page: 2190-85

THE LEAK TEST(S) INDICATED BY THE CHECKED BOX(ES) WAS(WERE) APPLIED TO DETERMINE THE INTEGRITY OF THE SOURCE DESCRIBED ON THE FRONT SIDE. THE LEAK TESTS INDICATED BELOW WERE EITHER TAKEN DIRECTLY FROM ISO 9978:2020 OR DERIVED FROM THE LEAK TEST METHODS LISTED IN ISO 9978:2020. THE REGULATORY LIMIT FOR LEAK TEST RESULTS IS <5 nCi (185 Bq) FOR BOTH ALPHA AND BETA-GAMMA ACTIVITY. LEAK TEST RESULTS MARKED BELOW CONTAINED <5 nCi (185 Bq) OF REMOVABLE ACTIVITY UNLESS OTHERWISE STATED ON THIS CERTIFICATE.

Standard Wipe Test

The source was wiped over its entire surface with a moistened filter paper disk. After drying, the disk was checked for activity using a scintillation detector.

Special Wipe Test

The source was wiped over its entire surface with moistened polystyrene. The polystyrene was then dissolved in a liquid scintillation cocktail and counted in a liquid scintillation counter.

Distilled Water Soak Test

The source was immersed in distilled water and maintained at $(50 \pm 5)^{\circ}\text{C}$ for a minimum of four hours or room temperature $(20 \pm 5)^{\circ}\text{C}$ for 24 hours. After removal of the source, the liquid was a) checked for activity using a liquid scintillation counter, or b) evaporated in a planchet and the residue checked for activity using a windowless proportional counter or end-window G.M. tube.

Liquid Scintillation Soak Test

The source was immersed for a minimum of 3 hours at room temperature $(20 \pm 5)^{\circ}\text{C}$ in a liquid scintillation cocktail, which does not attack the source's outer surface material. The source was stored away from light to avoid photoluminescence. The sealed source was then removed and the activity of the liquid scintillation cocktail was measured.

Gas Source Test

The source was placed in a vacuum desiccator and maintained at a pressure of <10 mm Hg for not less than 12 hours. The activity was checked by introducing air into the desiccator and monitoring the air with an end-window G.M. tube.

Ampoule Leak Test

The ampoule was kept in an inverted position on a filter paper disk or polystyrene wipe for a minimum of 16 hours. The wipe was then checked for activity using a scintillation detector or liquid scintillation counter.

Bubble Leak Test

The container was pressurized to its fill pressure; then soapy water was applied over its valve and neck or, the valve and neck of the vessel were immersed in water. If no growing bubbles were observed, the container was considered leak free.

Wipe Test for Industrial Ni-63 Sources

The sources were wipe tested by an approved sampling plan, which called for either 100% of the batch to be individually wipe tested, or, a subset thereof. The wipe test(s) used to test for removable contamination and the results of those tests are recorded on the front of this form.

Pressure Test for Triotech Kr-85 Sources

Prior to filling the vessel with Kr-85 gas, the vessel was evacuated to <5 mm Hg, the gas manifold system shut off and the system allowed to stand for a minimum of 30 minutes. A vacuum difference not greater than the known vacuum loss of the manifold system itself signified the vessel did not leak.

Leak Test Not Applicable

The active area of the source is uncovered or is protected by a very thin coating. Although the deposit is adherent, it is not designed or certified to pass a standard leak test. The inactive portions of the source have been checked using the standard wipe test or special wipe test depending on the nuclide.

Other Leak Test

24937 Avenue Tibbitts
Valencia, California 91355

Tel 661•309•1010
Fax 661•257•8303

www.ezag.com

Cf-252 Technical Data

The Cf-252 used to prepare your order of source U2-622 was taken from Eckert & Ziegler Isotope Products Laboratories Lot #6050716. It had the following composition as of 2021-09-09.

<u>Nuclide</u>	<u>Mass %</u>	<u>Activity %</u>
Cf-249	17.256	0.2236
Cf-250	19.815	6.8284
Cf-251	8.133	0.0408
Cf-252	54.796	92.9072

The Cm-248 decay product was last separated on 2018-04-19.

Isotopic composition provided by Oak Ridge National Laboratory.

If you have any questions, please contact Eckert & Ziegler
Isotope Products Technical Service: 661-309-1010

Res Niño Lazatin, Chemist
name, title


signature

2021-9-29
date



Eckert & Ziegler Isotope Products - 24937 Avenue Tibbitts-Valencia, CA 91355-United States

Invoice address
Idaho State University
921 S. 8th Avenue, Stop 8219
Pocatello, ID 83209
United States

Contact Dan Dale
Telephone 208-282-3467
Fax
Email daledani@isu.edu
Sales order CO-446072

10/5/21

Pro forma packing slip

Number
Delivery date 30 Sep 2021
Page 1 of 1
Your customer no. IDASTA01 - IDASTA01
Your order Reference P0036726

Terms of delivery
Place of delivery FCA - Free Carrier
Mode of delivery Origin - prepaid/added
Tracking number Air - FedEx 2nd Day
Shipping carrier

Delivery address
Idaho State University
ISU Pocatello Central Receiving
638 East Dunn Street
Pocatello, ID 83209
United States

Dan Dale
208-282-3467
daledani@isu.edu

Y0039658

Handling license
Shipping instructions: Req Number: R0039823
Dan Dale /PS120/8106

Line no.	Item number Description	Unit	Delivered	Ordered
1	CF230360500U Cf-252, 18.5MBq (500uCi) A3036-2 capsule, Nominal Quantity : 1.00 Serial number : U2-622	ea	1.00	1.00

Receipt : _____

Remit to:
Eckert & Ziegler Isotope Products
24937 Avenue Tibbitts
Valencia, CA 91355

Tel: 661-309-1010
Fax: 661-257-8303
DUNS 04-166-8633


Federal Tax Id
95-2666980

Bank Account
USD Remittance:
Comerica Bank - California
601 S. Figueroa Street 12th floor
Los Angeles, CA 90017
Account# 189 218 6139
Routing# 121137522
SWIFT# MNBUS33

International Bank Transfer
EUR Remittance:
Union Bank
445 South Figueroa Street
Los Angeles, CA 90017
Account# 301036
Routing# 122000496
SWIFT# Bofcus33mpk

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

(Provide at least three copies to airline.)

Shipper Martin Landeros EZIP 1800 Keystone Burbank CA 91504 US		Air Waybill No. 981838014250 Page 1 of 1 Page(s) Shipper's Reference Number <i>(optional)</i>	
Consignee Dan Dale Idaho State University ISU Pocatello Central Receiving 638 East Dunn Street Pocatello ID 83209 US		FX 18 Compliant  CAFE3506	
Two completed and signed copies of this Declaration must be handed to the operator		WARNING Failure to comply with all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law ,subject to legal penalties.	
TRANSPORT DETAILS			
This shipment is within the limitations prescribed for: (delete non applicable)		Airport of Departure Burbank	
<div style="border: 1px solid black; padding: 2px;"> <input type="checkbox"/> CARGO AIRCRAFT ONLY </div>			
Airport of Destination: Pocatello CFPIHA		Shipment type: <i>(delete non applicable)</i> <div style="border: 1px solid black; padding: 2px;"> <input checked="" type="checkbox"/> RADIOACTIVE </div>	
NATURE AND QUANTITY OF DANGEROUS GOODS UN Number or identification Number, proper shipping name, Class or Division (subsidiary risk), packing group (if required), and all other required information. UN 2915, Radioactive material, Type A package,7//CF-252, CERAMIC solid, 1 Type A package X 18.50000 MBq // III Yellow, TI 2.0, dims (L) 31 x (W) 31 x (H) 31 cm			
Additional Handling Information			
I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable International and National Governmental Regulations. I declare that all of the applicable air transport requirements have been met.		Name/Title of Signatory MARTIN LANDEROS/LEAD SHIPPER Place and Date BURBANK, CA USA 10/01/2021 Signature MARTIN LANDEROS <i>(see warning above)</i>	
8004249300 <i>Emergency Telephone Number</i>			
FOR RADIOACTIVE MATERIAL SHIPMENT ACCEPTABLE FOR PASSENGER AIRCRAFT, THE SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN OR INCIDENT TO RESEARCH, MEDICAL DIAGNOSIS OR TREATMENT. ADR EUROPEAN TRANSPORT STATEMENT: CARRIAGE IN ACCORDANCE WITH 1.1.4.2.1			