



NRD, LLC | 800-525-8076
 2937 ALT BOULEVARD | 716-773-7634
 PO BOX 310 | 716-773-7744 FAX
 GRAND ISLAND, NY | www.nrdinc.com
 14072-0310 | sales@nrdinc.com

TRUCK FREIGHT
Return shipping instructions for: NRD P-2000 series Static Elimination devices using Polonium-210 Radionuclide

A GUIDE TO PROPER PACKAGING AND SHIPPING
READ THESE INSTRUCTIONS COMPLETELY

PART A: GENERAL INFORMATION

1. FIVE BASIC ITEMS ARE NEEDED TO RETURN THE PRODUCT:
 - **AN ORIGINAL, TYPE A, SHIPPING CONTAINER** - Available upon request from NRD. DO NOT USE YOUR OWN PACKAGING OR CORRUGATION. Package is not to rattle.
 - **STRAIGHT BILL OF LADING** - This has been supplied in this packet. See instructions on PART "C" and example on PART "D" of this instruction manual. Be sure that the Straight Bill of Lading used has a HAZARDOUS MATERIALS ("HM") column.
 - **PROPER LABELING** - This has been supplied in this packet. See instructions on PART "C" and example on PART "B" of this instruction manual.
 - **ERG GUIDE 163** – This has been supplied in this packet.
 - **PACKING SLIP** – This must have: quantity and contents of package, and your company name on it or be on company letterhead.
2. CONTACT NRD CUSTOMER SERVICE, MONDAY – FRIDAY AT 1-800-525-8076 U.S., FOR REQUIRED MATERIAL BEFORE RETURNING ANY PRODUCT.
3. PREPARE THE DEVICE FOR SHIPMENT:
 - USE ONLY AN ORIGINAL, TYPE A, SHIPPING CONTAINER. TYPE A PACKAGE(S) AND CERTIFICATION AVAILABLE UPON REQUEST FROM NRD, LLC CUSTOMER SERVICE.
 - USE SUFFICIENT DUNNAGE TO FILL INNER PACKAGE VOIDS AND TO PREVENT RATTLES.
 - CLOSE PACKAGE AND TAPE ALL SEAMS WITH NYLON REINFORCED TAPE.
 - MARK OUTSIDE OF PACKAGE WITH THE WORDS "SECURITY SEAL" IN BOLD BLACK MARKER ACROSS TAPED SEAMS.
4. BELOW IS A LIST OF NRD DEVICE "ACTIVITY" AT THE TIME OF MANUFACTURE. THIS MAY BE A REFERENCE TO YOU IF YOUR DEVICE LABEL IS ILLEGIBLE DUE TO HANDLING.

<u>MODEL</u>	<u>ACTIVITY</u>	<u>MODEL</u>	<u>ACTIVITY</u>
P2001	2.25 mCi per active inch = 83.3 MBq per active inch	P2060	23.1 mCi = 855 MBq
P2021	10.0 mCi = 370 MBq	P2061	40.0 mCi = 1480 MBq
P2031	20.0 mCi = 740 MBq	P2062	14.1 mCi = 522 MBq
P2035	40.0 mCi = 1480 MBq	P2063	31.5 mCi = 1166 MBq
P2042	5.0 mCi = 185 MBq		

NOTE: IT IS THE SHIPPER'S/SENDER'S RESPONSIBILITY TO BE TRAINED FOR HAZARDOUS MATERIALS SHIPPING.

PART B: Decay Chart, Device and Package Labeling

DECAY FACTOR CHART

Remaining Activity

AGE OF DEVICE	1 month old	2 months old	3 months old	4 months old	5 months old	6 months old	7 months old	8 months old	9 months old	10 months old	11 months old	12 months old	13 months old	14 months old	15 months old	16 months old	17 months old	18 months old	19 months old	20 months old	21 months old	22 months old	23 months old	24 months old	25 months old	26 months old
DECAY FACTOR	31.8	274	23.6	20.3	17.5	15.0	12.9	11.1	9.57	8.23	7.08	6.10	5.25	4.51	3.88	3.34	2.88	2.47	2.13	1.83	1.58	1.36	1.17	1.00	0.864	0.744

To determine the current activity of a device, in MBq (megabecquerel), multiply the original activity of the device, in mCi (millicurie), as found on the device label, by the appropriate decay factor for the age of the device, as found in the chart above.

EXAMPLE: A P-2021 that is 4 months old would have a current activity of:

10 mCi – original activity, from device label

20.3 – decay factor, from chart above


$$10 \text{ mCi} \times 20.3 = 203 \text{ MBq}$$

IMPORTANT NOTE

DO NOT EXCEED 20000 MBq (540 mCi) PER PACKAGE

LABEL EXAMPLES BELOW ARE FOR SHIPPING NRD MODEL P2021 NUCLECEL 4 MONTHS OLD.

EXAMPLE: DEVICE LABEL



NUCLECEL™
STATIC ELIMINATOR

MODEL: P-2021 SERIAL NO.: XXXXXXXX

ISOTOPE: Po-210 ACTIVITY: 10 mCi

MANUFACTURED: 1/02

DEVELOPED &
MANUFACTURED BY
NRD, LLC
GRAND ISLAND, NY

CAUTION RADIOACTIVE MATERIAL


THE RECEIPT, POSSESSION, USE AND TRANSFER OF THIS DEVICE ARE SUBJECT TO A FEDERAL LICENSE OR THE EQUIVALENT AND THE REGULATIONS OF THE U.S. NRC OR OF A STATE WITH WHICH THE NRD HAS ENTERED INTO AN AGREEMENT FOR THE EXERCISE OF REGULATORY AUTHORITY. THIS LABEL SHALL BE MAINTAINED ON THIS DEVICE IN A LEGIBLE CONDITION.

ABANDONMENT OR DISPOSAL PROHIBITED UNLESS TRANSFERRED TO PERSONS SPECIFICALLY LICENSED BY THE NRC OR AN AGREEMENT STATE.

CHILDREN PROHIBITED FROM ANY INDICATION OF FAILURE OF OR DAMAGE TO CONTAINMENT OF RADIOACTIVE MATERIAL.

THIS DEVICE SHALL BE LEAK TESTED AT INTERVALS NOT TO EXCEED 13 MONTHS.

REMOVAL OF THIS LABEL PROHIBITED



EXAMPLE: BOX LABEL



RADIOACTIVE I

CONTENTS Po-210

ACTIVITY 203.0 MBq

7

EXAMPLE: OUTER BOX "RQ" LABEL

TO BE PLACED NEXT TO PRINTING "RADIOACTIVE MATERIAL" ONLY WHEN "ACTIVITY" IS 370 MBq OR GREATER

(PLACE THE ORANGE LABEL NEXT TO THIS LABEL – DO NOT OVERLAP THEM.)



PART D: Bill of Lading (Sample Only)

Example of Bill of Lading: **SAMPLE ONLY**

ATTENTION SHIPPERS!

FREIGHT CHARGES ARE PREPAID ON THIS BILL OF LADING UNLESS MARKED COLLECT.

STRAIGHT BILL OF LADING ORIGINAL - NOT NEGOTIABLE

Shipper No. _____

Carrier No. _____

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(Name of carrier)

(SCAC)

① Date DATE

On Collected or Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in item 430, Sec. 1.

TO: NRD LLC (716) 773-7634
 Consignee
 Street 2937 ALT BLVD N ①
 City GRAND ISLAND State N.Y. Zip Code 14072

FROM: YOUR COMPANY NAME AND TELEPHONE NO.
 Shipper
YOUR COMPANY COMPLETE ADDRESS
 Street
 City ② State Zip Code
 24 hr Emergency Contact Tel. No. CHEMTREC 800-424-9300 CCN 206249

Route _____ The letters "RO" are ONLY entered in this area if the total per pkg. activity is equal to or greater than 10 mCi or 370 MBq ③ Vehicle Number _____

No. of Units & Container Type	HM	BASIC DESCRIPTION Proper Shipping Name, Hazard Class, Identification Number (UN or NA), Packing Group, per 172.101, 172.202, 172.203	TOTAL QUANTITY (Weight, Volume Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
④ 3	⑤ X	UN2915; Radioactive material, Type A package, non-special form, non fissile, 7 WHITE 1, TI.O, USA DOT 7A, Po-210 Metal Solid, 3 Type A packages X 59.0 MBq, Fiberboard Box, Total Shipment Activity 177 MBq				
		⑥ TO BE PREPAID, ERG GUIDE 163 ATTACHED				

PLACARDS TENDERED: YES NO

Note - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
 The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding \$ _____ per _____

I hereby declare that the contents of this consignment are fully and accurately described above by 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.

Signature _____

REMIT C.O.D. TO: ADDRESS _____

COD Amt: \$ _____

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
 The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

C.O.D. FEE: PREPAID COLLECT \$ _____

TOTAL CHARGES: \$ _____

FREIGHT CHARGES
 FREIGHT PREPAID Check box if charges except when box at _____ are to be right is checked collect

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of

said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
 Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER <u>YOUR COMPANY NAME</u>	CARRIER
PER <u>YOU MUST SIGN HERE</u> ⑦	PER
<u>YOUR JOB TITLE</u>	DATE

Permanent post-office address of shipper.

POTENTIAL HAZARDS

HEALTH

- Radiation presents minimal risk to transport workers, emergency response personnel and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Type A packages (cartons, boxes, drums, articles, etc.) identified as "Type A" by marking on packages or by shipping papers contain non-life endangering amounts. Partial releases might be expected if "Type A" packages are damaged in moderately severe accidents.
- Type B packages, and the rarely occurring Type C packages, (large and small, usually metal) contain the most hazardous amounts. They can be identified by package markings or by shipping papers. Life threatening conditions may exist only if contents are released or package shielding fails. Because of design, evaluation and testing of packages, these conditions would be expected only for accidents of utmost severity.
- The rarely occurring "Special Arrangement" shipments may be of Type A, Type B or Type C packages. Package type will be marked on packages, and shipment details will be on shipping papers.
- Radioactive White-I labels indicate radiation levels outside single, isolated, undamaged packages are very low (less than 0.005 mSv/h (0.5 mrem/h)).
- Radioactive Yellow-II and Yellow-III labeled packages have higher radiation levels. The transport index (TI) on the label identifies the maximum radiation level in mrem/h one meter from a single, isolated, undamaged package.
- Some radioactive materials cannot be detected by commonly available instruments.
- Water from cargo fire control may cause pollution.

FIRE OR EXPLOSION

- Some of these materials may burn, but most do not ignite readily.
- Radioactivity does not change flammability or other properties of materials.
- Type B packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800°C (1475°F) for a period of 30 minutes.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- **Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels.**
- Radiation Authority must be notified of accident conditions. Radiation Authority is usually responsible for decisions about radiological consequences and closure of emergencies.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. • Stay upwind. • Keep unauthorized personnel away.
- Detain or isolate uninjured persons or equipment suspected to be contaminated; delay decontamination and cleanup until instructions are received from Radiation Authority.

PROTECTIVE CLOTHING

- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- When a large quantity of this material is involved in a major fire, consider an initial evacuation distance of 300 meters (1000 feet) in all directions.

EMERGENCY RESPONSE

FIRE

- Presence of radioactive material will not influence the fire control processes and should not influence selection of techniques.
- Move containers from fire area if you can do it without risk.
- Do not move damaged packages; move undamaged packages out of fire zone.

Small Fire

- Dry chemical, CO₂, water spray or regular foam.

Large Fire

- Water spray, fog (flooding amounts).
- Dike fire-control water for later disposal.

SPILL OR LEAK

- Do not touch damaged packages or spilled material.
- Damp surfaces on undamaged or slightly damaged packages are seldom an indication of packaging failure. Most packaging for liquid content have inner containers and/or inner absorbent materials.
- Cover liquid spill with sand, earth or other non-combustible absorbent material.

FIRST AID

- Call 911 or emergency medical service.
- Medical problems take priority over radiological concerns.
- Use first aid treatment according to the nature of the injury.
- Do not delay care and transport of a seriously injured person.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Injured persons contaminated by contact with released material are not a serious hazard to health care personnel, equipment or facilities.
- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.