



PROCESS SPECIFICATION
TITLE: QUARTZ TUBES
RADIOACTIVE (RA) BY-
PRODUCT MATERIAL
APPLICATION-COBALT 60

P-012
ISSUE: A
FEBRUARY, 2007

DOCUMENT REVISION STATUS

| REVISION LEVEL | DESCRIPTION OF CHANGE | DATE | ECN # |
|----------------|---|---------|---------|
| 1 | ORIGINAL ISSUE | N/A | ON FILE |
| 2 | UPDATE SEE FILE FOR DCN # | 1/71 | ON FILE |
| 3 | REVISED PER CONFORMANCE TO ECN REQUIEREMENT | 2/00 | 12674 |
| A | REFORMATTED DOCUMENT TO MEET CURRENT HNE PROCEDURE STANDARDS. ADDED SECTION 1.0. REVISED ALL SECTIONS. SEE ECN. | 2/13/07 | 14559 |

APPROVALS

APPROVED: PROCESS ENGINEERING: *Peter E. McLaughlin* DATE: 2-22-07
APPROVED: ENGINEERING MANAGER: *W. M. ...* DATE: 2/22/07
APPROVED: MANUFACTURING MANAGER: *R. J. ...* DATE: 2-22-07
APPROVED: QUALITY ASSURANCE MANAGER: *Ray ...* DATE: 2/13/07
For B.S.

1.0 SCOPE:

This document describes the procedure for injecting Radioactive Cobaltous Chloride (Cobalt 60) into quartz tubes.

2.0 EQUIPMENT:

- a. Lead Storage Container for radioactive (RA) material
- b. Hamilton Syringe Gas-tight Pt # 8110 Model 1725 250 μ l.
- c. Hamilton Needle 22 Gauge Pt # 91072
- d. Hamilton Repeating Dispenser Pt # 83700 Pb 600-1 5 μ l per dispense
- e. Heat Lamps or Oven capable of 100°C
- f. Lead Glass Shield
- g. Spill Tray
- h. Kimwipes
- i. Safety Glasses
- j. Gloves
- k. Survey Meter

3.0 MATERIALS:

Radioactive Cobaltous Chloride (Cobalt 60) solution packaged in 10 ml bottle, 200 μ Ci per bottle

4.0 PROCEDURE:

- 4.1 Spread Kimwipes over spill tray.
- 4.2 Place lead glass shield in center of spill tray.
- 4.3 Remove lead pig containing Cobalt 60 from lead safe and place behind lead glass shield.
- 4.4 Slowly remove cover from lead pig.
- 4.5 Remove screw cap from Cobalt 60 bottle.
- 4.6 Insert syringe needle into Cobalt 60 solution and draw solution into syringe. When complete replace screw cap on bottle and place lead cover on pig.
- 4.7 Slide syringe needle into quartz tube.

4.0 PROCEDURE (cont.):

- 4.8 Place two (2) drops of RA material in the center of the quartz tube and then rotate, keeping drops centered in tube.
- 4.9 Repeat above until all quartz tubes are processed.
- 4.10 Once all quartz tubes are filled; return unused portion of Cobalt 60 solution to bottle. Secure cap to bottle and lead cover to pig.
- 4.11 Return lead pig containing Cobalt 60 to lead safe.
- 4.12 Place quartz tubes in heated oven or under heat lamps until Cobalt 60 solution is dry.

5.0 SAFETY:

- 5.1 Only qualified workers to have access to RA facility.
- 5.2 The work area to be kept clean, bench tops to be covered with paper (Kimwipes).
- 5.3 No more than 20 tubes may be processed at a time.
- 5.4 Vinyl or latex gloves and vinyl apron to be used while filling the tubes. Gloves, apron and waste paper are to be disposed of in compactor.
- 5.5 Film badges must be worn by operators.
- 5.6 Isotope bottles and syringes must be kept at least 20 inches from eyes.
- 5.7 Area must be checked for radiation with calibrated survey meter before securing. Readings greater than twice background are considered significant.
- 5.8 A meter reading of the hands, clothing and nearby floor and bench area should be taken as well.
- 5.9 Each time Cobalt 60 is used; a survey meter reading should be taken of the hands, clothing and work area and entered in the log.