



PREPARATION OF COARSE NICKEL POWDER
Process Specification

SUBJECT:

This specification covers the process of sintering and pulverizing fine particle size carbonyl nickel powder to form a coarse powder suitable for matrix cathodes in such types as the 725A magnetron. (Reference to this process specification initially specified in Stdg. Notice 33-N-101P.)

I. EQUIPMENT

- A. Sieves - U.S. Standard Sieve Series 200, 270, and 325 mesh, 5" diameter with stainless steel mesh and frame. Also stainless steel bottom pan and cover (material optional). These sieves shall be used exclusively for this application.
- B. Shaker - Such as Cenco-Meinzer Sieve Shaker, Cenco Scientific Company, Catalog #18480.
- C. 3/8" to 1/2" diameter rotary file, bastard cut.
- D. Nickel firing tray, approximately 6"x8"x1", to be used exclusively for this application.

II. PROCEDURE

- A. Pour the fine nickel powder into the nickel firing tray to a depth of approximately 3/4".
- B. Fire tray with powder in line hydrogen at 730°C for 20 minutes. The fine powder will sinter together to form a porous brick.
- C. Wearing gloves to protect the nickel powder from contamination, grind the brick into coarse powder by bearing it against a rotary file rotating in a drill press. Catch the powder in the same tray used for firing the original brick.
- D. Stack sieves from top to bottom in order of decreasing mesh size. Place approximately 15 cc of coarse powder in top sieve and shake at low speed for 10 mins. Remove powder from selecting sieves and transfer into properly labeled glass jars. Reload top sieve and repeat operation as required. Powder not passing thru the top sieve may be reprocessed starting with "A" above.

NOTES:

- A. Glass storage jars for sieved nickel powder should be labeled with powder particle size, lot number, date of firing of the porous brick, and tap density of the powder.
- B. Powders made from separately fired bricks must always be stored in separate jars.
- C. If tap density of sieved powder is not within prescribed factory limits powder may be re-sieved as above to improve degree of particle selection.
- D. All equipment which comes into contact with the nickel powder should be thoroughly cleaned before use.
- E. In order to facilitate the transfer of the powder from sieve to storage jar, etc. the powder may be placed on Kraft paper to effect the transfer.
- F. Any powder which comes into contact with foreign equipment or material should be discarded.

*General revision.

PCH8737-5950/EG

* CHANGE
** ADDITION
*** DELETION

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