Pelleted, Coated, & Encrusted Seed

1. What is the minimum number of seeds to be submitted for a purity analysis on coated seeds?
   a. 7,500
   b. 2,000
   c. 30,000
   d. 1,000

   Section 1: Sampling
   1.4 Size of Sample
   a. Recommended minimum weights for samples.

(7) Coated, encrusted, or pelleted seed (coated units: refer to 3.8a) submitted for testing shall consist of at least: 7,500 coated units for a purity analysis, 30,000 coated units for a noxious weed seed examination up to a maximum of 2,000 grams, or 1,000 coated units for a germination only test. Refer to sections 3.8 and 6.8 1 for testing procedures.

2. What is the maximum weight to be used for kinds in Table 2A for which the working sample weight of raw seed is 500 grams?
   a. 500 grams
   b. 1,000 grams
   c. 750 grams
   d. 4,354 grams

   Section 2: Preparation of Working Samples
   2.3 Size of working samples
   b. Purity analysis, noxious weed seed examination, bulk examination
   (5) Coated, encrusted, and pelleted seed

(5) **Coated, encrusted, and pelleted seed.** For the purpose of determining the working sample weights use the most completely coated, crusted or pelleted units available in the sample (coated units: refer to 3.8 a) regardless of the content of the coated units.

(a) **Single kinds:** Due to variation in weight of coating materials, the weight of the working sample shall be determined separately for each lot. The weight of the purity working sample shall be determined by weighing 100 coated units and calculating the weight of 2,500 coated units for the purity analysis. The noxious weed seed and bulk examination working weights shall be 10 times the purity working weight (approximately 25,000 coated units) or a maximum of 1,000 grams for kinds in Table 2A for which the working sample weight of raw seed is 500 grams.

3. When removing the coating prior to planting the seed shall be allowed to dry and be planted within how many hours?
    a. 12
    b. 36
    c. 24
    d. 72

    Section 6: Germination Tests
    6.8 Special procedures and alternate methods for germination
    l. Coated seed
    1. Germ test on coated units…

    (b) When a purity analysis is not conducted on kinds from Poaceae, the coating must be removed before planting to identify the pure seed units. Remove the coating material in a manner that will not affect the germination of the seeds and plant after air drying at room temperature for not more than 72 hours. Refer to section 3.8 e (3) for coating removal method. Refer to section 15 for reporting germination test results.

4. When phytotoxic symptoms are evident in coated seed planted in paper substrate, which of the following substrates should be used for a retest? (select all that apply)
    a. Sand
    b. Soil
    c. Rock
    d. Organic growing media

    Section 6: Germination Tests
    6.8 Special procedures and alternate methods for germination
    l. Coated seed

    (3) Phytotoxic symptoms may be evident when germinating coated seed in paper substrata. In such cases a comparative retest in sand, soil or organic growing media may be necessary. For pelleted or film-coated onion, see section 6.8 r.

5. When reference is made to coated seed units the rules also apply to which of the following: (select all that apply)
    a. Pelleted
    b. Seed tape
    c. Seed mat
    d. Coated
    e. Encrusted

    Section 6: Germination Tests
    6.8 Special procedures and alternate methods for germination

l. **Coated seed** — Where reference is made to coated seed the rules also apply to pelleted and encrusted seed. Refer to section 2.1 d.

6. When coating is not required to be removed, the purity is required to be separated into which of the following parts: (select all that apply)
   a. Inert matter
   b. Uncoated crop seed
   c. Uncoated weed seed
   d. Uncoated pure seed

Section 3: The Purity Analysis
3.8 Pelleted, coated or encrusted seed purity procedures
(f) Procedure for purity analysis of coated seed units.

(1) Separation of component parts: The working sample shall be weighed in grams to the appropriate number of decimal places (refer to section 2.3) and shall be separated into four parts:

(a) Pure coated seed units as defined in section 3.8 f (2).
(b) Uncoated crop seed as defined in section 3.8 f (3) (including the kind under consideration).
(c) Inert matter as defined in section 3.8 f (4).
(d) Uncoated weed seed as defined in section 3.8 f (5)

7. On a coated purity inert matter shall include (select all that apply)
   a. Uncoated pure seed units of the crop kind being tested
   b. Loose coating material
   c. Broken and damaged coated seed units in which more than half of the surface is still covered by coating.
   d. Free seeds of weed species
   e. Broken coated units in which it is obvious there is no seed
   f. Any other material clearly defined as inert matter

Section 3: The Purity Analysis
3.8 Pelleted, coated or encrusted seed purity procedures
(f) Procedure for purity analysis of coated seed units.

(4) Inert matter shall include:

(a) Loose coating material.
(b) Broken seed coated units in which it is obvious there is no seed.
(c) Any other material defined as inert matter in section 3.5.

8. When the coating is required to be removed prior to the purity, the purity shall be separated into which of the following components: (select all that apply)

a. Other crop seed
b. Kind considered pure seed
c. Inert matter
d. Coating material
e. Weed seed

Section 3: The Purity Analysis
3.8 Pelleted, coated or encrusted seed purity procedures
(g) Procedure for purity analysis of de-coated seed units.

(4) Separation of component parts:

(a) Kind or cultivar considered pure seed as defined in section 3.2 and Table 3A.
(b) Other crop seed.
(c) Inert matter.
(d) Weed seed.
(e) Coating material.

9. What is the minimum number of seeds to be submitted for a noxious or bulk examination?
   a. 1,000
   b. 7,500
   c. 30,000
   d. 25,000

Section 1: Sampling
1.4 Size of Sample
a. Recommended minimum weights for samples.

(7) Coated, encrusted, or pelleted seed (coated units: refer to 3.8a) submitted for testing shall consist of at least: 7,500 coated units for a purity analysis, 30,000 coated units for a noxious weed seed examination up to a maximum of 2,000 grams, or 1,000 coated units for a germination only test. Refer to sections 3.8 and 6.8 l for testing procedures.

Match the following words with the definitions below:

10. Raw seed E
11. Seed Mat A
12. Coated or encrusted seed B
13. Inoculated seed C
14. Treated seed F
15. Pelleted seed H
16. Film coated seed G
17. Seed Tape D

a. broad sheets of material, such as paper or other degradable material, with seeds placed throughout the material randomly or in organized rows or groups.
b. seed that has been covered by a layer(s) of materials that obscure the original shape and size of the seed resulting in a substantial weight increase.
c. seed that has received a coating of a commercial preparation containing a microbial product, e.g. Rhizobium sp.
d. Narrow strips of material, such as paper or other degradable material, with seeds placed randomly, in groups of two or more seeds, or in a single file line.
e. seed that is free of any applied materials.
f. seed with a minimal covering of various materials whose primary objective is to reduce or control certain disease organisms, insects or other pests attacking the seed or seedlings growing therefrom and that contains identifying colorants or dyes.
g. retains the shape and the general size of the raw seed with a minimal weight gain. May contain polymers, pesticides, biologicals, identifying colorants or dyes, and other additives. The coating should result in a more or less continuous covering that eliminates or minimizes product dust-off.
h. seed that has been covered by a layer(s) of materials that obscure the original shape and size of the seed resulting in a substantial weight increase and improved plantability or singulation.

Section 2: Preparation of Working Samples

2.1 Definitions

d. **Seed formats:**

(1) **Coated or encrusted seed:** seed that has been covered by a layer(s) of materials that obscure the original shape and size of the seed resulting in a substantial weight increase. The addition of biologicals, pesticides, identifying colorants or dyes, and/or other active ingredients including polymers can be included in this process. Refer to sections 3.8 and 6.8 l.

(2) **Film-coated seed:** film-coated seed retains the shape and the general size of the raw seed with a minimal weight gain. The film coating may contain polymers, pesticides, biologicals, identifying colorants or dyes, and other additives. The coating should result in a more or less continuous covering that eliminates or minimizes product dust-off.

(3) **Inoculated seed:** seed that has received a coating of a commercial preparation containing a microbial product, e.g. *Rhizobium* sp.

(4) **Pelleted seed:** seed that has been covered by a layer(s) of materials that obscure the original shape and size of the seed resulting in a substantial weight increase and improved plantability or singulation. The addition of biologicals, pesticides, identifying colorants or dyes, and/or other active ingredients including polymers can be included in this process. Refer to sections 3.8 and 6.8 l.

(5) **Raw seed:** seed that is free of any applied materials.

(6) **Treated seed:** seed with a minimal covering of various materials whose primary objective is to reduce or control certain disease organisms, insects or other pests attacking the seed or seedlings growing therefrom and that contains identifying colorants or dyes.

(7) **Seed Mat:** broad sheets of material, such as paper or other degradable material, with seeds placed throughout the material randomly or in organized rows or groups. The addition of biologicals, pesticides, identifying colorants or dyes, and/or other active ingredients including polymers can be included in this process.

(8) **Seed Tapes:** Narrow strips of material, such as paper or other degradable material, with seeds placed randomly, in groups of two or more seeds, or in a single file line. The addition of biologicals, pesticides, identifying colorants or dyes, and/or other active ingredients including polymers can be included in this process.

18. **True** **False** For coated seed pleated paper may not be used for a germination test instead of the listed substrate.

Section 6: Germination Tests
6.8 Special procedures and alternate methods for germination
l. Coated seed

(1) Germination tests on coated seed units and on de-coated seed shall be conducted in accordance with methods in Table 6A. Kinds for which soaking or washing is specified in section 6.8 shall not be soaked or washed in the case of coated seed. For coated seed pleated paper may be used.

19. **True** **False** When the coating percentage is required to be labeled the sample doesn't have to be washed.

Section 3: The Purity Analysis
3.8 Pelleted, coated and encrusted seed purity procedures

b. When the percentage of coating material must be determined for purposes of labeling or regulatory label compliance testing, the procedure in section 3.8 g must be used.

Section 3.8 g: Procedure for purity analysis of de-coated seed units.
This section includes the procedure for removing the coating material from the seed.

20. **True** **False** When conducting a de-coated purity, the weight of the coating material is determined by subtracting the sum of the weights of the four components from the original weight of the working sample.

Section 3: The Purity Analysis
3.8 Pelleted, coated and encrusted seed purity procedures
g. Procedure for purity analysis of de-coated seed units.

The de-coated working sample shall be separated into the first four components in accordance with sections 3.2 through 3.5. Sections 3.6 and 3.7 shall not be followed. The weight of the coating material component is determined by subtracting the sum of the weights of the other four components from the original weight of the working sample. Calculate percentages of all five components based on the original weight of the working sample.

21. **True** **False** Mechanical dividers should only be used if the distance of the fall does not damage the applied materials.

Section 2: Preparation of working samples

2.2 Obtaining the working sample

The working sample on which the actual analysis is performed shall be taken from the submitted sample in such a manner that it will be representative. A suitable type of mechanical divider (conical, centrifugal, riffle, etc.) should be used. To avoid damage when dividing large-seeded crop kinds such as beans, peas, etc., prevent the seeds from falling great distances onto hard surfaces. When dividing coated, encrusted, and pelleted seeds, mechanical dividers may be used only if the distance of the fall does not damage the

applied materials. Mechanical dividers are not appropriate for sampling seed mats and seed tapes. Refer to 2.2 b (4).

22. **True** **False** Coated seed shall be placed on the substate in the condition in which they are received unless the sample was decoated for purity analysis.

Section 6: Germination Tests
6.8 Special procedures and alternate methods for germination
l. Coated seed
(1) Germ tests on coated seed units….

(a) Coated seed units shall be placed on the substratum in the condition in which they are received without rinsing, soaking, or any other pretreatment unless the sample was decoated for purity analysis in accordance with section 3.8 e.

23. **True** **False** The weight of the working sample must be determined separately for each lot of pelleted, coated or encrusted seed.

Section 2: Preparation of working samples
2.3 Size of working samples
b. Purity analysis, noxious weed seed examination, bulk examination.

(5) Coated, encrusted, and pelleted seed.

(a) **Single kinds:** Due to variation in weight of coating materials, the weight of the working sample shall be determined separately for each lot. The weight of the purity working sample shall be determined by weighing 100 coated units and calculating the weight of 2,500 coated units for the purity analysis. The noxious weed seed and bulk examination working weights shall be 10 times the purity working weight (approximately 25,000 coated units) or a maximum of 1,000 grams for kinds in Table 2A for which the working sample weight of raw seed is 500 grams.

24. Calculate the purity percentages to be reported on the following de-coated sunflower sample.

Coated working weight = 246.3g

Pure Seed	97.64g
Other Crop	2.32g
Weed Seed	0.01g
Inert Matter	2.91g

a. Pure Seed % 39.64%

b. Other Crop % 0.94%

c. Weed seed % 0.01%

d. Inert matter % 1.18%

e. Coating % 58.23%

= 100.00%

Pure Seed 97.64g ÷ 246.3 x 100 = 39.64%
Other Crop 2.32g ÷ 246.3 x 100 = 0.94%
Weed Seed 0.01g ÷ 246.3 x 100 = 0.004% = 0.01% (Section 3.1 b. (4) – "…if any component is determined to be present in any amount calculated to be less than 0.015 percent, then that component shall be reported as 0.01 percent.")
Inert Matter 2.91g ÷ 246.3 x 100 = 1.18%

102.88g

Coating Material 246.64g – 102.88g = 143.42g

143.42g ÷ 246.3 x 100 = 58.23%