6.2 **POWDERS FOR DRY SEED TREATMENT** **(DS)**

Note for preparation of draft specifications. Do not omit clauses or insert additional clauses, nor insert limits that are more lax than those than given in the guidelines, without referring to section 4. From the “Notes” provided at the end of this guideline, incorporate only those which are applicable to the particular specification.

The guidelines for seed treatment formulations do not apply to formulations intended for film-coating or pelleting of seeds. They include special clauses, related to their use pattern, although some of the corresponding test methods are not yet developed. The influence of treatment on germination is of major importance but it is not the subject of a specification clause because no test method is applicable to all types of seeds. To avoid adverse effects, users should apply the formulation strictly according to the recommendations of the manufacturer and should not treat seeds for which effect on germination is not known. Treated seeds should be stored in a suitable container and should be protected from excessive temperature and moisture.

**…… [ISO common name] POWDER FOR DRY SEED TREATMENT** (Note 1)

[CIPAC number]/DS (month & year of publication)

6.2.1 **Description**

The material shall consist of an homogeneous mixture of technical ...... [ISO common name], complying with the requirements of FAO/WHO specification [......], in the form of ...... (see Section 4.2), together with suitable fillers and any other necessary formulants including colouring matter (Note 1). It shall be in the form of a fine free-flowing powder, free from visible extraneous matter and hard lumps.

6.2.2 **Active ingredient**

6.2.2.1 **Identity tests** (Note 2)

The active ingredient shall comply with an identity test and, where the identity remains in doubt, shall comply with at least one additional test.

6.2.2.2 **...... [ISO common name] content** (Note 2)

The ...... [ISO common name] content shall be declared (g/kg) and, when determined, the average content measured shall not differ from that declared by more than the appropriate tolerance, given in the table of tolerances, Section 4.3.2.

6.2.3 **Relevant impurities**

6.2.3.1 **By-products of manufacture or storage** (Note 3), if required

Maximum: ......% of the …… [ISO common name] content found under 6.2.2.2.

6.2.3.2 **Water** (MT 30.5) (Note 4), if required

Maximum: ...... g/kg.

6.2.4 **Physical properties**

6.2.4.1 **Acidity** and/or **Alkalinity** (MT 191) or **pH range** (MT 75.3) (Note 4), if required

Maximum acidity: ...... g/kg calculated as H2SO4.

Maximum alkalinity: ...... g/kg calculated as NaOH.

pH range: ...... to ......

6.2.4.2 **Dry sieve test** (MT 170)

If appropriate, maximum y..% of the formulation shall be retained on a test sieve, the mesh size of which must be specified.

Maximum: y% retained on a … μm test sieve. Not more than (0.00y x X)% of the mass of the sample used for the determination shall be present as ...... [ISO common name] in the residue on the sieve, where X is the ...... [ISO common name] content (g/kg) found under 6.2.2.2 (Notes 5 & 6).

6.2.4.3 **Adhesion to seeds** (MT 194)

The manufacturer shall declare for a representative type of seeds for which the seed treatment formulation is recommended, the minimum percentage of the [ISO common name] remaining on the seeds after the test.

6.2.5 **Storage stability**

6.2.5.1 **Stability at elevated temperature** (MT 46.3)

After storage at 54 ± 2 °C for 14 days (Note 7), the determined average active ingredient content must not be lower than ......% relative to the determined average content found before storage (Note 8) and the formulation shall continue to comply with the clauses for:

- by-products of manufacture or storage (6.2.3.1),

- acidity/alkalinity/pH range (6.2.4.1),

- dry sieve test (6.2.4.2),

- adhesion to seeds (6.2.4.3),

as required.

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Note 1 The influence of treatment on germination is of major importance but it is not the subject of a specification clause because no test method is applicable to all types of seeds. To avoid adverse effects, users should apply the formulation strictly according to the recommendations of the manufacturer and should not treat seeds for which effect on germination is not known. Treated seeds should be stored in a suitable container and should be protected from excessive temperature and moisture.

The formulation is expected to contain a dye or pigment that permanently colours the seed after treatment (red is recommended). For special purposes however, the dye/pigment can be added at a later stage. In some countries, there may be a legal requirement that a specific colour shall be used. The same colour must not be used for denaturing seeds intended for use as livestock feeding stuffs.

Note 2 Method(s) of analysis must be CIPAC, AOAC or equivalent. If the methods have not yet been published then full details, with appropriate method validation data, must be submitted to FAO/WHO by the proposer.

Note 3 This clause should include only relevant impurities and the title should be changed to reflect the name of the relevant impurity. Method(s) of analysis must be peer validated.

Note 4 The method(s) to be used shall be stated. If several methods are available, a referee method shall be selected.

Note 5 MT 170, together with relevant methods of analysis for active ingredient, see Note 2.

Note 6 For example, if the maximum permitted on the sieve is 5% (y) and if the formulation has a found content of 400 g/kg of …[ISO common name] and 20 g of sample is used in the test, then the amount of the …[ISO common name] in the residue on the sieve should not exceed 0.40 g, i.e. (0.005 x 400) x 20 / 100 = 0.40 g

Note 7 Unless other temperatures and/or times are specified. Refer to Section 4.6.2 of this Manual for alternative storage conditions.

Note 8 Samples of the formulation taken before and after the storage stability test may be analyzed together after the test in order to reduce the analytical error.