6.16 **EMULSIFIABLE POWDERS (EP)**

# Introduction

A water-emulsifiable powder is applied as a conventional oil-in-water emulsion of the active ingredient(s), after dispersion in water. The active ingredient(s) may be solubilized or diluted in organic solvent(s).

Water emulsifiable powders contain one or more active ingredient(s), either solubilized or diluted in suitable organic solvent(s) which is (are) absorbed in a water soluble polymer powder or some other type of soluble or insoluble powder. The formulation may contain other formulants, as necessary.

Water emulsifiable powders are treated in a similar fashion to water dispersible powders (WP), emulsifiable granules (EG) and emulsifiable concentrates (EC), as they disperse and emulsify on dilution in water.

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.

**...... [ISO common name] EMULSIFIABLE POWDER**

(CIPAC No.)/EP (month & year of publication)

## 6.16.1 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 any other necessary formulants. The material shall be dry, free flowing, free from visible extraneous matter and hard lumps and provide an emulsion upon dilution in water.

6.16.2 **Active ingredient**

6.16.2.1 **Identity tests** (Note 1)

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

6.16.2.2 **...... [ISO common name]content** (Note 1)

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.

6.16.3 **Relevant impurities**

6.16.3.1 **By-products of manufacture or storage** (Notes 1 & 2), if required

Maximum: ......% of the …… [ISO common name] content found under 6.16.2.2.

6.16.3.2 **Water** (MT 30.5), if required

Maximum: ...... g/kg.

6.16.4 **Physical properties**

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

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

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

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

6.16.4.2 **Wettability** (MT 53.3) (Note 3)

The formulation should be completely wetted in ...... min.

6.16.4.3 **Dispersion stability** (MT 180)

### The formulation, when diluted at 30 ± 2 °C with CIPAC Standard Waters A and D, shall comply with the following:

|  |  |
| --- | --- |
| Time after allowing the dispersion to stand | Limits of stability |
|  0 h | initial dispersion complete |
|  0.5 h | “cream”, maximum: ...... ml |
|  | “free oil”, maximum: ...... ml |
|  | sediment, maximum: ...... ml |
|  24 h | re-dispersion complete |
|  24.5 h | “cream”, maximum: ...... ml |
|  | “free oil”, maximum: ...... ml |
|  | sediment, maximum: ...... ml |

6.16.4.4 **Wet sieve test** (MT 185) (Note 4)

Maximum: ......% retained on a 75 μm test sieve.

 6.16.4.5 **Persistent foam** (MT 47.3) (Note 5)

Maximum ...... ml after 1 min.

6.16.5 **Storage stability**

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

 After storage at 54 ± 2 °C for 14 days (Note 6), the determined average active ingredient content must not be lower than ......% relative to the determined average content found before storage (Note 7)and the formulation shall continue to comply with the clauses for:

- by-products of manufacture or storage (6.16.3.1),

- acidity, alkalinity or pH range (6.16.4.1),

- dispersion stability (6.16.4.3),

- wet sieve test (6.16.4.4),

as required.

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Note 1 Methods of analysis for the active ingredient must be CIPAC, AOAC. Methods of analysis for relevant impurities must be peer validated. If the methods have not yet been published then full details, with appropriate validation data, must be submitted to FAO/WHO by the proposer.

Note 2 This clause should only include relevant impurities.

Note 3 The method to be used shall be stated, either without or with swirling (MT 53.3.1 or MT 53.3.2).

Note 4 The test will detect any coarse particle which could cause blockage of nozzles and filters.

Note 5 The mass of sample to be used in the test should be specified at the highest rate recommended by the supplier. The test is to be conducted in CIPAC standard water D.

Note 6 Unless other temperatures and/or times are specified. Refer to Section 4.6.2 of this Manual for alternative storage conditions.

Note 7 Analysis of the formulation before and after storage stability test may be carried out at the same time (i.e. after storage) to reduce the analytical error.