7.11 **EMULSIFIABLE CONCENTRATES** **(EC)**

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 CONCENTRATE**

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

7.11.1 **Description**

The material shall consist of technical ...... [ISO common name], complying with the requirements of FAO/WHO specification ...... , in the form of ....... (see Section 4.2), dissolved in suitable solvents, together with any other necessary formulants. It shall be in the form of a stable homogeneous liquid, free from visible suspended matter and sediment, to be applied as an emulsion after dilution in water.

7.11.2 **Active ingredient**

7.11.2.1 **Identity tests** (Note 1)

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

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

 The ...... [ISO common name] content shall be declared (g/kg or g/l at 20 ± 2ºC, Note 2) 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.

7.11.3 **Relevant impurities**

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

 Maximum: ......% of the …… [ISO common name] content found under 7.11.2.2.

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

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

7.11.4 **Physical properties**

 7.11.4.1 **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 ......

 7.11.4.2 **Emulsion stability and re-emulsification** (MT 36.3)

 The formulation, when diluted at 30 ± 2 °C (Notes 5 and 6) with CIPAC Standard Waters A and D, shall comply with the following:

|  |  |
| --- | --- |
| Time after dilution | Limits of stability, MT 36.3 |
|  0 h | initial emulsification complete |
|  0.5 h | “cream”, maximum: ...... ml |
|  2.0 h | “cream”, maximum: ...... ml“free oil”, maximum: ...... ml |
|  24 h | re-emulsification complete |
|  24.5 h | “cream”, maximum: ...... ml “free oil”, maximum: ...... ml |
| Note: tests after 24 h are required only where results at 2 h are in doubt. |

 7.11.4.3 **Persistent foam** (MT 47.3) (Note 7)

 Maximum: ...... ml after 1 min.

7.11.5 **Storage stability**

7.11.5.1 **Stability at 0 °C** (MT 39.3)

 After storage at 0 ± 2 °C for 7 days, the volume of solid and/or liquid which separates shall not be more than 0.3 ml.

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

 After storage at 54 ± 2 °C for 14 days (Note 8), the determined average active ingredient content must not be lower than ......% relative to the determined average content found before storage (Note 9) and the formulation shall continue to comply with the clauses for:

- by-products of manufacture or storage (7.11.3.1),

- acidity, alkalinity, pH range (7.11.4.1),

- emulsion stability and re-emulsification (7.11.4.2),

as required.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Note 1 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 2 If the buyer requires both g/kg and g/l at 20 °C, then in case of dispute the analytical results shall be calculated as g/kg.

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 to be used shall be stated. If several methods are available, a referee method shall be selected.

Note 5 Unless another temperature is specified.

Note 6 As outlined in CIPAC MT 36.3, the test concentrations should be based on those in the recommended directions for use supplied with the product. Where several concentrations are recommended, the highest and lowest concentrations within the scope of the method should be used.

Note 7 The mass of sample to be used in the test should correspond to the highest rate of use recommended by the supplier. The test is to be conducted in CIPAC standard water D.

Note 8 Unless other temperatures and/or times are specified. Refer to Section 4.6.2 of this Manual for alternative storage conditions.

Note 9 Samples of the formulation taken before and after the storage stability test may be analyzed concurrently after the test in order to reduce the analytical error.