7.4 **ULTRA LOW VOLUME LIQUIDS** **(UL)**

In addition to the characteristics identified in the guideline below, the potential for loss of droplet mass by volatilization may also be critical for ultra low volume liquid (UL) formulations. If droplet evaporation is too rapid, the proportion of the spray which drifts from the target, and the distance over which drift occurs, may be increased to unacceptable levels. The volatilization and drift that occur in practice are dependent upon the initial droplet size spectrum and the height through which droplets fall, the air temperature and wind speed. Even if the other parameters are reasonably consistent, wind speed, in particular, is usually highly variable even over short distances and periods of time. A degree of volatilization which may be unacceptable for one type of application may be of little or no consequence in another case. It is desirable that a clause to limit losses by volatilization should be included in the specification but, at present, it is difficult to relate a simple measurement of loss by volatilization to the potential increase in drift produced. Industry is requested to produce a method, together with data obtained under controlled conditions, that will allow a meaningful relationship to be established between the results produced and the potential increase in drift in various scenarios.

*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] ULTRA LOW VOLUME LIQUID**

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

7.4.1 **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), together with any necessary formulants. It shall be in the form of a stable homogeneous liquid, free from visible suspended matter and sediment.

7.4.2 **Active ingredient**

7.4.2.1 **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.

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

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

7.4.3 **Relevant impurities**

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

 Maximum: ......% of the …… [ISO common name] content found under 7.4.2.2.

7.4.3.2 **Water** (MT 30.6), if required

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

7.4.4 **Physical properties**

 7.4.4.1 **Viscosity**, if required (MT 22.1)

 The viscosity shall be in the range: ...... to ......

7.4.5 **Storage stability**

7.4.5.1 **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.

7.4.5.2 **Stability at elevated temperature** (MT 46.4)

 After storage at 54 ± 2 °C for 14 days (Note 4), the determined average active ingredient content must not be lower than ......% relative to the determined average content found before storage (Note 5) and the formulation shall continue to comply with the clauses for:

- by-products of manufacture or storage (7.4.3.1),

as required.

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

Note 1 Method(s) of analysis must be CIPAC, AOAC or equivalent. Where methods have not yet been published, full details and 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 Unless other temperatures and/or times are specified. Refer to Section 4.6.2 of this Manual for alternative storage conditions.

Note 5 Samples of the formulation taken before and after the storage stability test may be analysed concurrently after the test in order to reduce the analytical error.