

{PRIVATE }PARAQUAT DICHLORIDE SOLUBLE CONCENTRATES

FAO Specification 56/SL/S/F (2003)

1. DESCRIPTION

The material shall consist of technical paraquat dichloride, complying with the requirements of FAO specification 56/TK/S/F(2003), as an aqueous solution, together with wetting and safening agents, which will include an effective emetic, and may include other safeners including olefactory alerting agents, colourants, and thickeners. It shall be in the form of a clear or opalescent liquid, with not more than a trace of suspended matter, and sediment., to be applied as a true solution of the active ingredient in water.

2 ACTIVE INGREDIENT

2.1 Identity tests (56/SL/M/2, CIPAC G, p.128)

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

2.2 Paraquat dichloride (56/SL/M/3, CIPAC E, p.167)

The paraquat dichloride content (Note 1) shall be declared (g/kg and/or g/l at $20 \pm 2^\circ\text{C}$, 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.

<u>Declared content in g/kg or g/l at $20 \pm 2^\circ\text{C}$</u>	<u>Tolerance</u>
Above 25 up to 100	$\pm 10\%$ of the declared content
Above 100 up to 250	$\pm 6\%$ of the declared content
Above 250 up to 500	$\pm 5\%$ of the declared content

In each range the upper limit is included.

2.3 Emetic content(for method see Appendix 1)

PP 796: 2-amino-4,5-dihydro-6-methyl-4-propyl-s-triazole-(1,5a)pyrimidin-5-one

Not less than 0.4 g/l (Note 3)

3 RELEVANT IMPURITIES

3.1 By-products of manufacture or storage

3.1.1 Free 4,4'-bipyridyl (56/13/M/7.4, CIPAC 1A, p.1317)

Maximum: 1000ppm (0.1%w/w)

3.1.2 Total terpyridine content (for method see Appendix 2)

Maximum: 1.0ppm (0.0001%w/w)

4 PHYSICAL PROPERTIES

4.1 pH range (CIPAC MT 75.3,)

pH range of a 1% v/v dispersion: 6.0 to 8.0.

4.2 Solution Stability (CIPAC MT 41)

The formulation, after the stability test at 54°C (see 5.2) and following dilution (Note 4) with CIPAC Standard Water D and standing at $30 \pm 2^\circ\text{C}$ for 18 h, shall give a clear or opalescent solution, free from more than a trace of sediment and visible solid particles. Any visible sediment or particles produced shall pass through a 45µm test sieve (Note 5).

4.3 Persistent foam (CIPAC MT 47.2) (Note 6)

Maximum : 60ml after one minute.

5. STORAGE STABILITY

5.1 Stability at 0°C (CIPAC MT39.3)

After storage at $0 \pm 2^\circ\text{C}$ for 7 days, the volume of solid and/or liquid which separates shall not be more than 0.3ml.

5.2 Stability at 54°C (CIPAC MT 46.3)

After storage at $54 \pm 2^\circ\text{C}$ for 14 days, the determined average active ingredient content must not be lower than 97% relative to the determined average content found before storage (Note 7), and the product shall continue to comply with clauses for: by-products of manufacture or storage (3.1) and pH range (4.1).

5. CONTAINERS

Containers may be manufactured from suitable polymeric materials or metal, and must comply with pertinent national and international transport and safety requirements. Where metal is used containers shall be lined with suitable polymeric material, or the internal surfaces treated to prevent corrosion of the container and/or deterioration of the contents. The product must not be allowed to come into direct contact with metal.

NOTES

1. *Multiply the paraquat ion content as determined by CIPAC method 56/SL/M/3 by 1.38.*
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*
3. *An effective emetic must be included. No compound, other than PP796 has been found to be effective in meeting the following criteria:*
 - *It must be rapidly absorbed (more rapidly than paraquat) and be quick acting. Emesis must occur in about half an hour in at least 50% of cases.*
 - *It must be an effective (strong) stimulant of the emetic centre to produce effective emesis. The emetic effect should have a limited 'action period' of about two to three hours to allow effective treatment of poisoning.*
 - *It must act centrally on the emetic centre in the brain.*
 - *It must not be a gastric irritant because, as paraquat is itself an irritant, this could potentiate the toxicity of paraquat.*
 - *It must be toxicologically acceptable. It must have a short half-life in the body (to comply with the need for a limited action period).*

- *It must be compatible with and stable in the paraquat formulation and not affect the herbicidal efficacy or occupational use of the product..*
- 4. *The concentration for the test should not be higher than the highest concentration recommended in the instructions for use.*
- 5. *Some formulations containing additional wetter may show signs of layering and produce a trace of oily precipitate under the test conditions defined in MT41. This is acceptable, and does not affect biological efficacy or spray characteristics at normal spray dilution.*
- 6. *The mass of sample used in the test should be specified at the highest rate of use recommended by the supplier.*
- 7. *Samples of the product taken before and after the storage stability test should be analysed concurrently after the test to reduce the analytical error.*

APPENDIX 1:

Method for the Determination of PP796

APPENDIX 2:

Method for the determination of Total Terpyridyls