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CERTIFICATE OF ANALYSIS

| | | | |
|-----------|---------------------------------|---------------|-------------|
| Product | : Permethrin (Pharma Grade) 99% | COA No. | : 1399/14 |
| Batch No. | : 144003188 | Report No. | : FP-513/14 |
| Mfg. Date | : Oct. 2014 | Mfg. Lic. No. | : KD-324 |
| Exp. Date | : Sep. 2019 | Dispatch Qty | : 100 Kg |

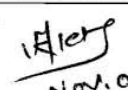
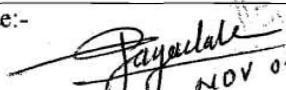
| TEST | OBSERVATION | LIMIT |
|--|--|--|
| Characters (Description & Solubility) | Yellow brownish colour liquid which may solidify on standing or at lower temperature. Soluble in Alcohol, Acetone, ether & hydrocarbons (Toluene) | Yellow brownish colour liquid which may solidify on standing or at lower temperature. Soluble in Alcohol, Acetone, ether & hydrocarbons (Toluene) |
| Identification | A) By IR The IR spectrum of the sample is concordant with the spectrum obtained with Permethrin standard. | A) By IR The IR spectrum of the sample is concordant with the spectrum obtained with Permethrin standard |
| | B) By HPLC Retention time of Permethrin test sample matches with retention time of permethrin standard in the assay test. | B) By HPLC Retention time of Permethrin test sample matches with retention time of permethrin standard in the assay test. |
| Loss On Drying | 0.24 % | Not more than 2.0 % |
| Sulphated Ash | 0.05 % | Not more than 0.2 % |
| Assay by HPLC (on dried basis) | 99.48 % | 98.0 % to 101 % |
| Cis Isomer | 24.95 % | 23.0 % to 27.0 % |
| Related Substance by HPLC | M P B Alcohol : 0.11 % | Not more than 0.15 % |
| | M P B Aldehyde : 0.02 % | Not more than 0.15 % |
| | D. V. Acid Ester (Cis+Trans): 0.10 % | Not more than 0.15 % |
| | Unknown Impurity : 0.19 % | Not more than 0.30 % |
| | Total impurity : 0.28 % | Not more than 2.0 % |
| Residual Solvents | Toluene – 227 ppm | NMT 890 ppm |
| | *Benzene - BDL | NMT 2 ppm |

BDL: Below Detection Level NMT- Not more than

*Benzene is not used in process, but tested due to the use of Toluene.

Note:- Before sampling stir well & warm up to 40 °C Permethrin solidifies below 35 °C. In case of solidification please warm up to 40 to 45 °C to get liquid (Before use). This does not affect the quality.

Permethrin is semi solid material melting point test is not applicable.

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|---|---|
| Remarks | : Passes As Per Specification |
| Prepared By/Date:-  NOV. 04, 2014 Mr. V. K. Mhatre (QA Manager) | Approved By/Date:-  NOV 04, 2014 Mr. S. B. Jagadale (QA Head) |

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