व्यावसायिक परीक्षण रिपोर्ट

**COMMERCIAL TEST REPORT**

संख्या/ **No. : PS-223/1890/2016**

माह/**Month : July, 2016**

# DHAN LUXMI STEEL, KALA TRISHUL BATTERY CUM HAND OPERATED KNAPSACK SPRAYER

सत्यमेव जयते

भारत सरकार

**Government of India**

कृषि एवं किसान कल्याण मंत्रालय

**Ministry of Agriculture and Farmers Welfare**

कृषि, सहकारिता एवं किसान कल्याण विभाग

**Department of Agriculture, Cooperation and Farmers Welfare**

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

**Northern Region Farm Machinery Training and Testing Institute**

ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001

**Tractor Nagar, Sirsa Road, HISAR, (Haryana)- 125 001**

**[ISO 9001:2008 COMPLIANT INSTITUTION]**

Website: http://nrfmtti.gov.in/

E-mail: fmti-nr@nic.in

Tele./FAX: 01662-276984

| Clause No. | Specified requirement | Observations | Remarks |
|---|---|---|---|
| Cl. 4.3 IS 3906:1995 | The material used for different components shall be declared by the manufacturer in the manual. | Declared in the manual and on letter head as submitted by the manufacturer. | Conforms |
| **PERFORMANCE REQUIREMENTS ( Cl 5 IS 3906:1995)** | | | |
| Cl. 5.1 Discharge rate | When tested in accordance with the method given in 6.1.3 of IS: 10134-1994 the pump shall be capable of discharging a minimum of 500 ml of water per minute. | Pump is capable of discharging 1440 & 592.5 ml/min used battery & hand lever respectively. | Conforms |
| Cl.5.2 Volumetric Efficiency | When tested in accordance with the method given in 6.2 of IS: 10134-1994, the volumetric efficiency shall be not less than 85 percent. | The volumetric efficiency is 90.20 % which is within specified limit. | Conforms |
| **CONSTRUCTIONAL REQUIREMENTS (Cl.6 IS 3906 :1995)** | | | |
| Cl. 6.1 Tank | The tank capacity shall be 10,13 or 16 litres with a tolerance of ± 0.5 liter. | The tank capacity is 16 ltr. | Conforms |
| Cl.6.1.1 | The thickness of sheet used in manufacture of brass tank shall be minimum of 0.63 mm ± 0.03 mm. | Not applicable, as the tank is made of plastic. | -- |
| Cl. 6.1.2 | The tank, when filled upto its neck level with water, shall not show any sign of leakage and shall not buckle. | No sign of leakage & buckling in tank is noticed, when filled up to the neck level with water. | Conforms |
| Cl.6.2 Skirt/Stands | The tank shall be provided with a skirt/stand which shall project a minimum of 6mm beyond the lowest portion of the bottom of the tank. | The tank is provided with a stand which is projected 1.9 mm beyond the lowest portion of the bottom of the tank. | **Does Not Conforms** |
| Cl.6.3 Strap | Two straps of not less than 800 mm when adjusted to maximum possible length and 38mm in width shall be provided in order to help carriage of sprayer Provision for adjustment of the length of each strap shall also be provided. | Two straps provided of 995 mm length and 34 mm width Provision made for adjustment of the strap length. | Conforms for length, Does not conforms for width |
| Cl.6.3.1 | The straps and their assembly shall withstand the test prescribed in 7.3 of IS:10134-1994. | Straps tested as per method specified in Cl.7.3 of IS 10134:1994. No breakage of straps or breakage or crack of strap buckle found. | Conforms |
| Cl.6.4 Filling hole | A filling hole of 90 mm minimum diameter if circular or in minor axis if oval, shall be provided on the top of the tank. | Circular filling hole of 115.10 mm dia. is provided on the top of tank. | Conforms |

## 4. SUMMARY OF OBSERVATION

4.1 The discharge rate was observed as 1440 & 592.5 ml/min while operation on battery and manual mode respectively at 300 kPa pressure against the minimum requirement of 500 ml/min.

4.2 Volumetric efficiency was observed as 90.20% against the minimum requirement of 85%.

4.3 **Endurance test**

a) The test was conducted 48 hours. The discharge rate variation is observed as 3.72%, which is within the limit of ±5%.

b) No noticeable breakdown was observed during the test.

## 5. COMMENTS & RECOMMENDATIONS

5.1 **Conformity to Indian Standard**

The time required for full charging of battery was observed as 8 to 9 hours. The sprayer operation time after full charging was observed as 5 to 6 hours.

Kala Trishul battery cum hand operated sprayer does not conforms the following requirements specified in Indian Standard. These should be rectified as per relevant Indian Standard.

i) Cl. 4.1 IS: 3906-1995-Sub clause No. xiii, xiv & xv-Material of construction is not as per Indian Standard.
ii) Cl. 4.1 IS: 3652-1995- Material for spray lance is not as per IS.
iii) Cl.6.2 IS 3906:1995 – The skirt/stand of Tank is not as per IS.
iv) Material construction of cut of device component is not as per IS.
v) Cl. 6.5 IS: 3652 – 1995-Threaded connections does not conforms to IS.
vi) Cl.6.9.1 IS: 3906:1995-The gap between connecting lever and handle near pivot and near knapsack is not as per IS.
vii) Cl. 6.8.3 Sub Clause C-3.2-Cut off device strainer area is less than requirement.
viii) Cl. 6.8.3 Sub Clause C-3.2.1-The average size of any side or diameter of apertures of the strainer is not as per IS.
ix) C-6.2 – The maximum torque required for trigger actuation is not as per IS.
x) C-7.1-Opertor's manual not provided.
xi) C-10 IS; 3652-1995 Sub Clause (b)-Batch or code No. is not marked as per IS.
xii) C-10 IS: 3652-1995 Sub Clause (c)-Type of cut off device is not marked.
xiii) Cl. 6.8.3 Sub Clause D-2, IS: 3652-1995 –Material of spray lance is not as per IS.
xiv) Cl. 6.8.3 Sub Clause D5, IS: 3652-1995-The lance is not marked as per IS.
xv) Cl. 6.14 Sub Clause F-3.2-Spray angle of nozzle is not declared by the manufacturer.
xvi) Cl. 6.14 Sub. Clause F-5, IS:3652-1995-Nozzle designation is not provided.
xvii) Cl. 6.14 Sub. Clause F (a), 11 (b) & (c) IS: 3652-1995-Nozzle marking is not provided.
xviii) Cl. 7.3.3 IS: 3906:1995-Agitator is not provided.
xix) Cl. 7 IS: 3906-1995 Sub Clause Cl-9.1-Marking (b)-Batch or sr. No. is not provided. It may provide.

5.2 Spray distribution pattern is complying triangular distribution limit as per IS: 3652:1995.

5.3 The details of manufacturer and country of origin is not provided in operator's manual packing and sprayer. It may be provided.

5.4 **Safety provision/safety wear**

i) The accessories viz mask, hand gloves and safety goggles for operator's safety are provided with sprayer.
ii) Safety signs and hazard pictorials are not provided on the machine. It must be provided on the machine for safety of user.
iii) Safety instructions regarding handling poisonous agrochemical and first aid may also be added in operator's manual.