व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या / No. : PS-214/1876/2016
माह / Month: June, 2016

HAND OPERATED KNAPSACK SPRAYER
KISAN KRAFT, KK-BKS-16L

सत्यमेव जयते

भारत सरकार
कृषि एवं किसान कल्याण मंत्रालय
कृषि, सहकारिता एवं किसान कल्याण विभाग

उत्तरी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान
सत्यमेव जयते
पुस्तकालय
हिसार

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE & FARMERS WELFARE
DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE

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xxviii)	**Material of construction of nozzle components**			
	-Body and cap	Brass, Engineering plastic	Brass	Conforms
	-Disc, tip, Swirl core	Brass, stainless steel, Engg. Plastics	Brass	Conforms
	-Spindle, coupling nut & gland nut	Brass, Engg. Plastics	Brass	Conforms
xxix	**Material of construction of cut of device components**			
	-Body, valve seat, gland nut, cap & collar, Valve stem	Brass, Engineering plastic	Engg. plastics	Conforms
	-Nipple	Brass, Aluminium alloy, plastic	Not applicable	--
	-Valve	Brass, synthetic rubber, plastic	Plastice	Conforms
	-Strainer	Brass, Aluminium alloy, stainless steel, plastic	Plastic	Conforms
	-Operating knob	Brass, Engineering plastic, plastic	Engg. plastic	Conforms
	- Operating trigger	Stainless steel, Engineering plastic	Engg. plastic	Conforms
	-Spring	Stainless steel, phosphor bronze	Stainless steel	Conforms
	-Gasket	Synthetic rubber, fiber,leather, PVC	PVC	Conforms
	-Gland packing	Asbestos rope	Not available	--

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.	Separately declared by the manufacturer on a leaflet.	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 692.50 ml/min water.	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 90.62% 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.	--

c)	Batch or code number.	Not marked	**Does not conform**
6.14 Nozzle	Unless otherwise specified by the purchaser, the nozzle shall conform to the requirement as given in Annexure-F of IS: 3652-1995.		
ANNEXURE F HYDRAULIC SPRAY NOZZLES (CL 6.8.4 OF IS 3652:1995)			
F-1 Types F-1.1	On the basis of spray distribution the nozzles shall be of the following types:- a) Hollow cone type b) Fan type c) Adjustable type i) Double action type ii) Triple action type.	Fan type	Conforms
F-1.2	On the basis of the method of attachment, the nozzles shall be of the following types:-		
	a) Fixed type	Fixed type	Conforms
	b) Swivel type	NA	--
F-3 PERFORMANCE REQUIREMENTS			
F-3.1 Rate of discharge F-3.1.1	The discharge rate of the nozzle shall be declared by the manufacturer. In case of adjustable nozzle, the declared value shall be for extreme adjustments for cone and jet spray patterns at a pressure of 300 kPa.	500 to 700 ml/min declared in the manual submitted by the manufacturer.	Conforms
F-3.1.2	When tested in accordance with F-7, The nozzles shall provide a rate of discharge as given in Table-3. The rate of discharge shall be within ± 5 percent for fixed type and±10 percent for adjustable type of nozzle, of the declared value.	The rate of discharge is as given in table 3 of IS:3652-1995. Rate of discharge is 697.50 ml/min observed against declared value 500 to 700 ml/min.	Conforms
F-3.2 Spray Angle	The spray angle of the nozzle shall be declared by the manufacturer. The angle, when tested in accordance with method given in F-9 shall not differ by ±3 deg. for fixed type and ±5 deg .for adjustable type nozzles from the declared value.	Spray angle of nozzle was observed 88.8^0 against 90 to 110^0 declared by the manufacturer.	Conforms
F-3.3 Endurance test	The hydraulic spray nozzle when tested in accordance with F-7 and F-9 at a pressure of 300 ± 30 kPa after operating for 48 hour duration with continuous stretches of 6h,variation in discharge rate and spray angle from initial values should not be more than ±5 percent and ±3 deg. respectively.	Endurance test of spray nozzle completed and variation in discharge and spray angle is 3.58% and 0.79% respectively.	Conforms
F-4 Other Requirements F-4.1	If strainer is provided, the average size of any side or diameter of the apertures shall be not more than 450 μm.	Strainer is not provided in the nozzle.	--

5. COMMENTS & RECOMMENDATIONS:

5.1 Conformity to Indian Standard

Kisan Kraft, KK-BKS-16L Hand Operated Knapsack Sprayer does not conforms the following requirements specified in Indian Standard. **These should be rectified as per relevant Indian Standard.**

- **i)** Cl. 6.5 IS: 3652:1995-Threaded connections does not conforms to IS.
- **ii)** Cl. 6.13 Sub clause C-10, IS: 3906:1995- Cut-off device is not marked as per Indian Standard.
- **iii)** Cl. 6.8.3 Sub Clause D-3, IS: 3652:1995- Brass tube wall thickness is 0.3 mm against minimum specified thickness of 0.6 mm.
- **iv)** Cl. 6.8.3 Sub Clause D5, IS: 3652:1995-The lance is not marked as per IS.
- **v)** Cl. 6.14 Sub. Clause F5, IS: 3652:1995-Nozzle designation is not provided.
- **vi)** Cl. 6.14 Sub. Clause F (a), 11 (b) & (c) IS: 3652-1995-Nozzle marking is not provided.
- **vii)** Cl. 7.3.2 IS: 3906-1995-The back rest cushion is not provided.
- **viii)** Cl. 7.3.3 IS: 3906:1995-Agitator is not provided.

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

5.3 Safety provisions/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.

6. TECHNICAL LITERATURE

Operation manual of manual knapsack sprayer KK-BKS-16L is provided by the applicant for reference during test. The operator's manual, service manual and spare parts catalogue should be updated & brought out as per IS: 8132-1999.

TESTING AUTHORITY

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY **DIRECTOR**	

7. APPLICANT'S COMMENTS

We agree to all comments and recommendations.
We will improve in it at the production level.