प्रारंभिक ब्याबसायिक परीक्षण रिपोर्ट संख्या/No. **CSIR/CMERI/FMTTC/2022/001**

INITIAL COMMERCIAL TEST REPORT माह/Month: May, 2022

THIS TEST REPORT VALID UP TO : 31st MAY, 2027

ASPEE 8AHBR
BATTERY OPERATED KNAPSACK SPRAYER

कृषि मशीनरी प्रशिक्षण और परीक्षण केंद्र

Farm Machinery Training and Testing Centre

सीएसआईआर- केन्द्रीय यांत्रिक अभियांत्रिकी अनुसंधान संस्थान

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Manufacturer	:	ASPEE Agro Equipment Pvt. Ltd. Opp. Gram Panchayat Office, Chikhali Road, Antalia, Village, Bilimora- 396321, Ta – Gandevi, Dis- Navsari, GUJARAT
Test requested by	:	Manufacturer
Selected for test by	:	The applicant
Method of selection	:	The sprayer is selected as per direction laid down in the Ministry's order no. 13-1/2021 – M&T (I&P), dated 3rd Feb 2022.

1. SPECIFICATIONS

1.1 General

Type	:	Battery Operated Knapsack Sprayer
Make*	:	ASPEE Agro Equipment Pvt. Ltd.
Model*	:	AGM001/8AHBR – GREEN MAGIC
Brand	:	ASPEE
Serial No.	:	**Not Specified**
Name of manufacturer	:	ASPEE Agro Equipment Pvt. Ltd. Opp. Gram Panchayat Office, Chikhali Road, Antalia, Village, Bilimora- 396321, Ta – Gandevi, Dis- Navsari, GUJARAT
Year of manufacture	:	November-2021
Capacity of sprayer, l	:	20
Working pressure, kg/cm^2	:	1 to 4

1.2 Motor (As per Sticker)

Type	:	D C Motor
Make	:	ASPEE
Serial number	:	**Not specified**
Motor operating voltage	:	12 V, D C
Motor power	:	**Not Specified**
Max. Current*	:	1.8 A
Rated speed*, rpm	:	**Not specified**

1.3 Battery (As per Sticker)

Type	:	Sealed, Lead-Acid Battery
Make	:	JSTN
Model	:	**Not specified**
Serial number	:	XK06-006-01270
Capacity & rating*	:	12V, 8 AH
Country of origin	:	**Not Specified**
Location	:	Below the chemical tank.

1.4 Battery Charger from AC Supply

Make	:	**ASPEE**
Model	:	**Not specified**
Input voltage*	:	AC 110 - 240V
Output voltage *	:	DC 12 V
Output current*	:	1 .7 A
Country of origin	:	**Not specified**

1.5 Pump

10. TEST FOR NOZZLE
(Vide Annex F of IS: 3652-1995)

Date of test : 18.02.2022
Type of Nozzle : Fixed, Hollow Cone Type

10.1 TEST FOR DISCHARGE RATE OF NOZZLE

The discharge rate of nozzle at a pressure of 300 kPa has been declared by applicant as 2.10 l/min for hollow cone spray pattern.

The discharge rate corresponding to 300 kPa pressure was observed as under: -

- For hollow cone spray pattern: 1.08 l/min

10.2 TEST FOR SPRAY ANGLE OF NOZZLE

The spray angle of nozzle at a pressure of 300 kPa has been declared by applicant as 90˚. The spray angle corresponding to 300 kPa pressure was observed as 84˚.

10.3 ENDURANCE TEST OF NOZZLE

i) Date **:** 8.02.2022 to 16.02.2022
ii) Total running time (h) **:** 48
iii) Quantity of liquid collected and spray angle observed during endurance test.

Sr. No.	No. of collection	Avg. discharge ml/min	Spray angle, degree
a)	First collection	1054	84.8°
b)	Second collection	1053	84.7°
c)	Third collection	1080	84.2°
d)	Fourth collection	1075	85.0°
e)	Fifth collection	1047	84.9°
f)	Sixth collection	1060	83.5°
g)	Seventh collection	1045	84.4°
h)	Eighth collection	1060	84.1°

Remarks:

i. Percentage variation in discharge rate from first to last collection, 0.57 %
ii. Percentage variation in spray angle from first to last collection, 0.825 %

10.4 SPRAY DISTRIBUTION PATTERN OF NOZZLE

The liquid discharge from nozzle at 300 kPa pressure was collected in glass tubes of patternator. The spray pattern as per the quantity of liquid collected is represented in tabular form and in Fig. 1.

10.5 Nozzle designation : Not marked
Provision for strainer in nozzle **: Not provided**

10.6 MARKING OF NOZZLE

Manufacturer's name or recognized trade mark **: Not marked**
Batch or code number **: Not marked**
Type of cut-off device **: Not marked**

16. CONFORMITY TO INDIAN STANDARDS

i)	IS 11313:2007* Hydraulic power sprayers-specification	:	**Does not conform in toto**
ii)	IS 10134:1994* Method of test for manually operated sprayer	:	**Does not conform in toto**
iii)	Spray nozzle and spray gun as per IS:3652-1995* (Reaffirmed 2011)	:	**Does not conform in toto**
iv)	IS: 3906:1995* (Reaffirmed 2001) Crop protection equipment – Hand-operated Knapsack Sprayer, Piston type - specification	:	**Does not conform in toto**
v)	IS: 2643-2005* Pipe threads where pressure-tight joint are not made on the threads-dimensions, tolerance and designation	:	**Does not conform in toto**

**This is battery operated Knapsak Sprayer and the above mentioned standards are not the correct standard for the certain test.*

17. COMMENTS & RECOMMENDATIONS

17.1 The sprayer year of manufacture is not marked. It should be marked.

17.2 The serial number, motor power and rated speed of motor is not specified. It should be specified.

17.3 The model and country of origin of battery is not specified. It should be specified.

17.4 The model and country of origin of battery charger is not specified. It should be specified.

17.5 The model, serial number, rated speed and country of origin of pump is not specified. It should be specified.

17.6 The material used for pump inlet port end fitting does not meet the requirements of Indian standard. It MUST be looked into.

17.7 The volumetric efficiency of sprayer on battery operated mode was observed as 70.28%, which is not within the requirement of the relevant Indian Standard.

17.8 The cut off device is not marked. It must be marked.

17.9 The nozzle is not marked. It should be marked.

17.10 During the pump chamber hydraulic test, the motor stopped beyond 4.80 kg/cm2 pressure against the pressure requirement of 7.5 kg/cm2. Thus the sprayer does not meet the requirement of Indian Standard.

17.11 The tank capacity of sprayer does not meet the requirement of IS: 3906-1995. It MUST be looked into.

17.12 The length of discharge outlet does not meet the requirements of Indian standard. It MUST be looked into.

17.13 The lance is not marked with batch or code number. It **MUST** be marked

17.14 The batch or code number and type of cut-off device is not marked. It should be marked.

17.15 Time required to full charge battery with AC charger is observed as 8 to 8.5 hours.

17.16 The spraying operation time after fully charging the battery was observed as 4 to 4.5 hours.

17.17 The current drawn by motor at no load and on load was observed 1.2 Amp and 2.22 Amp respectively which does not conform to requirement of IS: 14459: 1997.

17.18 The length of operating trigger of cut-of-device from the pivot axis is not within the requirement of the relevant Indian Standard

17.19 The average size of the side of the strainer used in cut-off device is does not meet the requirements of Indian Standard. It MUST be looked into.

17.20 A suitable labelling plate (not sticker) needs to be provided with, inter alia, following information; -

i. Manufacturer's name
ii. Make
iii. Model
iv. Month & year of manufacture
v. Rated speed
vi. Rated pressure
vii. Discharge rate
viii. Power rating
ix. Country of origin

18. TECHNICAL LITERATURE

The operator, maintenance & parts manual of sprayer was provided during the test which found adequate, however, the manual should be updated as per IS: 8132:1999, with the inclusion of safety instructions regarding handling poisonous agrochemical and first aid.

TESTING AUTHORITY

Dr. ANJALI CHATTERJEE Chief Scientist	Anjali 20/05/2022
Dr. SUBRATA KUMAR MANDAL Senior Principal Scientist	Subrata Kr Mandal 20/5/2022
Md. IMRAN SHEKH Senior Scientist	Imran

19. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
19	17.1, 17.2, 17.3, 17.4, 17.5, 17.6, 17.7, 17.8, 17.9, 17.10, 17.11, 17.12, 17.13, 17.14, 17.15, 17.16, 17.17, 17.18, 17.19, 17.20	Noted the same and will take the necessary corrective action

CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE

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