| | |
|---|---|
| **Date of test** | 3.8.2023 |
| **Date of expiry** | 3.8.2026 |
| **Number of pages** | 4 B / B |

**This Certificate is only valid when printed in colour and complete with all 4 pages.**

# Test Certificate No. 12842.2/23-8

**Applicant** Commercial Syn Bags Limited
"Commercial House", 3-4 Jaora Compound, M.Y.H. Road, Indore 452 001, (M.P.) India

**Test pieces** *Flexible Intermediate Bulk Containers - SWL = 1500 kg, SF = 5:1*
*Single trip FIBC for non-dangerous goods acc. ISO 21898*

**Manufacturer's type designation** N/A

**Design**

**Dimensions** Sample a : (90 cm x 90 cm) x 90 cm [1] **Volume** 800 litres **Tare** 1190 g
Samples b + c: (90 cm x 90 cm) x 200 cm [1] **Volume** 1800 litres **Tare** 2020 g

**Body fabric** Polypropylene 150 g/m², uncoated [2], white flat woven fabric layers without coloured characterisation

**Suspension** Four white PP-webbings (50 mm wide, 40 g/m), sewn into the vertical seams in a length of 55 cm / 80 cm (lowest size) resp. 60 cm / 150 cm (highest size), anchorage lengths for intermediate sizes see page 4

**Details** Four vertical seams, two horizontal seams at the bottom (U-panel design) / overlock + chain stitching / fabric folded in all the seams / open top [3] / no inliner / discharge spout d = 42 cm [3] made of PP-fabric 65 g/m² + 15 g/m² coating, double seam

**Kind of tests** *Type Tests according ISO 21898*

**Tests a + b** Cyclic top lift tests acc. Annex B **Test c** Compression test acc. Annex C

**Test conditions** Charging with plastic granules (filling height approx. 85 cm (lowest size) resp. 195 cm (highest size), load application with piston and pressure plate (d = 90 cm), rate of load application 70 kN/min.

**Cyclic load and load to failure**

**Sample a** After 70 cycles of load application to $P_c$ = **50 kN** (5100 kg) no visible damages occurred in the test piece. The load has then been increased until failure. On reaching a load of $P_b$ = **73,9 kN** (7530 kg) the fabric tore at a bottom seam.

**Sample b** After 70 cycles of load application to $P_c$ = **50 kN** (5100 kg) no visible damages occurred in the test piece. The load has then been increased until failure. On reaching a load of $P_b$ = **85,6 kN** (8720 kg) the fabric tore at a bottom seam and at the discharge spout seam.

**Compression**

**Sample c** After six hours compression by $P_k$ = **60 kN** (6120 kg) no visible damages occurred in the test piece.

## Test result

*A safe working load* ***SWL = 1500 kg / SF = 5:1*** *is allowable.*

**Statement of conformity** The FIBCs tested comply with the requirements of ISO 21898.
FIBCs of this design type are in a condition for safe operation.

**Notes**

**This Certificate is restricted to FIBCs produced by Commercial Syn Bags Limited.**
[1] **This certificate covers all FIBCs with heights of between 90 cm and 200 cm.**
All material weights are minimum weights and may not be lower than the values shown.
Test diagrams see page 2. Photos of the test pieces see page 3. This certificate expires on 3.8.2026.
[2] Raw material: Pure virgin polypropylene (statement of the manufacturer)
[3] "Directions for use referring to this certificate" see page 4.

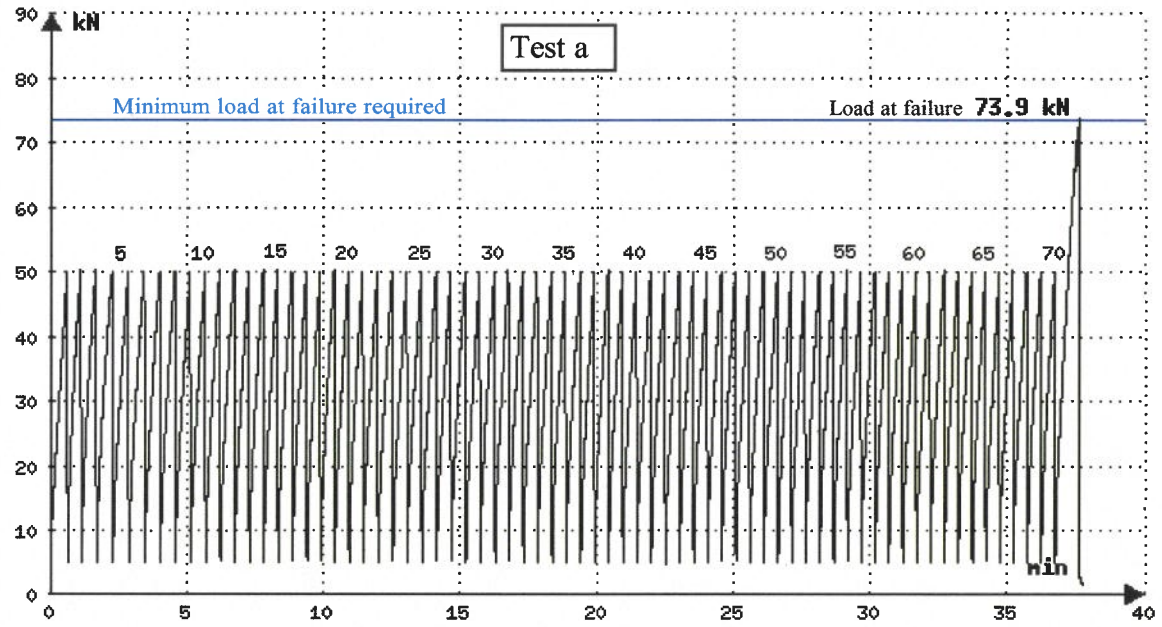
**Competent Engineer**

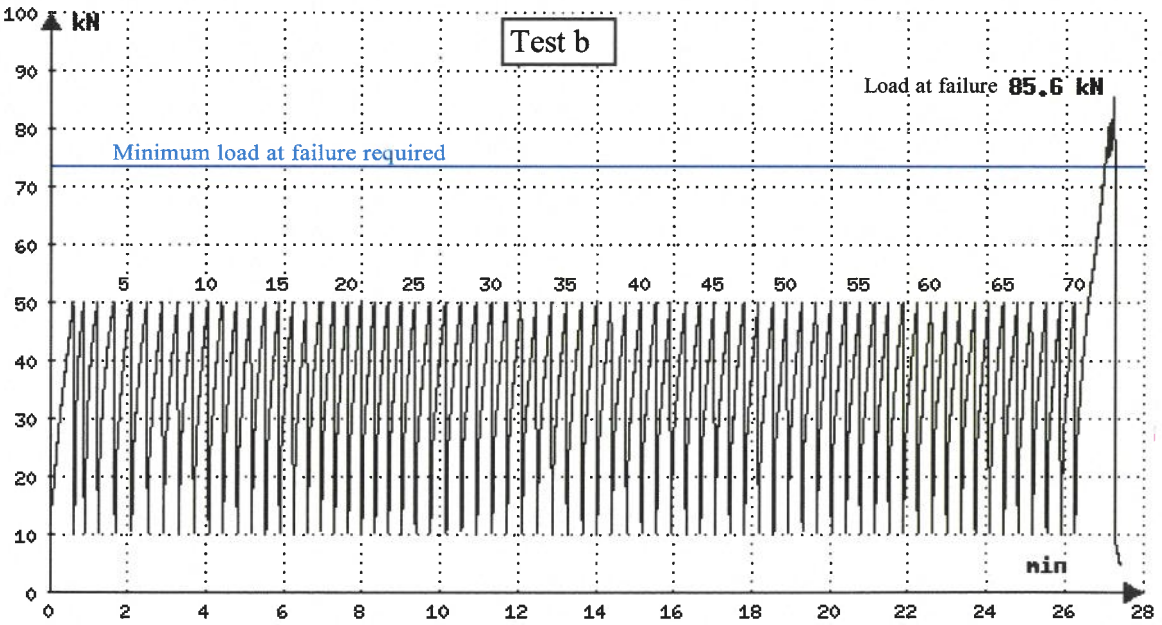
Jorg Bartel

**Head of Institute**

Dr. Herbert Kielbassa

# FIBC - Cyclic top lift tests
# Test diagrams 12842.2 a + b / 23 - 8



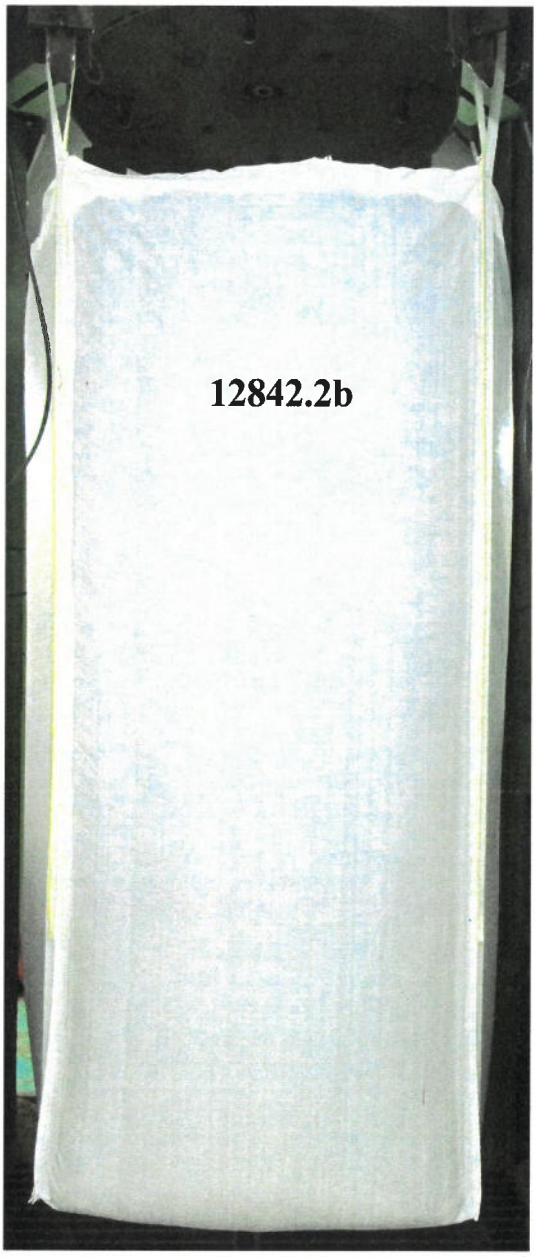

## Project data

| | |
|---|---|
| Applicant | : Commercial Syn Bags Limited |
| Test piece a | : FIBC 90 cm x 90 cm x 90 cm |
| Test piece b | : FIBC 90 cm x 90 cm x 200 cm |
| Safe working load | : SWL = 1500 kg |
| Safety factor | : SF = 5 : 1 |

## Test data

| | |
|---|---|
| Test date | : 3.8.2023 |
| Test Standard | : ISO 21898 |
| Load at failure, test a | : Pb = 73,9 kN = 7530 kg |
| Load at failure, test b | : Pb = 85,6 kN = 8720 kg |

# FIBC - Cyclic top lift tests
# Photos of the test samples


**Project data**

| | |
|---|---|
| Applicant | : Commercial Syn Bags Limited |
| Test piece a | : FIBC 90 cm x 90 cm x 90 cm |
| Test piece b | : FIBC 90 cm x 90 cm x 200 cm |
| Safe working load | : SWL = 1500 kg |
| Safety factor | : SF = 5 : 1 |

**Test data**

| | |
|---|---|
| Test date | : 3.8.2023 |
| Test Standard | : ISO 21898 |
| Load at failure, test a | : Pb = 73,9 kN = 7530 kg |
| Load at failure, test b | : Pb = 85,6 kN = 8720 kg |

# Directions for use referring to this certificate

This certificate covers FIBCs of like design, manufactured using like materials and methods of construction as set down in this certificate and showing dimensions as listed below and in the certificate. The use of other methods or components may render the certificate invalid. It is the responsibility of FIBC manufacturers to ensure the samples tested are representative of the production.

| **Allowed** (covered by this certificate) | **Not allowed** (not covered by this certificate) |
|---|---|
| Diameters of discharge spout smaller than **42** cm | Diameters of discharge spout larger than **42** cm |
| Base without discharge spout | |
| Base dimensions of between **90** cm x **90** cm and **99** cm x **99** cm provided the same geometry is maintained | ase dimensions smaller than **90** cm x **90** cm<br>Base dimensions larger than **99** cm x **99** cm |
| Bag heights of between **90** cm and **200** cm | Bag heights smaller than **90** cm<br>Bag heights larger than **200** cm |
| Use for one filling and one discharge only | Re-use of the FIBCs |
| Open top or any other design of top construction | Manufacture after expiry date of this certificate: **3.8.2026** |

## Anchorage lengths of the webbings

| Bag height (cm) | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Short leg (cm) | 55 | 55 | 56 | 56 | 57 | 57 | 58 | 58 | 59 | 59 | 60 | 60 |
| Long leg (cm) | 80 | 86 | 93 | 99 | 105 | 112 | 118 | 125 | 131 | 137 | 144 | 150 |

## Label

All FIBCs shall be durably marked by means of a permanently attached and easily visible and readable label. The layout of the label referring to this certificate shall be as shown below with the following data:

Manufacturer's Name & Address and Logo
Manufacturer's Reference (unique to the hereby certified FIBC type)

**SWL 1500 kg** **Safety Factor 5 : 1**

Your logos etc.

| | |
|---|---|
| **Test Certificate No** | **12842.2/23-8** |
| **Test Certificate Date** | **3.8.2023** |
| **Approved Laboratory** | **LABORDATA** |
| **Test Standard** | **ISO 21898** |
| **FIBC Class** | **Single trip** |
| **Date FIBC manufactured** | |

Handling Recommendations / Pictograms (proposals see www.labordata.com)

Supplier's Name & Address (if required)