

Certificate 402497-19-0102



Process Safety

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JEIL INDUSTRY CO., LTD

3, Bukjeongseo-gil,
Yangsan-si,
Gyeongsangnam-do,
Republic of Korea

Certification of a FIBC as Type C according to IEC 61340-4-4; Edition 3.0: 2018

Date: February 25, 2019

Our reference: KU

Summary

The tested FIBC **is in compliance** with the requirements of Type C according IEC 61340-4-4; Edition 3.0: 2018.

The manufacturer label **is in compliance** with the requirements according IEC 61340-4-4; Edition 3.0: 2018-01 for labels for Type C FIBC's. The Type C label is less than 100 cm² in area.

This Document consists of
5 Pages.
Page 1 of 5

The results in this report refer exclusively to the submitted samples. The sample name as well as additional data corresponds to the information provided by the customer. A further verification was not made. Copies of the entire report are permitted, whereas excerpts as well as its use for advertising purposes requires the express written approval of TÜV SÜD Schweiz AG.

Detailed information on the sample, test parameters and test results are shown in the following tables.

Head of Testing

Christian Kubainsky

February 25, 2019

The results in this test report are based on measurements of samples given to the test laboratory. The total test report may be copied but not parts of it.

This test report for a FIBC design shall be valid for a period of three years from the date of issue.



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Test Report 402497-19-0102



Process Safety

Test Object

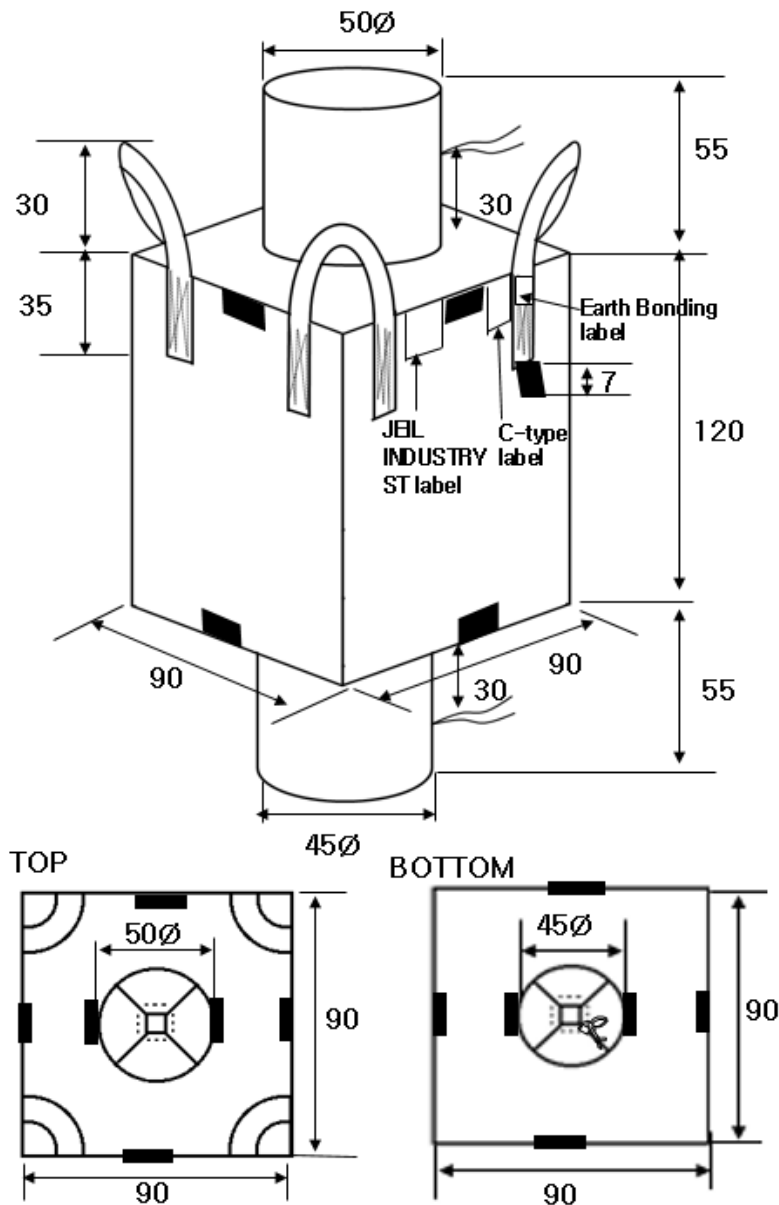
Received: February 19, 2019

Sample Description (given by Manufacturer)

Detail	Notes	Ident No./Code
FIBC description	FIBC type C	
Manufacturers name & address	JEIL INDUSTRY CO., LTD Bukjeongseo-gil, Yangsan-si, Gyeongsangnam-do, Republic of Korea	
Method of construction	Sewing of PP fabrics	
Nominal load	500kg	
Material type and grade	Polypropylene yarn and carbon yarn	
Tare mass	2.15kg	
Number of plies	1550 Denier	
Grammage of material per square meter	196g	
Fabric (warp / weft), tapes per 100mm	14X14/inch	
Coating material, thickness weight	PP / 25 μ m / 157g	
Liner	N/A	
Dimensions	900x900x1200mm	
Filling aperture	50cm Ø	
Discharge aperture	45cm Ø	
Sewing	Thread	
Conductive thread	Carbon yarn	
Form of liner attachment	N/A	
Adhesive type	Sewing	
No. of lifting loops	4EA	
No. of labels	4EA	
Label description (for every kind)	Type C label: 1EA Earth label : 2EA Company Label :1EA	
No. of document pouch	N/A	

The sample description corresponds to the information provided by the requester. A further verification was not made

Drawing



Applied Testing Procedure

SOP-No: 201 (Measuring of the surface resistance)

SOP-No: 207 (Determination of the breakdown voltage U_D)

SOP-No: 213 (Testing of the electrostatic properties of FIBC)

Test set-up

The tests were carried out in the electrostatic lab of the TÜV SÜD Process Safety in Basel.

For the determination of the resistance to ground the Megohmmeter was used connected to a sharp metal point according IEC 61340-4-4:2012 + A1:2014. The measuring voltage was 10V and 100 V.

Test Report 402497-19-0102



Process Safety

For the surface resistance the Megohmmeter was used with the circle electrode according IEC 61340-2-3. The measuring voltage was 1000V and 100V.

For the conversion to resistivity values the following equation are used:

$$\rho_s = R_x (d_1 + g) \cdot \pi / g$$

where

ρ_s is the surface resistivity (W);

R_x is the measured surface resistance (W);

d_1 is the diameter of the inner contact electrode (m);

g is the distance (gap) between the contact electrodes (m).

For the used electrode, the factor $(d_1 + g) \cdot \pi / g = 10.455$

The breakdown voltage was tested with the high voltage device connected to the electrode arrangement plate against plate (P25 / P75) according to EN 60243.

The breakdown voltage test and the resistance to ground test was done inside a climatic chamber with a climate of 23°C/20%rh, according IEC 61340-4-4: Edition 3.0; 2018-01.

the surface resistance test was done inside a climatic chamber with a climate of 23°C/20%rh and 23°C/60%rh, according IEC 61340-4-4: Edition 3.0; 2018-01.

The conditioning time prior to testing was at least 12h

End of experimental part: February 25, 2019.

Test Report 402497-19-0102



Process Safety

Results and Evaluation

Test Location	Test Scope	Test Value	Unit
lifting loops	resistance to ground	3.8E+06	Ω
filling spout, fabric	resistance to ground	3.5E+07	Ω
top, fabric	resistance to ground	4.3E+05	Ω
body side1, fabric	resistance to ground	3.2E+05	Ω
body side2, fabric	resistance to ground	3.9E+05	Ω
body side3, fabric	resistance to ground	6.5E+05	Ω
body side4, fabric	resistance to ground	7.0E+05	Ω
bottom, fabric	resistance to ground	2.5E+05	Ω
outlet spout, fabric	resistance to ground	2.8E+06	Ω
body fabric	breakdown voltage	2.2	kV
Top and bottom fabric	breakdown voltage	2.4	kV
filling spout, top, outlet spout (fabric)	breakdown voltage	1.8	kV
bag label	surface resistivity at 23°C/20%rh	1.6E+10	Ω
Type C label	surface resistivity at 23°C/20%rh	NA	Ω
bag label	surface resistivity at 23°C/60%rh	2.8E+10	Ω
Type C label	surface resistivity at 23°C/60%rh	NA	Ω