



ENGINEERING AND TEST DIVISION
1175 CHURCH STREET, BOHEMIA, LONG ISLAND, NEW YORK 11716 (631) 589-6300

TEST REPORT NO.: 418722-01-04-R23-0131

DAYTON T. BROWN, INC. JOB NO.: 418722-01-000

CUSTOMER:	SHANGHAI XINFAN INDUSTRIAL CORPORATION ROOM 2704, NO.436 HENG FENG ROAD SHANGHAI 200070, CHINA
SUBJECT:	FREIGHT CONTAINER MECHANICAL SEAL CLASSIFICATION TESTING PER ISO 17712:2013 (E) CLAUSES: 4.1.3 AND 5, CONDUCTED ON 26 BOLT SEALS, MODEL NO. TSS-BS-UTEDITION, SERIAL NOS. 000001 THROUGH 000026
PURCHASE ORDER NO.:	20230202001

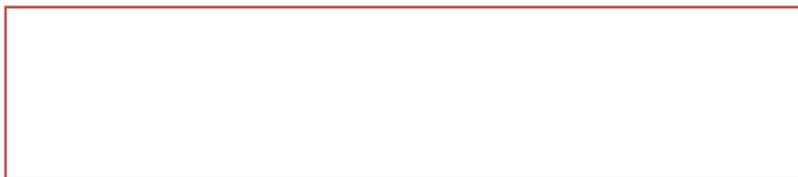
ATTENTION: MS. FIFI CHEN

SEAL CLASSIFICATION: HIGH SECURITY

TEST ADMINISTRATOR	 J. BENINCASA
QUALITY DEPARTMENT	 D. THORNE
DATE	9 MARCH 2023

INFORMATION CONTAINED HEREIN MAY BE SUBJECT TO EXPORT CONTROL LAWS. REFER TO INTERNATIONAL TRAFFIC IN ARMS REGULATION (ITAR) OR THE EXPORT ADMINISTRATION REGULATION (EAR) OF 1979. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO OBTAIN ANY REQUIRED LICENSES TO EXPORT ANY CONTROLLED DATA.

THE DATA CONTAINED IN THIS REPORT WAS OBTAINED BY TESTING IN COMPLIANCE WITH THE APPLICABLE TEST SPECIFICATION AS NOTED



REVISION HISTORY

Revision	Date	Section Affected	Change
--	03/09/2023	--	--

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1.0 ABSTRACT

This test report details the results of freight container mechanical seal classification testing conducted on Bolt Seals, under reference (a) to the requirements of reference (c).

As per ISO 17712:2013(E) Clause 5.1.2, "Testing is to be done once every two years". Therefore, this report expires 2 years from the test completion date.

Results of the tests are detailed in the following text.

Test data pertinent to this program will remain on file at Dayton T. Brown, Inc. for 90 days.

The testing and results contained in this report are in accordance with the testing requirements called out in ISO 17712:2013 and are only applicable to the samples as received and to the specific units identified in the test report and do not address any individual manufacturer's compliance or non-compliance with all the requirements of ISO 17712:2013 which are the sole responsibility of each manufacturer and not part of the testing performed and recorded in this test report.

Dayton T. Brown, Inc. is not involved in any production quality inspections. All tests are based on the samples that are selected by the manufacturer and provided to Dayton T. Brown, Inc. without any Dayton T. Brown, Inc. involvement in said selection.

Dayton T. Brown, Inc. performs testing to ISO 17712:2013 under laboratory conditions. These tests do not measure and are not intended to measure all possible applications or installations of the seal assembly or components. In that event, the report will describe the particular application tested in detail. Dayton T. Brown, Inc. is not responsible for actual performance of any seal assembly as installed in any application.

This report shall not be reproduced, except in full, without the written approval of Dayton T. Brown, Inc.

2.0 REFERENCES

- (a) Customer Purchase Order No.: 20230202001
- (b) Dayton T. Brown, Inc. Job No.: 418722-01-000
- (c) Test Specifications: ISO 17712:2013 (E) Clauses: 4.1.3 and 5

3.0 SEAL CLASSIFICATION

ISO 17712:2013 (E): (H)-High Security for Clauses: 4.1.3 and 5

4.0 ADMINISTRATIVE INFORMATION

Customer	Shanghai Xinfan Industrial Corporation Room 2704, No.436 Heng Feng Road Shanghai 200070, China
Sample Type	Bolt Seal
Sample Name	High Security Bolt Seal (as provided by customer)
Model No.	TSS-BS-UTEDITION (as provided by customer)
Serial Nos.	000001 through 000026
Quantity Received	30
Quantity Tested	26
Date Received	6 February 2023
Dates Tested	15 and 16 February 2023

5.0 TEST PROGRAM OUTLINE

Test	Test Item Description	Results
Bolt Seal Diameter Qualification	Model No TSS-BS-UTEDITION Bolt Seal, Serial No. 000026	See Page 6.
Tensile	Model No TSS-BS-UTEDITION Bolt Seals, Serial Nos. 000001 through 000005	See Page 8.
Shear	Model No TSS-BS-UTEDITION Bolt Seals, Serial Nos. 000006 through 000010	See Page 10.
Bending	Model No TSS-BS-UTEDITION Bolt Seals, Serial Nos. 000011 through 000015	See Page 12.
Impact	Model No TSS-BS-UTEDITION Bolt Seals, Serial Nos. 000016 through 000025	See Pages 14 and 15.
Test Equipment List and Test Item Photo	Model No TSS-BS-UTEDITION Bolt Seal	See Pages 17 and 18.

6.0 TEST RESULTS

4.1.3 - Bolt Seal Diameter Qualification Test and Results

TEST REQUIREMENT

The Bolt Seal Diameter Qualification test shall be conducted in accordance with reference (c).

TEST RESULTS

All testing was performed in accordance with the referenced specification.

TEST DATA

Date: 15 February 2023

Bolt Seal Diameter Qualification Test at Room Temperature			
Specimen No.	Measurement (mm)		Remarks
	Pin Head	Lock Body	
000026	18.27	18.03	Meets Requirements

Tech: JB

Test Requirements

The minimum diameter (or minimum widest cross-dimension) for the metal components of a bolt seal shall be 18mm.



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TYPICAL PHOTO OF THE BOLT SEAL DIAMETER QUALIFICATION TEST SETUP
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5.2 - Tensile Test and Results

TEST REQUIREMENT

The tensile test shall be conducted in accordance with reference (c).

TEST RESULTS

A pretest visual inspection of the test items revealed no anomalies.
 All testing was performed in accordance with the referenced specification.
 The pulling speed during the test was 50.8mm/min.
 Test room ambient conditions: 20.4° C and 49.2% RH

TEST DATA

Date: 16 February 2023

Tensile Test at Room Temperature			
Specimen No.	Load (kN)	Class Rating	Remarks
000001	22.88	H	*
000002	20.17	H	**
000003	22.76	H	*
000004	23.69	H	*
000005	23.01	H	*

Tech: JB

* A post-test visual inspection of the test item revealed that the bolt tip broke in the lock mechanism due to testing.

** A post-test visual inspection of the test item revealed that the bolt pulled out of the lock mechanism due to testing.

Classification Key

Rating Load to Failure

High Security (H): 10.0 kN

Security (S): 2.27 kN

Indicative (I): <2.27 kN



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TYPICAL PHOTO OF THE TENSILE TEST SETUP

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5.3 - Shear Test and Results

TEST REQUIREMENT

The shear test shall be conducted in accordance with reference (c).

TEST RESULTS

A pretest visual inspection of the test items revealed no anomalies.
 All testing was performed in accordance with the referenced specification.
 The travel rate during the test was 12.5 mm/min.
 Test room ambient conditions: 20.2° C and 51.4% RH

TEST DATA

Date: 16 February 2023

Shear Test at Room Temperature			
Specimen No.	Load (kN)	Class Rating	Remarks
000006	8.896	H	*
000007	8.896	H	*
000008	8.896	H	*
000009	8.896	H	*
000010	8.896	H	*

Tech: JB

* A post-test visual inspection of the test item revealed a slight indent on the shaft of the bolt due to testing.

Classification Key

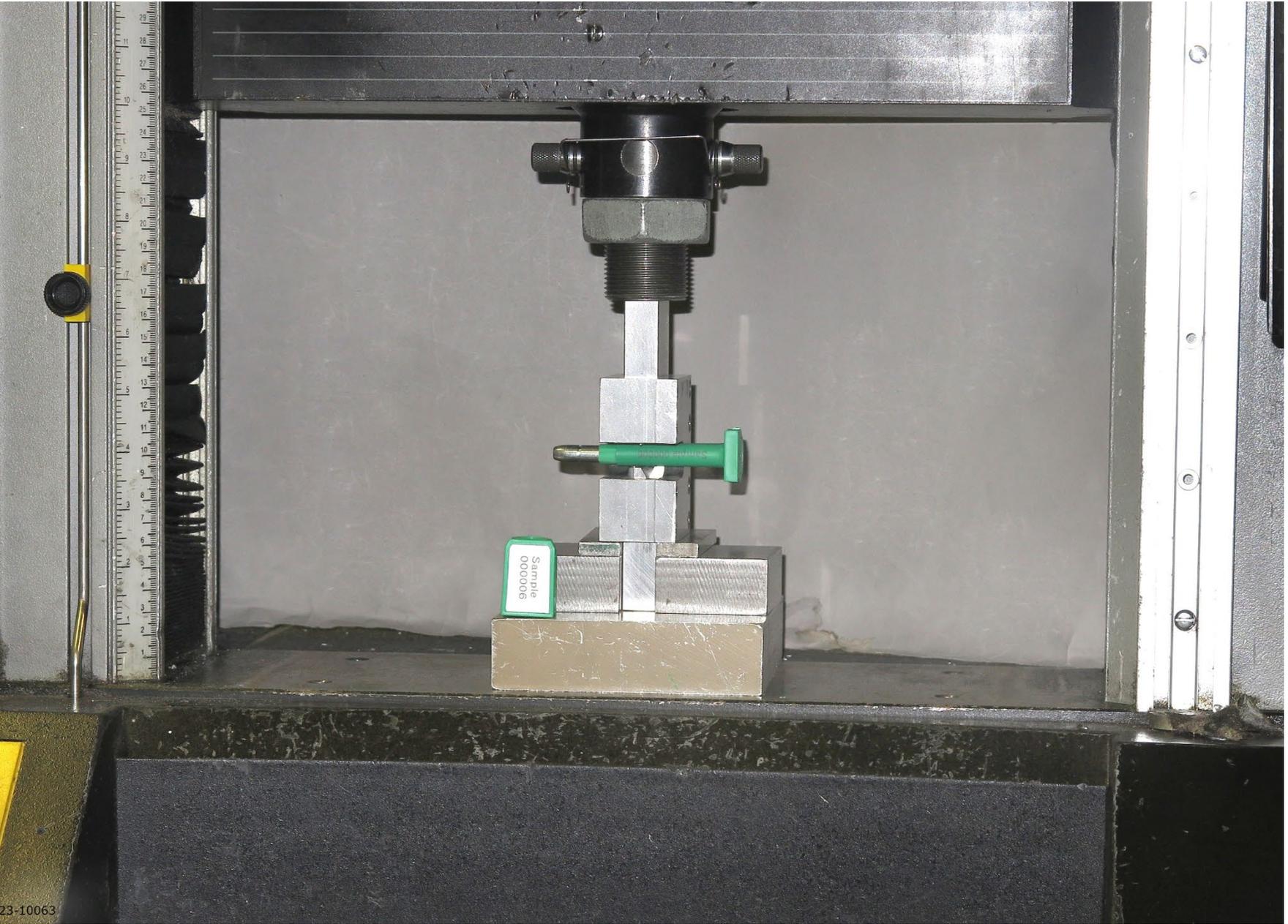
Rating Load to Failure

High Security: (H): 3.336 kN

Security (S): 2.224 kN

Indicative (I): <2.224 kN

SAFETY PRECAUTIONS – Do not exceed a shear force greater than 8900 N (2001 lbf). If the specimen has not failed at that force, halt the test and unload the test equipment. Record a shear force of 8896 N (2000 lbf). Sudden and violent rupture of the test specimen can endanger personnel, equipment and property.



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TYPICAL PHOTO OF THE SHEAR TEST SETUP

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5.4 - Bending Test and Results

TEST REQUIREMENT

The bending test shall be conducted in accordance with reference (c).

TEST RESULTS

A pretest visual inspection of the test items revealed no anomalies.
 All testing was performed in accordance with the referenced specification.
 The test was performed using a .332m moment arm with a pull speed of 3 seconds.
 Test room ambient conditions: 20.2° C and 51.3% RH

TEST DATA

Date: 16 February 2023

Bending Test at Room Temperature				
Specimen No.	Bending Moment (Nm)	Load Force (N)	Class Rating	Remarks
000011	57.33	172.7	H	*
000012	58.79	177.1	H	*
000013	58.89	177.4	H	*
000014	60.12	181.1	H	*
000015	60.68	182.8	H	*

Tech: JB

* A post-test visual inspection of the test item revealed that the shaft of the seal bent due to testing.

Classification Key

Rigid Seals
 Rating Moment to Failure

High Security (H): 50 Nm

Security (S): 22 Nm

Indicative (I): <22 Nm



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TYPICAL PHOTO OF THE BENDING TEST SETUP

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5.5 - Impact Test and Results

TEST REQUIREMENT

The impact test shall be conducted in accordance with reference (c).

TEST RESULTS

A pretest visual inspection of the test items revealed no anomalies.
 All testing was performed in accordance with the referenced specification.
 Test chamber conditions: 18.9° C and 28.5% RH

TEST DATA

Date: 15 February 2023

Impact Test at Room Temperature (required 18 ± 3°C)					
Specimen No.	Number of Successful Impacts Per Load (J)			Class Rating	Remarks
	13.56	27.12	40.68		
000016	5	5	5	H	*
000017	5	5	5	H	*
000018	5	5	5	H	*
000019	5	5	5	H	*
000020	5	5	5	H	*

Tech: JB

* A post-test visual inspection of the test item revealed that plastic portions of the seal broke or deformed due to testing. The bolt and lock of the seal remained intact.

Classification Key

Rating	Load to Failure (5 impacts at each load)	Dead Blow Weight (4 kg) Drop Height
High Security (H):	40.68 J	1.037 m
Security (S):	27.12 J	0.691 m
Indicative (I):	<27.12 J	0.346 m

5.5 - Impact Test and Results

Test chamber conditions: -26.9° C and 79.8% RH

TEST DATA – (Continued)

Date: 15 February 2023

Impact Test at Reduced Temperature (required $-27 \pm 3^{\circ}\text{C}$)					
Specimen No.	Number of Successful Impacts Per Load (J)			Class Rating	Remarks
	13.56	27.12	40.68		
000021	5	5	5	H	*
000022	5	5	5	H	*
000023	5	5	5	H	*
000024	5	5	5	H	*
000025	5	5	5	H	*

Tech: JB

* A post-test visual inspection of the test item revealed that plastic portions of the seal broke or deformed due to testing. The bolt and lock of the seal remained intact.

Classification Key

Rating	Load to Failure (5 impacts at each load)	Dead Blow Weight (4 kg) Drop Height
High Security (H):	40.68 J	1.037 m
Security (S):	27.12 J	0.691 m
Indicative (I):	<27.12 J	0.346 m



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TYPICAL PHOTO OF THE IMPACT TEST SETUP

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Test equipment utilized for the program reported herein was within its assigned interval of calibration. Details are on file at Dayton T. Brown, Inc. and will be made available upon request.



TEST: FREIGHT CONTAINER MECHANICAL SEAL CLASSIFICATION TESTING

<u>ITEM</u>	<u>MANUFACTURER</u>	<u>MODEL</u>	<u>DTB NO.</u>	<u>ACCURACY</u>	<u>CAL DUE DATE</u>	<u>LAST CAL DATE</u>
THERMOTRON, 275	THERMOTRON	FX-82-CHV-25-25	04E-006	-	N.C.R.	-
CONDITIONING ROOM	DAYTON T. BROWN	N/A	04S-001	-	N.C.R.	-
RECORDER, CHART TRULINE	HONEYWELL	DR4500	12-12	Type T ± 0.7°F	09/24/2023	09/29/2022
LOGGER, RH AND TEMPERATURE	FLUKE	1620A	12-39	59 to 95°F ± 0.75°F; 10 to 70% RH ± 2% RH	02/04/2024	02/07/2023
TAPE MEASURE, 26 FEET/8 METERS	STARRETT	TX1-26ME	15-100	± 1 mm	05/21/2023	05/24/2022
CONTROLLER, ENVIRONMENTAL SYSTEM	JC SYSTEMS	620	25-55	RTD ± 1.08°F; RH ± 1% RH	03/12/2023	03/18/2022
TESTER, UNIVERSAL TENSILE W/STATIC LOAD CELLS (2)	INSTRON	5569	29-2	± 1% of reading	06/18/2023	06/20/2022
WEIGHT, DEAD BLOW	DAYTON T. BROWN	JB-1	38-55	± 0.01 kilograms	05/26/2024	06/01/2022
INDICATOR, TEMPERATURE AND HUMIDITY	VAISALA	HMI41/HMP46	43-4	± 2% 10 to 95% RH, ± 0.36°F	07/16/2023	07/22/2022
TIMER, DIGITAL	FISHER SCIENTIFIC	14-649-17	47-55	± 8.64 Sec/24 hr	01/21/2024	01/24/2023
IMPACT TESTER, FREIGHT CONTAINER MECHANICAL	DAYTON T. BROWN	ISO 17712:2013	61-10	-	N.C.R.	-
GAUGE, DIGITAL FORCE 200 LB	CHATILLON	DFS2-200	61-14	± 0.1% of F.S.	06/04/2023	06/06/2022
CALIPER, DIGIMATIC 4"	MITUTOYO	CD-4" CS	68-273	± .0005"	01/19/2025	01/25/2023
FIXTURE, SHACKLE CUTTING AND 2 BLADES	DAYTON T. BROWN	ISO 17712:2013	68-492	Mfr	12/17/2023	12/09/2019
MICROMETER, DIGIMATIC OUTSIDE 1" COOLANT PROOF	MITUTOYO	293-335-30	68-502	± 0.00005"	10/22/2023	10/26/2021

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MODEL NO. TSS-BS-UT EDITION BOLT SEAL

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