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Metal Industries Research & Development Centre
Mechanical Testing Laboratory
No.25, 37th Road, Industrial Park, Taichung City 40768, Taiwan (R.O.C.)
試驗報告 TEST REPORT

Testing Laboratory
0099

Test Report No. : O0428156-T01　　Page 1 of 12

Customer：	ZHEJIANG OUFU CONTAINER SEAL CO., LTD. Building 25, NO.1336 HANGFU ROAD, CHONGFU TOWN, TONGXIANG CITY, JIAXING CITY, ZHEJIANG PROVINCE, CHINA 314511	
	NovaVision, LLC 524 EAST WOODLAND CIRCLE BOWLING GREEN, OH 43402 USA	
Subject：	Freight containers Mechanical seals classification Testing	
Name of Article：	HIGH SECURITY SEALS	
Type：	Zhejiang Oufu	CABLE SEALS：OF-CS5.0 BOLT SEALS：OF-BS05 COMBINED：OF-BS05-CS5.0
	NovaVision, LLC	CABLE SEALS：MS-C5 BOLT SEALS：MS-B9 COMBINED：MS-C5B9
Received Date：	2025/04/28	
Test Dates：	2025/04/28~2025/05/06	
Date Issued：	2025/05/06	

CHIANG, Ching-Liu
報告簽署人 (Report Authorized Person)

SU, Yuan-Da
檢驗員 (Inspector)

Note：
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試驗報告 TEST REPORT

1. ABSTRACT

Customer：	ZHEJIANG OUFU CONTAINER SEAL CO., LTD. Building 25, NO.1336 HANGFU ROAD, CHONGFU TOWN, TONGXIANG CITY, JIAXING CITY, ZHEJIANG PROVINCE, CHINA 314511	
	NovaVision, LLC 524 EAST WOODLAND CIRCLE BOWLING GREEN, OH 43402 USA	
Name of Article：	HIGH SECURITY SEALS	
Type：	Zhejiang Oufu	CABLE SEALS：OF-CS5.0 BOLT SEALS：OF-BS05 COMBINED：OF-BS05-CS5.0
	NovaVision, LLC	CABLE SEALS：MS-C5 BOLT SEALS：MS-B9 COMBINED：MS-C5B9
Serial No.：01~26		
Quantity Tested：26		
Inspection Reference：ISO 17712:2013(E)		

Test Item	Section Number	Serial No.	Results	
			Bolt Seal	Cable Seal
Evidence of Tampering (Minimum Diameter)	4.1.3	26	See Page 3	---
Tensile Test	5.2	01~05	See Page 4	See Page 4
Shear Test	5.3	06~10	See Page 6	See Page 6
Bending Test	5.4	11~15	See Page 7	See Page 8
Impact Test room temp	5.5	16~20	See Page 9	See Page 10
Impact Test reduced temp	5.5	21~25	See Page 9	See Page 10

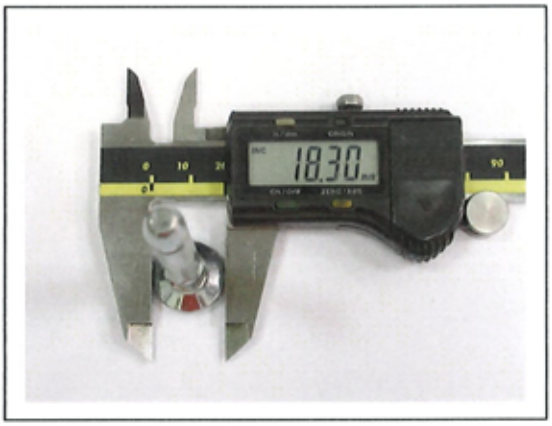
2. Evidence of tampering Test - Bolt Seal：

Ambient Temp.：18℃；65% R.H.
Inspection Reference：ISO 17712:2013(E)
Result：

Evidence of Tampering Section 4.1.3

Specimen No.	Measurement (mm)		Pass/Fail
26	Pin Head	18.30	Pass
	Lock Body	18.14	Pass

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



Pin Head

Lock Body

3. Tensile Test ：

Testing Instrument：Universal Testing Machine (No.TG0103)
Ambient Temp.：18℃；65% R.H.
Inspection Reference：ISO 17712:2013(E)
Result：

Tensile Test Section 5.2

The seal was gripped in a tensile machine and a pull force applied.

Specimen No.	Requirement Load to failure	Result kN		Seal classification
		Bolt Seal	Cable Seal	
01	10.0 kN：High security seal 2.27 kN：Security seal < 2.27 kN：Indicative seal	16.5	13.0	High security seal (H)
02		16.2	13.8	High security seal (H)
03		17.5	13.9	High security seal (H)
04		16.2	14.2	High security seal (H)
05		16.0	13.8	High security seal (H)

Universal Testing Machine

Tensile Set up -Bolt Seal

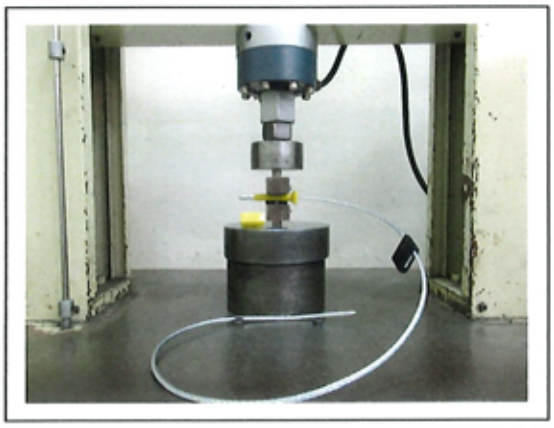
Tensile Set up - Cable seal

4. Shear Test
Testing Instrument：Universal Testing Machine (No.TG0103)
Ambient Temp.：17°C；66% R.H.
Inspection Reference：ISO 17712:2013(E)
Result：

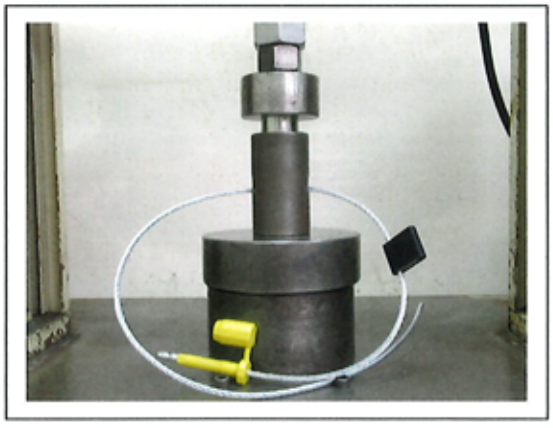
Shear Test Section 5.3

The seal was fixed in a universal testing machine to withstand cutting with shearing blades and a compressive load applied slowly until the seal is severed.

Specimen No.	Requirement Load to failure	Result kN		Seal classification
		Bolt Seal	Cable Seal	
06	3.336 kN：High security seal 2.224 kN：Security seal <2.224 kN：Indicative seal	8.896	8.896	High security seal (H)
07		8.896	8.896	High security seal (H)
08		8.896	8.896	High security seal (H)
09		8.896	8.896	High security seal (H)
10		8.896	8.896	High security seal (H)



Shear Set up- Bolt Seal



Shear Set up - Cable seal

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

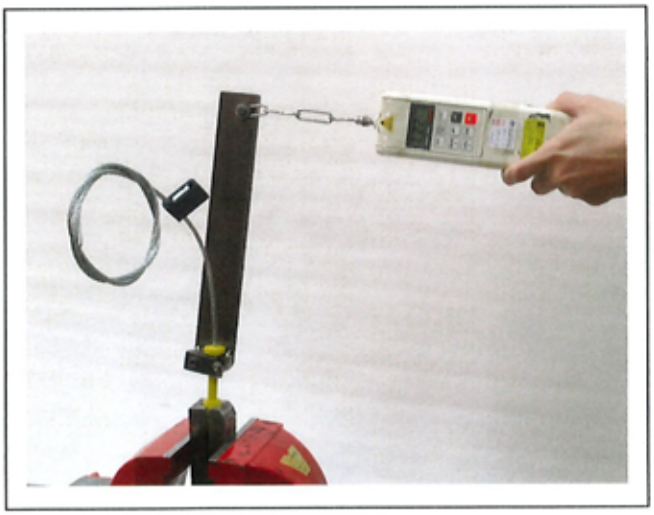
5.1 Bending Test - Bolt Seal

Testing Instrument：FORCE GAURE
Ambient Temp.：17℃；66% R.H.
Inspection Reference：ISO 17712:2013(E)
Result：

Bending Test Section 5.4

Fix the locking end on the universal testing machine in a horizontal position.
Apply a load on the remaining portion of the seal at a distance (the moment arm) above the fixed end so as to bend the seal 90 degrees.

Specimen No.	Requirement Bending moment to failure	Result N·m	Seal classification
11	50 N·m：High security seal 22 N·m：Security seal < 22 N·m：Indicative seal	61.9	High security seal (H)
12		64.2	High security seal (H)
13		62.1	High security seal (H)
14		60.6	High security seal (H)
15		62.0	High security seal (H)



Bend Set up - Bolt Seal

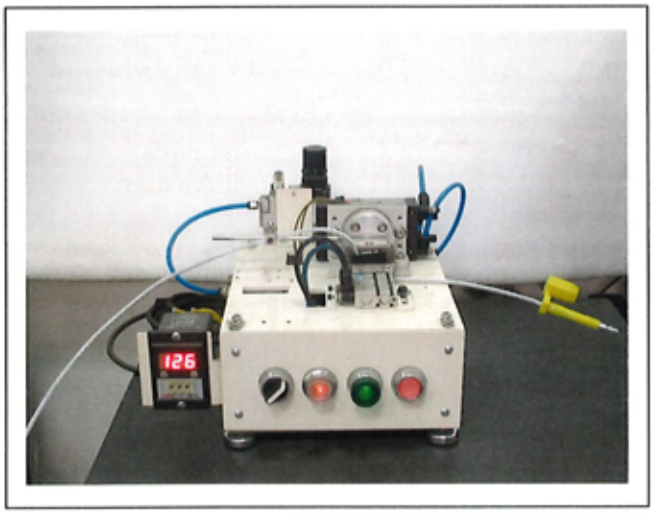
5.2 Bending Test - Cable seal

Testing Instrument：Bending Tester
Ambient Temp.：17℃；66% R.H.
Specification No.：ISO 17712:2013(E)
Result：

Bending Test Section 5.4

Fix the locking end and flex the material adjacent to this fixed end repeatedly through an arc of 180° until failure

Specimen No.	Requirement Cycles to failure	Result Cycles	Seal classification
11	501：High security seal	>501	High security seal (H)
12	251：Security seal	>501	High security seal (H)
13	<251：Indicative seal	>501	High security seal (H)
14		>501	High security seal (H)
15		>501	High security seal (H)



Bend Set up - Cable seal

6.1 Impact Test - Bolt Seal

Testing Instrument：

1. Impact Tester
2. Programmable Low Temp. Tester (No.SG5501)

Inspection Reference：ISO 17712:2013(E)

Impact Test Section 5.5

The impact test is performed at 18 degrees Celsius and minus 27 degrees Celsius of temperature. The impact load is applied at the locking mechanism of the seal in the direction opposite the direction used in locking the seal.

Result：

Impact Test at 18±3℃

Specimen No.	Requirement	Result Joule			Seal classification
		13.56	27.12	40.68	
16	40.68J：High security seal 27.12J：Security seal <27.12J：Indicative seal **5 impacts at each load**	Pass	Pass	Pass	High security seal (H)
17		Pass	Pass	Pass	High security seal (H)
18		Pass	Pass	Pass	High security seal (H)
19		Pass	Pass	Pass	High security seal (H)
20		Pass	Pass	Pass	High security seal (H)

Impact Test at -27±3℃

Specimen No.	Requirement	Result Joule			Seal classification
		13.56	27.12	40.68	
21	40.68J：High security seal 27.12J：Security seal <27.12J：Indicative seal **5 impacts at each load**	Pass	Pass	Pass	High security seal (H)
22		Pass	Pass	Pass	High security seal (H)
23		Pass	Pass	Pass	High security seal (H)
24		Pass	Pass	Pass	High security seal (H)
25		Pass	Pass	Pass	High security seal (H)

6.2 Impact Test - Cable seal

Testing Instrument：

1. Impact Tester
2. Programmable Low Temp. Tester (No.SG5501)

Inspection Reference：ISO 17712:2013(E)

Impact Test Section 5.5

The impact test is performed at 18 degrees Celsius and minus 27 degrees Celsius of temperature. The impact load is applied at the locking mechanism of the seal in the direction opposite the direction used in locking the seal.

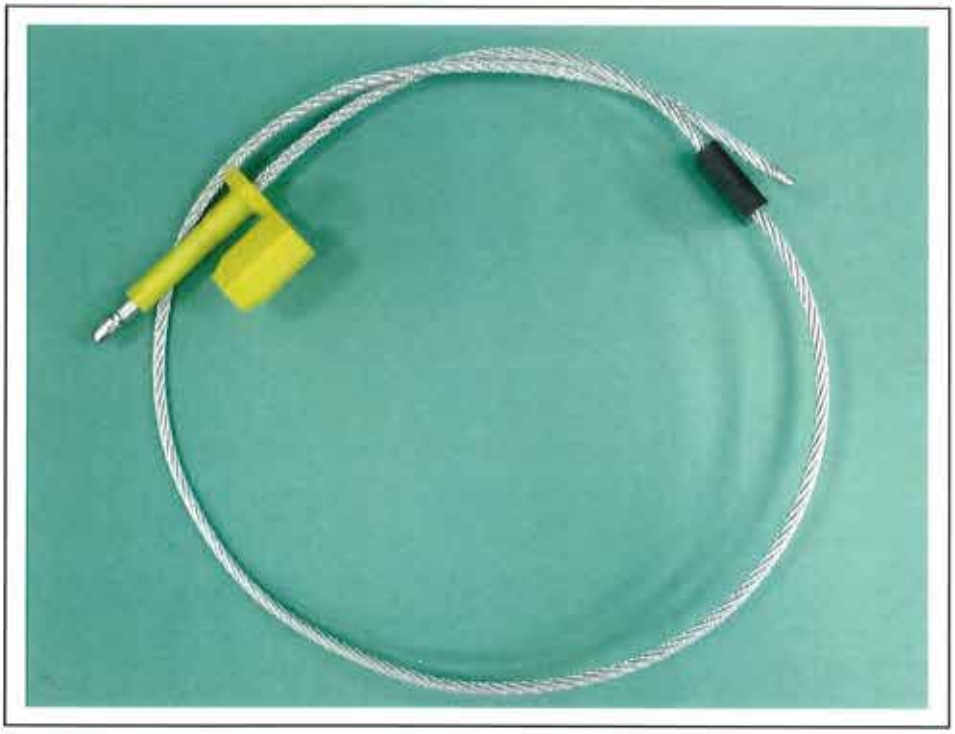
Result：

Impact Test at 18±3℃					
Specimen No.	Requirement	Result Joule			Seal classification
		13.56	27.12	40.68	
16	40.68J：High security seal 27.12J：Security seal <27.12J：Indicative seal **5 impacts at each load**	Pass	Pass	Pass	High security seal (H)
17		Pass	Pass	Pass	High security seal (H)
18		Pass	Pass	Pass	High security seal (H)
19		Pass	Pass	Pass	High security seal (H)
20		Pass	Pass	Pass	High security seal (H)

Impact Test at -27±3℃					
Specimen No.	Requirement	Result Joule			Seal classification
		13.56	27.12	40.68	
21	40.68J：High security seal 27.12J：Security seal <27.12J：Indicative seal **5 impacts at each load**	Pass	Pass	Pass	High security seal (H)
22		Pass	Pass	Pass	High security seal (H)
23		Pass	Pass	Pass	High security seal (H)
24		Pass	Pass	Pass	High security seal (H)
25		Pass	Pass	Pass	High security seal (H)

Impact Set up-Bolt Seal

Impact Set up- Cable seal



Name of Article：HIGH SECURITY SEALS

Type	Zhejiang Oufu	CABLE SEALS：OF-CS5.0 BOLT SEALS：OF-BS05 COMBINED：OF-BS05-CS5.0
	NovaVision, LLC	CABLE SEALS：MS-C5 BOLT SEALS：MS-B9 COMBINED：MS-C5B9

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