

Test Report

Baltic Safety Products AB
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File No.: 114-25481.a
Date: 2014-06-19
Enclosures: 2
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Sample Description: One type of fabric and cover submitted to FORCE Technology in April 2014.

Cover designation: Molten metal splash proof cover 2543

Fabric: Wooltechs 500
Manufacturer of fabric: Textil Santanderina S. A., Spain
Cover closure: Vecro black 201 and 500 (10 mm)
Manufacturer of cover closure material: Gripband AB, Sweden



Front



Back

Testing: Testing was performed in accordance with EN ISO 12402-8:2006+A1:2011 for the following tests:

Clause 5.6.1 General

Test period: April-May 2014 2009

Results: Results are stated on page 2.

Conclusion: The submitted type of Cover "Molten metal splash proof cover 2543" fulfils the requirements in accordance with 12402-8:2006+A1:2011 for the tests clause mentioned on page 2 and was found to be applicable for protective covers.

Supplementary remarks (not part of the accredited report)

- Other documentation together with requirements according to EN ISO 12402-8:2006/A1:2011 are seen in enclosure no. 1.



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Testing of "Molten metal splash proof cover 2543" in Accordance with EN ISO 12402-8:2006+A1:2011

EN ISO 12402-8:2006+A1:2011 Clause 5.6.1

Requirement: Protective covers shall not impede the conformity of the entire device with EN ISO 12402-1 to EN ISO 12402-6

Test method: EN ISO 12402-9:2006+A1:2011 Clause 5.5.10.2.2 Inflation test.
 Deviation from standard: The test is performed at standard condition.

Protective cover on lifejacket Winner 150
 Protective cover on lifejacket Baltic 300N MED SOLAS

The test results are stated below:

Sample:	Full inflation	Status
Cover on lifejacket Winner 150	< 5 s	Pass*
Cover on lifejacket Winner Baltic 300N MED SOLAS	< 5 s	Pass*

*) Requirement: Lifejacket shall inflate including correct distribution through the chambers, within 3 to 4 sec. (requirement <5 sec.) after firing the inflation mechanism.

EN ISO 12402-8:2006+A1:2011 Clause 5.6.1

Test method: 12402-7:2006+A1:2011 Table 14 Effect of Abrasion on Tensile Strength using Annex B Wyzenbeek method and EN ISO 13934-1:1994
 Abradant: Emmery A621 Grain 0 (Norton Saint-Gobain Abrasives)

Exposure:	Tensile strength measurements					Avg.	Status
	1	2	3	4	5		
Abraded, warp	1331 N	1252 N	1093 N	1185 N	1010 N	1174 N	Pass*
Abraded, weft	1763 N	1658 N	1175 N	1308 N	1398 N	1461 N	Pass*

*) Requirement according to EN ISO 12402-7:2006+A1:2011 table 14: The average tensile strength shall be at least 25 N for each direction following abrasion. Uncertainty of measurement is assessed not to be relevant for this test.

EN ISO 12402-8:2006+A1:2011 Clause 5.6.2.1.2

Test spike: SR 0.5 mm, Ø4, 15 °
 Tension: 62 N for 10 sec. on three areas.

Sample:	Result	Status
Covermaterial + inflation chamber on lifejacket Winner 150	No puncture	Pass*

*) Requirement according EN ISO 12402-8:2006+A1:2011 Clause 5.6.2.1.1 There shall be no puncture when tested according to clause 5.6.2.1.2

Not part of the accredited test report

Fulfilment of requirements according to EN ISO 12402-8

Basic requirement EN ISO 12402-8/A1	Property	Test house	Documentation
Clause 5.6.1	Abrasion resistance	Force Technology	114-25481.a
	Inflation	Force Technology	114-25481.a
	Fire resistance	Aitex, Spain	2012CO0729*
Clause 5.6.2.1	Puncture	Force Technology	114-25481.a
Clause 5.6.2.2	Molten metal splash resistance	Aitex, Spain	2012CO0729
Clause 5.6.2.3	Burst strength	N/A**	N/A

*) Flame spread tested according to EN ISO 11611 **) Not applicable

Fulfilment of requirements according to EN ISO 11611 of the fabric

Requirement to EN ISO 11611 class 2	Property	Test house	Documentation
Clause 6.1	Tensile strength	Aitex, Spain	2012CO0729
Clause 6.2	Tear strength	Aitex, Spain	2012CO0729
Clause 6.3	Burst strength	N/A*	N/A
Clause 6.4	Seam strength	-	Not tested
Clause 6.5	Dimensional change	Aitex, Spain	2012CO0729
Clause 6.6	Requirements for leather	N/A*	N/A
Clause 6.7	Flame spread	Aitex, Spain	2012CO0729
Clause 6.8	Impact of splatter	Aitex, Spain	2012CO0729
Clause 6.9	Heat transfer (radiation)	Aitex, Spain	2012CO0729
Clause 6.10	Electrical resistance	Aitex, Spain	2012CO0729
Clause 6.11	Innocuousness	-	Not tested

*) Not applicable

Fulfilment of requirements according to EN ISO 11612 of the fabric

Requirement to EN ISO 11612 A1 A2 B1 C2 D3 E3 F1	Property	Test house	Documentation
Clause 6.2	Heat resistance	Aitex, Spain	2012CO0729
Clause 6.3	Limited flame spread	Aitex, Spain	2012CO0729
Clause 6.4	Dimensional change	Aitex, Spain	2012CO0729
Clause 6.5	Physical requirements	Aitex, Spain	2012CO0729
Clause 6.7	Ergonomics requirements	-	Not tested
Clause 6.9	Innocuousness	-	Not tested
Clause 7.2	Convective heat	Leitat, Spain	IN-01433/2012-B
Clause 7.3	Radiant heat	Aitex, Spain	2012CO0729
Clause 7.4	Molten aluminium splash	Leitat, Spain	IN-01433/2012-B
Clause 7.5	Molten iron splash	Leitat, Spain	IN-01433/2012-B
Clause 7.6	Contact heat	Aitex, Spain	2012CO0729

*) Not applicable

FORCE Technology - Almindelige betingelser

1. Aftale om løsning af opgaver

Før arbejdet påbegyndes, skal der være truffet skriftlig aftale vedrørende opgavens art og omfang, tidsplan og økonomi.

2. Ejendomsret og ophavsret

2.1 FORCE Technologys rapporter må kun offentliggøres i deres helhed og med kildeangivelse. Anvendelse af uddrag og i citatform må kun ske efter skriftlig aftale herom.

2.2 Rekvirenten må respektere FORCE Technologys forpligtelser i henhold til lov om arbejdstagers opfindelser.

3. Manglende opfyldelse af aftale

FORCE Technology kan ikke gøres ansvarlig for ikke at opfylde aftaler, helt eller delvist, såfremt dette skyldes begivenheder uden for FORCE Technologys indflydelse.

4. Garanti

- 4.1 FORCE Technology påtager sig at udbedre fejl, der skyldes mangel ved design, materiale eller udført arbejde.
- 4.2 Denne garanti begrænses til fejl, som opstår eller bliver afsløret inden 12 måneder fra leveringstidspunktet.
- 4.3 I tilfælde af brug af specielle komponenter vil garantiperioden for disse komponenter være den samme, som FORCE Technology er i stand til at opnå hos sine leverandører.
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 - a) at reparere den fejlbehæftede del eller udstyr på stedet, eller
 - b) at få den fejlbehæftede del eller udstyr returneret til FORCE Technology for reparation, eller
 - c) at udskifte den fejlbehæftede del eller udstyr, således at kunden selv kan udføre den nødvendige reparation for FORCE Technologys regning.
- 4.5 I det tilfælde, hvor FORCE Technology har modtaget en fejlbehæftet del eller udstyr til erstatning eller reparation, skal kunden afholde transportomkostninger samt bære risikoen ved transport.
- 4.6 Fejlbehæftede dele eller udstyr, som er erstatte ifølge disse bestemmelser, skal stilles til FORCE Technologys disposition.
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- 4.8 Garantiperioden for reservedele og tilbehør er den samme som for den udskiftede del.

5. Ansvar

- 5.1 FORCE Technology er ikke erstatningsansvarlig for tab eller skade, medmindre det kan dokumenteres, at tabet eller skaden er opstået på grund af fejl eller forsømmelse begået af FORCE Technology i forbindelse med produktion eller udførelsen af en rekvireret opgave.
- 5.2 FORCE Technology hæfter ikke for driftstab, tådstab, avancen tab eller lignende indirekte tab.
- 5.3 FORCE Technology løser rekvirerede opgaver og fremkommer med udtalelser og vejledninger på grundlag af den viden og teknik, FORCE Technology råder over. FORCE Technology påtager sig ikke erstatningsansvar, medmindre det kan bevises, at denne viden eller teknik var mangelfuld på tidspunktet for opgavens løsning.
- 5.4 FORCE Technology fratægger sig erstatningsansvar for skader, som måtte indtræffe i forbindelse med en anvendelse af afgivne data og prøvningsresultater, som lægges uden for den opgave og uden for det formål, i forbindelse med hvilke FORCE Technologys udtalelse er afgivet.
- 5.5 FORCE Technology fratægger sig erstatningsansvar for fejl i forbindelse med udtalelser, for hvilke det er anført, at disse hviler på en skønsmæssig vurdering.
- 5.6 Ved udvælgelse af kontrol og prøvning hæfter FORCE Technology kun for skader, som måtte opstå ved, at FORCE Technology ikke rettidigt har gjort rekvirenten opmærksom på tilstedeværende mangler.
- 5.7 FORCE Technology har intet erstatningsansvar for indruffne skader, såfremt en skade skyldes en egenskab ved et produkt eller en anvendelse af et produkt, som enten ikke er afprøvet eller undersøgt og beskrevet i prøvnings- eller undersøgelsesrapporten, eller som afviger fra FORCE Technologys beskrivelse i prøvnings- eller undersøgelsesrapporten af produktets egenskaber eller af en mulig produktanvendelse.
- 5.8 FORCE Technology har intet erstatningsansvar for indruffne skader, såfremt et skadevoldende produkt ikke konkret har været afprøvet af FORCE Technology, medmindre rekvirenten godtgør, at det skadevoldende produkt er identisk med et af FORCE Technology konkret afprøvet og kontrolleret produkt.
- 5.9 Hvis andre end rekvirenten rejser krav om erstatning mod FORCE Technology, begrundet i forhold, der ligger ud over det erstatningsansvar, som FORCE Technology i henhold til punkt 5.1 - 5.8, har påtaget sig, er rekvirenten pligtig til at overtage sagens førelse og skadesløsholde FORCE Technology for alle omkostninger, herunder sagsomkostninger og erstatningsbeløb.

6. Tvister

Såfremt der opstår tvist mellem rekvirenten og FORCE Technology i forbindelse med udførelsen af en opgave eller fortolkning af aftalen, skal tvisten, såfremt den ikke kan løses ved forhandling mellem parterne, afgøres af Det Danske Voldgiftsinstitut på grundlag af dansk ret.

FORCE Technology - General Conditions

1. Agreement

Prior to commencing work, agreement on type and scope as well as timetable and economy shall be made in writing.

2. Ownership and copyright

- 2.1 Reports made by FORCE Technology shall only be published in full and with source reference. Extracts shall only be quoted upon prior permission in writing.
- 2.2 The client shall observe FORCE Technology's obligations in accordance with the Danish employees' inventions act.

3. Non-fulfilment of agreement

FORCE Technology shall neither in whole nor in part be liable for any non-fulfilled agreements owing to events beyond the influence of FORCE Technology.

4. Warranty

- 4.1 Subject as hereinafter set out, FORCE Technology shall undertake to remedy any defects resulting from faulty design, materials or workmanship.
- 4.2 This liability is limited to defects which occur or are discovered within twelve (12) months from the time of delivery.
- 4.3 In respect of special components the warranty period will be the same as the warranty period which FORCE Technology is able to obtain from their suppliers.
- 4.4 In the event that the client wishes to submit a claim under the warranty he shall without delay notify FORCE Technology in writing of any defect that has arisen. On receipt of such notification FORCE Technology shall if the defect is one that is covered by this clause at their option:
 - a) repair the defective Goods or parts in situ; or
 - b) have the defective Goods or parts returned for repair; or
 - c) replace the defective Goods or parts in order to enable the client to carry out the necessary repairs at the expense of FORCE Technology.
- 4.5 In the event that FORCE Technology has received defective Goods for replacement or repair, the client shall bear the costs of transport and risk of damage.
- 4.6 Defective Goods or parts replaced in accordance with these provisions shall be made available to FORCE Technology.
- 4.7 The liability of FORCE Technology shall apply only to defects that occur under proper use. In particular it does not cover defects arising from faulty installation and maintenance or repairs carried out by individuals other than FORCE Technology's personnel or their agent, or alterations carried out without the consent in writing by FORCE Technology; nor does it cover normal wear and tear.
- 4.8 The warranty period in respect to spare parts and accessories shall operate in the same manner as the warranty period for the replaced part itself.

5. Liability

- 5.1 FORCE Technology shall only be liable for loss or damage if it is proved that the loss or damage is due to errors or negligence of FORCE Technology in connection with production or performance of a task.
- 5.2 FORCE Technology shall not be liable for any consequential loss, such as but not limited to loss of time or loss of profits.
- 5.3 Tasks are solved and opinions and guidance are given by FORCE Technology on the basis of the knowledge and technology available to FORCE Technology. FORCE Technology shall only be liable if it is proved that this knowledge or technology were faulty at the time of the completion of the task.
- 5.4 FORCE Technology shall not accept liability for loss or damage that may occur in connection with the client's use of provided data or test results which lies outside the scope of the task and purpose in connection with which FORCE Technology's opinion has been given.
- 5.5 FORCE Technology shall not accept liability for errors in connection with opinions given regarding which it has been stated that they are based on an estimate.
- 5.6 When performing verification and testing, FORCE Technology shall only be liable for damage which might occur owing to FORCE Technology's failure to notify the client, in time, of existing defects.
- 5.7 FORCE Technology shall not be liable for damage occurring if such damage is due to a property of a product or an application of a product which has either not been tested or examined and described in the testing or examination report, or which differs from FORCE Technology's description in the testing or examination report of the property of the product or of a possible application of the product.
- 5.8 FORCE Technology shall not accept liability for damage occurred if a product causing damage has not actually been tested by FORCE Technology, unless the client proves that the product is identical with a product actually tested and verified by FORCE Technology.
- 5.9 If a third party claims damages from FORCE Technology on grounds which lie beyond the liability to pay damages undertaken by FORCE Technology in accordance with clauses 5.1 to 5.8, the client shall be under an obligation to take over the conducting of the case and indemnify and hold harmless FORCE Technology for all costs and damages.

6. Disputes

Any dispute between the client and FORCE Technology arising out of or in connection with the performance of a task or the interpretation of the agreement shall if such dispute cannot be solved through negotiation between the parties be settled by Copenhagen Arbitration in accordance with Danish law.

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The Danish Accreditation and Metrology Fund (DANAK)

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