TEST REPORT

Test Report #	18W-003827	Date of Report Issue:	August 22, 2019
Date of Sample Received:	June 20, 2018	Pages:	Page 1 of 40

CLIENT INFORMATION:

Company:	Spector & Co.
Address:	-

SAMPLE INFORMATION:

Description:	Backpack with water-resistant tech pocket,water bottle pocket
Assortment:	BLACK
Model/style No.:	SPARTAN MUST HAVES BACKPACK
SKU No.:	BG108
Factory/Supplier:	USH045
Quantity Submitted:	2 pcs
Country of Distribution:	Canada & USA
Country of Origin:	China
Testing Period:	06/20/2018-06/28/2018,07/16/2018-07/25/2018,08/16/2018-08/17/2018 06/28/2019-07/04/2019

OVERALL RESULT: **PASS with information**

Please refer to the following pages for test result summary and appropriate notes.

HANGZHOU ASIAINSPECTION TESTING TECHNOLOGY CO., LTD

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TEST REPORT

Test Report #	18W-003827	Date of Report Issue:	August 22, 2019
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TEST RESULTS SUMMARY:

At the request of the client, the following tests were conducted:

CONCLUSION	TEST(S) CONDUCTED
PASS	California Proposition 65, Total Lead in Substrate Materials
PASS	Canadian Consumer Products Containing Lead Regulations (SOR/2018-83), Total Lead Content
PASS	California Proposition 65, Total Cadmium in Substrate Materials
PASS	California Proposition 65, Phthalates (DBP, BBP, DEHP, DINP, DIDP, DnHP)
PASS	CPSC 16 CFR 1307 Prohibition of Children's Toys and Child Care Articles Containing Specified Phthalates(DBP, BBP, DEHP, DINP, DHEXP / DnHP, DCHP, DIBP, DPENP)
PASS	Client's Requirement, Phthalates content
PASS	19 CFR 134.11, Country of Origin
PASS	Uniform Packaging and Labeling Regulation
PASS	Marking of Imported Goods Order, (C.R.C., c.535), Country of Origin
PASS	Charter of French Language, (R.S.Q., c.C-11), Province of Quebec Labeling
PASS	Consumer Packaging and Labeling Act (R.S., 1985, c. C-38)
PASS	Color Fastness to Crocking
PASS	Color Fastness to Water
PASS	Color Fastness to Light
Refer to Detailed Results	Dimensions
Refer to Detailed Results	The capacity in liters for bag
Refer to Detailed Results	Article Weight
PASS	Defects
PASS	Workmanship

TEST RESULTS SUMMARY:

At the request of the client, the following tests were conducted:

CONCLUSION	TEST(S) CONDUCTED
PASS	SOR/2016-194 and Method F01 Flammability of Textile Products
Refer to Detailed Results	Fabric Weight Per Unit Area
PASS	Tensile Strength
PASS	Tearing Strength
PASS	Bursting Strength
PASS	Seam Strength
Refer to Detailed Results	Abrasion Resistance
PASS	Pilling Resistance
PASS	Zipper Strength
PASS	Zipper Operability
PASS	Water Repellency-Spray Test
PASS	Water Resistance –Rain Test
Refer to Detailed Results	Quantitative Composition Analysis
Refer to Detailed Results	Fiber Content
PASS	Client's Requirement for Static Load Test

DETAILED RESULTS:

California Proposition 65, Total Lead in Substrate Materials

Test Method: CPSC-CH-E1001-08.3 (Metal), CPSC-CH-E1002-08.3 (Non-Metal)
Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry

Specimen No.	1	2+5	3	4	6	**Limit (mg/kg)**
Test Item	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	
Total Lead (Pb)	ND	ND	ND	ND	ND	**100**
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:

mg/kg =Milligrams per kilogram

LT = Less than

ND = Not detected (Reporting Limit =15 mg/kg)

Composite results are based on specimen of least mass resulting in highest potential concentration.

Remark:

The specification is quoted from client's requirement.

DETAILED RESULTS:

Canadian Consumer Products Containing Lead Regulations (SOR/2018-83), Total Lead Content

Test Method: ASTM F963-17 Clause 8.3.1
Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry

Specimen No.	1	2+5	3	4	6	**Limit (mg/kg)**
Test Item	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	
Total Lead (Pb)	ND	ND	ND	ND	ND	**90**
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:
mg/kg=Milligrams per kilogram)
LT = Less than
ND = Not detected (Reporting Limit = 15 mg/kg)
Composite results are based on specimen of least mass resulting in highest potential concentration.

DETAILED RESULTS:

California Proposition 65, Total Cadmium in Substrate Materials

Test Method: ASTM F963-17 Clause 8.3.1
Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry

Specimen No.	1	2+5	3	4	6	**Limit (mg/kg)**
Test Item	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	
Total Cadmium (Cd)	ND	ND	ND	ND	ND	**75**
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:

mg/kg =Milligrams per kilogram

LT = Less than

ND = Not detected (Reporting Limit = 15 mg/kg)

Composite results are based on specimen of least mass resulting in highest potential concentration.

Remark:

The specification is quoted from client's requirement.

DETAILED RESULTS:

California Proposition 65, Phthalates (DBP, BBP, DEHP, DINP, DIDP, DnHP)

Test Method: CPSC-CH-C1001-09.3
Analytical Method: Gas Chromatography with Mass Spectrometry

Specimen No.		1	2+5	3	6	**Limit (mg/kg)**
Test Item	CAS No.	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	
Dibutyl phthalate (DBP)	84-74-2	ND	ND	ND	ND	**1000**
Benzyl butyl phthalate (BBP)	85-68-7	ND	ND	ND	ND	**1000**
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7	ND	ND	ND	ND	**1000**
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0	ND	ND	ND	ND	**1000**
Diisodecyl phthalate (DIDP)	26761-40-0 68515-49-1	ND	ND	ND	ND	**1000**
Di-n-hexyl phthalate (DnHP)	84-75-3	ND	ND	ND	ND	**1000**
Conclusion		PASS	PASS	PASS	PASS	

Note:

mg/kg (Milligrams per kilogram) = 0.0001 % m/m (Percent by mass)

LT = Less than

ND = Not detected (Reporting Limit = 150 mg/kg)

Composite results are based on specimen of least mass resulting in highest potential concentration.

Remark:

The specification is quoted from client's requirement.

DETAILED RESULTS:

CPSC 16 CFR 1307 Prohibition of Children's Toys and Child Care Articles Containing Specified Phthalates (DBP, BBP, DEHP, DINP, DHEXP / DnHP, DCHP, DIBP, DPENP)

Test Method: CPSC-CH-C1001-09.3(Modified), In-House Method
Analytical Method: Gas Chromatography with Mass Spectrometry

Specimen No.		1	2+5	3	6	Limit (mg/kg)
Test Item	CAS No.	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	
Dibutyl phthalate (DBP)	84-74-2	ND	ND	ND	ND	**1000**
Benzyl butyl phthalate (BBP)	85-68-7	ND	ND	ND	ND	**1000**
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7	ND	ND	ND	ND	**1000**
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0	ND	ND	ND	ND	**1000**
Di-n-hexyl phthalate (DHEXP / DnHP)	84-75-3	ND	ND	ND	ND	**1000**
Dicyclohexyl phthalate (DCHP)	84-61-7	ND	ND	ND	ND	**1000**
Diisobutyl phthalate (DIBP)	84-69-5	ND	ND	ND	ND	**1000**
Di-n-pentyl phthalate (DPENP)	131-18-0	ND	ND	ND	ND	**1000**
Conclusion		PASS	PASS	PASS	PASS	

Note:
mg/kg = Milligrams per kilogram
LT = Less than
ND = Not detected (Reporting Limit = 150 mg/kg)
Composite results are based on specimen of least mass resulting in highest potential concentration.

DETAILED RESULTS:

Client's Requirement, Phthalates content

Test Method: CPSC-CH-C1001-09.3
Analytical Method: Gas Chromatography with Mass Spectrometry

Specimen No.		1	2+5	3	6	**Limit (mg/kg)**
Test Item	CAS No.	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	
Dibutyl phthalate (DBP)	84-74-2	ND	ND	ND	ND	**1000**
Benzyl butyl phthalate (BBP)	85-68-7	ND	ND	ND	ND	**1000**
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7	ND	ND	ND	ND	**1000**
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0	ND	ND	ND	ND	**1000**
Diisodecyl phthalate (DIDP)	26761-40-0 68515-49-1	ND	ND	ND	ND	**1000**
Di-n-hexyl phthalate (DHEXP / DnHP)	84-75-3	ND	ND	ND	ND	**1000**
Di-n-octyl phthalate (DNOP)	117-84-0	ND	ND	ND	ND	**1000**
Diethyl phthalate (DEP)	84-66-2	ND	ND	ND	ND	**1000**
Diisobutyl phthalate (DIBP)	84-69-5	ND	ND	ND	ND	**1000**
Dicyclohexyl phthalate (DCHP)	84-61-7	ND	ND	ND	ND	**1000**
Di-n-pentyl phthalate (DPENP/DnPP)	131-18-0	ND	ND	ND	ND	**1000**
Conclusion		PASS	PASS	PASS	PASS	

Note:

mg/kg (Milligrams per kilogram) = 0.0001 % m/m (Percent by mass)

LT = Less than

ND = Not detected (Reporting Limit = 150 mg/kg)

Composite results are based on specimen of least mass resulting in highest potential concentration.

Remark:

The specification is quoted from client's requirement.

DETAILED RESULTS:

19 CFR 134.11, Country of Origin

Specimen No.	7	
Test	Observation	Conclusion
Country of Origin	Present on label	PASS

Uniform Packaging and Labeling Regulation

Specimen No.	7	
Test	Observation	Conclusion
Declaration of Identity	The packaging contains the declaration of identity	PASS
Declaration of Responsibility	The packaging contains the declaration of responsibility	PASS

DETAILED RESULTS:

Marking of Imported Goods Order, (C.R.C., c.535), Country of Origin

Specimen No.	7	
Section	Requirement	Conclusion
2	Present on label	PASS

Charter of French Language, (R.S.Q., c.C-11), Province of Quebec Labeling

Specimen No.	7	
Clause	Test	Conclusion
c.C-11	French Labeling	PASS

Consumer Packaging and Labeling Act (R.S., 1985, c. C-38)

Specimen No.	7	
Section	Requirement	Conclusion
10	Place of Manufacture	PASS

DETAILED RESULTS:

Color Fastness to Crocking

Test Method: AATCC 8-2016

Specimen No.	7-Black shell	7-Grey shell	7-Grey Main lining	Client's requirement (Grade)
Items	Result (Grade)	Result (Grade)	Result (Grade)	
Dry staining	4.5	4.5	4.5	Min. 4.0
Wet staining	4.5	4.5	4.5	Min. 2.5
Conclusion	PASS	PASS	PASS	-

Specimen No.	7-White lining	7-Silver lining	7-Strap	Client's requirement (Grade)
Items	Result (Grade)	Result (Grade)	Result (Grade)	
Dry staining	4.5	4.5	4.0	Min. 4.0
Wet staining	4.5	4.5	4.5	Min. 2.5
Conclusion	PASS	PASS	PASS	-

Specimen No.	7-Back Mesh	Client's requirement (Grade)
Items	Result (Grade)	
Dry staining	4.5	Min. 4.0
Wet staining	4.5	Min. 2.5
Conclusion	PASS	-

Remark: Grey Scale rating is based on the 5-step scale of 1 to 5, where 1 is bad and 5 is good.

DETAILED RESULTS:

Color Fastness to Water

Test Method: AATCC 107-2013

Specimen No.	7-Black shell	7-Grey shell	7-Grey Main lining	Client's requirement (Grade)
Items	Result (Grade)	Result (Grade)	Result (Grade)	
Change in shade	4.5	4.5	4.5	Min. 4.0
Staining on multi-fiber stripe				
-Acetate	3.5	4.5	4.5	Min. 3.5
-Cotton	4.5	4.5	4.5	Min. 3.5
-Nylon	4.0	4.5	4.5	Min. 3.5
-Polyester	4.0	4.5	4.5	Min. 3.5
-Acrylic	4.5	4.5	4.5	Min. 3.5
-Wool	4.5	4.5	4.5	Min. 3.5
Conclusion	PASS	PASS	PASS	-

Specimen No.	7-White lining	7-Silver lining	7-Strap	Client's requirement (Grade)
Items	Result (Grade)	Result (Grade)	Result (Grade)	
Change in shade	4.5	4.5	4.5	Min. 4.0
Staining on multi-fiber stripe				
-Acetate	4.5	4.5	4.5	Min. 3.5
-Cotton	4.5	4.5	4.5	Min. 3.5
-Nylon	4.5	4.5	4.5	Min. 3.5
-Polyester	4.5	4.5	4.5	Min. 3.5
-Acrylic	4.5	4.5	4.5	Min. 3.5
-Wool	4.5	4.5	4.5	Min. 3.5
Conclusion	PASS	PASS	PASS	-

Remark: Grey scale rating is based on the 5-step of 1 to 5, where 1 is bad and 5 is good.

DETAILED RESULTS:

Color Fastness to Water

Test Method: AATCC 107-2013

Specimen No.	7-Back Mesh	Client's requirement (Grade)
Items	Result (Grade)	
Change in shade	4.5	Min. 4.0
Staining on multi-fiber stripe		
-Acetate	4.5	Min. 3.5
-Cotton	4.5	Min. 3.5
-Nylon	4.5	Min. 3.5
-Polyester	4.5	Min. 3.5
-Acrylic	4.5	Min. 3.5
-Wool	4.5	Min. 3.5
Conclusion	PASS	-

Remark: Grey scale rating is based on the 5-step of 1 to 5, where 1 is bad and 5 is good.

Color Fastness to Light

Test Method: AATCC 16.3-2014; Option 3; Xenon Arc Lamp.

Specimen No.	7-Black shell	7-Grey shell	Client's requirement (Grade)
Items	Result (Grade)	Result (Grade)	
After 20 AFU Change in shade	4.5	4.0	Min. 4.0
Conclusion	PASS	PASS	-

Remarks: Grey scale rating is based on the 5-step of 1 to 5, where 1 is bad and 5 is good.

DETAILED RESULTS:

Dimensions

Test Method: IHTM, Standard Measure;

Specimen No.	7	Client's requirement
Items	Result (inch)	
Length	12	N/A
Width	7	
Height	19 1/4	
Conclusion	Information only	-

The capacity in liters for bag

Test Method: IHTM, Standard Measure;

Specimen No.	7	Client's requirement
Items	Result (liter)	
Capacity	23.5	N/A
Conclusion	Information only	-

DETAILED RESULTS:

Article Weight

Test Method: IHTM 010

Specimen No.	7	Client's requirement
Items	Result	
(g/piece)	483	N/A
Conclusion	Information only	-

Defects

Test Method: ASTM D3990 - 12(2016); Visual Examination

Specimen No.	7	Requirement
Item	Result	
Observation	No major defect	Visual examination to verify noticeable defects (such as missing components, obvious knitting /weaving defects, improper functioning component).
Conclusion	PASS	

DETAILED RESULTS:

Workmanship

Test Method: IHTM; Visual Examination

Specimen No.	7	Requirement
Item	Result	
Observation	No major poor workmanship	Visual examination to verify noticeable poor Workmanship (such as: Poor sewing: Broken seam Missing stitches or Skipped / Uneven /wave stitches or stitched holes on visible area. Insecure back stitches / Uneven stitch tension / Needle chewing Misaligned seam. Poor riveting metal eyelet or other metal parts Dirty / Glue/ Scratch / Wrinkle / Pen Mark / Oil Stain / Water Stain The inside hiding thread expose. Poor electro-plating or spraying on handle metal plate Obvious Scratched mark on extendable handle or metal plate Fabric , webbing band or strap getting discoloration
Conclusion	PASS	-

DETAILED RESULTS:

SOR/2016-194 and Method F01 Flammability of Textile Products

Test Method: CAN/CGSB-4.2 No.27.5-2008

Specimen No.	7-Black shell				
Preliminary Tests	Fabric Surface	Smooth	Test Specimen Direction		Face Length
Items	Result				Client's requirement
	As Received		**After Dry-cleaning and Laundering***		
	Flame Spread (sec.)	Burn Code	Flame Spread (sec.)	Burn Code	
(1)	-	IBE	-	IBE	>3.5s
(2)	-	IBE	-	IBE	
(3)	-	IBE	-	IBE	
(4)	-	IBE	-	IBE	
(5)	-	IBE	-	IBE	
(6)	-	IBE	-	IBE	
(7)	-	IBE	-	IBE	
(8)	-	IBE	-	IBE	
(9)	-	IBE	-	IBE	
(10)	-	IBE	-	IBE	
Conclusion	PASS				

* Dry-cleaning / Laundering procedure is according to CAN/CGSB-4.2 No.30.3-94 & CAN/CGSB-4.2 No.58-2004; Machine wash at 50℃ and tumble dry on the normal setting.

Burn Code Description:

IBE = Ignited but extinguished;

DETAILED RESULTS:

SOR/2016-194 and Method F01 Flammability of Textile Products

Test Method: CAN/CGSB-4.2 No.27.5-2008

Specimen No.	7-Grey shell				
Preliminary Tests	Fabric Surface	Smooth	Test Specimen Direction		Face Length
Items	Result				Client's requirement
	As Received		**After Dry-cleaning and Laundering***		
	Flame Spread (sec.)	Burn Code	Flame Spread (sec.)	Burn Code	
(1)	-	DNI	-	DNI	>3.5s
(2)	-	DNI	-	DNI	
(3)	-	DNI	-	DNI	
(4)	-	DNI	-	DNI	
(5)	-	DNI	-	DNI	
(6)	-	DNI	-	DNI	
(7)	-	DNI	-	DNI	
(8)	-	DNI	-	DNI	
(9)	-	DNI	-	DNI	
(10)	-	DNI	-	DNI	
Conclusion	PASS				

* Dry-cleaning / Laundering procedure is according to CAN/CGSB-4.2 No.30.3-94 & CAN/CGSB-4.2 No.58-2004; Machine wash at 50℃ and tumble dry on the normal setting.

Burn Code Description:

DNI = Did not ignite;

DETAILED RESULTS:

SOR/2016-194 and Method F01 Flammability of Textile Products

Test Method: CAN/CGSB-4.2 No.27.5-2008

Specimen No.	7-Back mesh				
Preliminary Tests	Fabric Surface	Smooth	Test Specimen Direction		Face Length
Items	Result				Client's requirement
	As Received		**After Dry-cleaning and Laundering***		
	Flame Spread (sec.)	Burn Code	Flame Spread (sec.)	Burn Code	
(1)	-	IBE	-	IBE	>3.5s
(2)	-	IBE	-	IBE	
(3)	-	IBE	-	IBE	
(4)	-	IBE	-	IBE	
(5)	-	IBE	-	IBE	
(6)	-	IBE	-	IBE	
(7)	-	IBE	-	IBE	
(8)	-	IBE	-	IBE	
(9)	-	IBE	-	IBE	
(10)	-	IBE	-	IBE	
Conclusion	PASS				

* Dry-cleaning / Laundering procedure is according to CAN/CGSB-4.2 No.30.3-94 & CAN/CGSB-4.2 No.58-2004; Machine wash at 50℃ and tumble dry on the normal setting.

Burn Code Description:

IBE = Ignited but extinguished;

DETAILED RESULTS:

SOR/2016-194 and Method F01 Flammability of Textile Products

Test Method: CAN/CGSB-4.2 No.27.5-2008

Specimen No.	7-Grey Main lining				
Preliminary Tests	Fabric Surface	Smooth	Test Specimen Direction		Face Length
Items	Result				Client's requirement
	As Received		**After Dry-cleaning and Laundering***		
	Flame Spread (sec.)	Burn Code	Flame Spread (sec.)	Burn Code	
(1)	10.2	BB	9.3	BB	>3.5s
(2)	8.9	BB	9.7	BB	
(3)	10.5	BB	10.2	BB	
(4)	9.7	BB	9.0	BB	
(5)	9.4	BB	9.9	BB	
(Avg.)	9.7	BB	9.6	BB	
Conclusion	PASS				

* Dry-cleaning / Laundering procedure is according to CAN/CGSB-4.2 No.30.3-94 & CAN/CGSB-4.2 No.58-2004; Machine wash at 50℃ and tumble dry on the normal setting.

Burn Code Description:

BB = Base burns;

DETAILED RESULTS:

SOR/2016-194 and Method F01 Flammability of Textile Products

Test Method: CAN/CGSB-4.2 No.27.5-2008

Specimen No.	7-White lining fabric				
Preliminary Tests	Fabric Surface	Smooth	Test Specimen Direction		Face Length
Items	Result				Client's requirement
	As Received		**After Dry-cleaning and Laundering***		
	Flame Spread (sec.)	Burn Code	Flame Spread (sec.)	Burn Code	
(1)	-	DNI	-	DNI	>3.5s
(2)	-	DNI	-	DNI	
(3)	-	DNI	-	DNI	
(4)	-	DNI	-	DNI	
(5)	-	DNI	-	DNI	
(6)	-	DNI	-	DNI	
(7)	-	DNI	-	DNI	
(8)	-	DNI	-	DNI	
(9)	-	DNI	-	DNI	
(10)	-	DNI	-	DNI	
Conclusion	PASS				

* Dry-cleaning / Laundering procedure is according to CAN/CGSB-4.2 No.30.3-94 & CAN/CGSB-4.2 No.58-2004; Machine wash at 50℃ and tumble dry on the normal setting.

Burn Code Description:

DNI = Did not ignite;

DETAILED RESULTS:

Fabric Weight Per Unit Area

Test Method: ASTM D3776/D3776M-09a(R2013),Option C;

Specimen No.	7-Shell black body	7- Main Lining	Client's requirement
Items	Result	Result	
(g/m^2)	216	84.2	N/A
(oz/yd^2)	6.37	2.48	N/A
Conclusion	Information only	Information only	-

Specimen No.	7-Back mesh	Client's requirement
Items	Result	
(g/m^2)	259	N/A
(oz/yd^2)	7.64	N/A
Conclusion	Information only	-

DETAILED RESULTS:

Tensile Strength

Test Method: ASTM D5034-09(Reapproved 2013); Instron CRE - 1" Grab

Specimen No.	7-Shell black body	7- Main Lining	Client's requirement (lbf)
Items	Result (lbf)	Result (lbf)	
Warp	369.7	150.0	Min. 25
Weft	197.0	130.0	Min. 25
Conclusion	PASS	PASS	-

DETAILED RESULTS:

Tearing Strength

Test Method: ASTM D1424-09(R2013) Elmendorf

Specimen No.	7-Shell black body	7- Main Lining	Client's requirement (lbf)
Items	Result (lbf)	Result (lbf)	
Warp yarns torn	>14.1	5.6	Min. 1.5
Weft yarns torn	>14.1	4.6	Min. 1.5
Conclusion	PASS	PASS	-

Note:

(1) Warp test - test in which the warp yarns are torn.
Weft test - test in which the weft yarns are torn.

(2) The maximum capacity of the tester is 14.1lbf

DETAILED RESULTS:

Bursting Strength

Test Method: ASTM D3786/D3786M-13; Mullen Bursting Tester

Specimen No.	7-Back Mesh	Client's requirement (P.S.I.)
Items	Result (P.S.I.)	
Bursting Strength	>200*	Min. 40
Conclusion	PASS	-

Remark: * =Exceeds the limitation of the tester due to the nature of the fabric.

Seam Strength

Test Method: with reference to ASTM D 1683/D1683M-11a; Instron CRE

Specimen No.	7	Client's requirement (lbf)
Items	Result (lbf)	
Side seam-left	130.8(F.T.S.)	Min. 25
Side seam-right	146.8(F.T.S.)	Min. 25
Bottom seam-front	150.6(S.T.B.)	Min. 25
Bottom seam-back	203.5(F.T.S.)	Min. 25
Conclusion	PASS	-

Remarks: S.T.B. = Sewing Thread Breaks.
F.T.S. = Fabric Tear at Seam

DETAILED RESULTS:

Abrasion Resistance

Test Method: ASTM D4966-12$^{\varepsilon 1}$, Option 1; Martindale Wear & Abrasion Tester; 12kPa Pressure

Specimen No.	7-Shell black body	Client's requirement (rubs)
Items	Result (rubs)	
End point	>10000	10000
Conclusion	PASS	-

Specimen No.	8*	Client's requirement (rubs)
Items	Result (rubs)	
End point	8000	N/A
Conclusion	Information only	-

Remark: *: just mention that the test was done on 8000 rubs

DETAILED RESULTS:

Pilling Resistance

Test Method: ASTM D3512/D3512M-16; After 30 min. tumbling in Random tumble Pilling Tester

Specimen No.	7-Shell black body	7-Back mesh	Client's requirement
Items	Result	Result	
As received Rating	4.5	4.5	Min. 3.5
Conclusion	PASS	PASS	-

Remarks: Pilling Rating

5	No pilling
4	Slight pilling
3	Moderate pilling
2	Severe pilling
1	Very severe pilling

DETAILED RESULTS:

Zipper Strength

Test Method: ASTM D2061-07(R2013); type: LM

Specimen No.	7-Bigger nylon zipper	
Items	Result	Client's requirement
Chain Crosswise Strength Test (lbf)	217.9(Tape break)	Min. 175
Resistance to Pull-Off Slider Pull (lbf)	128.2(Puller Pull Out)	Min.35
Resistance to Twist of Pull and Slider Test Clockwise (lb. inch) Counter-Clockwise (lb. inch)	 >6.0 >6.0	Min.4
Conclusion	PASS	

Zipper Operability

Test Method: ASTM D2062-03(R2014)

Specimen No.	7-Bigger nylon zipper	
Items	Result	Client's requirement
Chain opening (lbf)	1.3	Max. 2
Chain closing (lbf)	1.6	Max. 2
Conclusion	PASS	

Remark: It is noted that a specific sampling plan is laid down per ASTM D2061-07(R2013) & ASTM D2062-03(R2014). The above results for Zipper Strength & Zipper Operability are drawn on the 6 of tested specimens, based on the request from the applicant.

DETAILED RESULTS:

Zipper Strength

Test Method: ASTM D2061-07(R2013); type: LM

Specimen No.	7-Longer nylon zipper	
Items	Result	Client's requirement
Chain Crosswise Strength Test (lbf)	204.5(elements pull-off)	Min. 175
Resistance to Pull-Off Slider Pull (lbf)	75.2(Puller Pull Out)	Min.35
Resistance to Twist of Pull and Slider Test Clockwise (lb. inch) Counter-Clockwise (lb. inch)	 5.2 5.1	Min.4
Conclusion	PASS	

Zipper Operability

Test Method: ASTM D2062-03(R2014)

Specimen No.	7-Longer nylon zipper	
Items	Result	Client's requirement
Chain opening (lbf)	0.8	Max. 2
Chain closing (lbf)	0.9	Max. 2
Conclusion	PASS	

Remark: It is noted that a specific sampling plan is laid down per ASTM D2061-07(R2013) & ASTM D2062-03(R2014). The above results for Zipper Strength & Zipper Operability are drawn on the 6 of tested specimens, based on the request from the applicant.

DETAILED RESULTS:

Zipper Strength

Test Method: ASTM D2061-07(R2013); type: LM

Specimen No.	7-Smallest nylon zipper	
Items	Result	Client's requirement
Chain Crosswise Strength Test (lbf)	197.9(Tape break)	Min. 175
Resistance to Pull-Off Slider Pull (lbf)	76.5(Puller Pull Out)	Min.35
Resistance to Twist of Pull and Slider Test Clockwise (lb. inch) Counter-Clockwise (lb. inch)	 4.8 4.3	Min.4
Conclusion	PASS	

Zipper Operability

Test Method: ASTM D2062-03(R2014)

Specimen No.	7-Smallest nylon zipper	
Items	Result	Client's requirement
Chain opening (lbf)	0.6	Max. 2
Chain closing (lbf)	0.6	Max. 2
Conclusion	PASS	

Remark: It is noted that a specific sampling plan is laid down per ASTM D2061-07(R2013) & ASTM D2062-03(R2014). The above results for Zipper Strength & Zipper Operability are drawn on the 6 of tested specimens, based on the request from the applicant.

DETAILED RESULTS:

Water Repellency-Spray Test

Test Method: AATCC 22-2014; Spray Test – Tested under controlled condition, water temperature: 27±1°C

Specimen No.	7-Shell black body			Client's requirement
Items	Result			
	Specimen 1#	Specimen 2#	Specimen 3#	
As received Rating	95	95	95	Min. 90
Conclusion	PASS			-

Remarks: Spray Rating

100	No sticking or wetting of specimen face
90	Slight random sticking or wetting of specimen face
80	Wetting of specimen face at spray points
70	Partial wetting of the specimen face beyond the spray points
50	Complete wetting of the entire specimen face beyond the spray points
0	Complete wetting of the entire face of the specimen

Water Resistance –Rain Test

Test Method: AATCC 35-2013; Rain Test-2ft head Pressure; 2-min impact

Specimen No.	7-Shell black body				Client's requirement
Items	Result				
	Specimen 1#	Specimen 2#	Specimen 3#	Average	
As received Weight of blotter gained (g)	0.0	0.0	0.0	0.0	Max 1.0g
Conclusion	PASS				-

DETAILED RESULTS:

Fiber Content

Test Method: AATCC 20-2013

Specimen No.	7-Shell fabric		
Items	Client's requirement	Result	Conclusion
Polyester (%)	N/A	100	Information only

Specimen No.	7-Main lining		
Items	Client's requirement	Result	Conclusion
Polyester (%)	N/A	100	Information only

DETAILED RESULTS:

Quantitative Composition Analysis

Test Method: JY/T 001-1996/ ASTM E1131-08(2014)/ EPA 8270D: 2014

Test Instrument:

Instrument name	Model	Manufacturer	Internal number	The period of validity of calibration
Fourier transform infrared spectrometer	FTIR Nicolet iS10	Thermo Scientific	EC-151	2019.04.19
Inductively coupled plasma optical emission spectrometer	ICP 720-OES	Agilent	EC-002	2019.04.18
Thermogravimetric analyzer	TG 209 F3	NETZSCH	EC-180	2019.01.04
Gas chromatography and mass spectrometry	GCMS7890B-5977A	Agilent	EC-152	2019.08.01
Energy dispersive X-ray fluorescence spectrometer	EDX 1800B	Skyray	EC-103	2018.12.05

Test result:

Specimen No.	7-Pocket lining			
Category	Substance	CAS No.	Content (%)	Conclusion
Polymer	Ethylene-vinyl acetate copolymer	24937-78-8	98.48	Information only
Filler	Titanium oxide	1317-80-2	1.52	

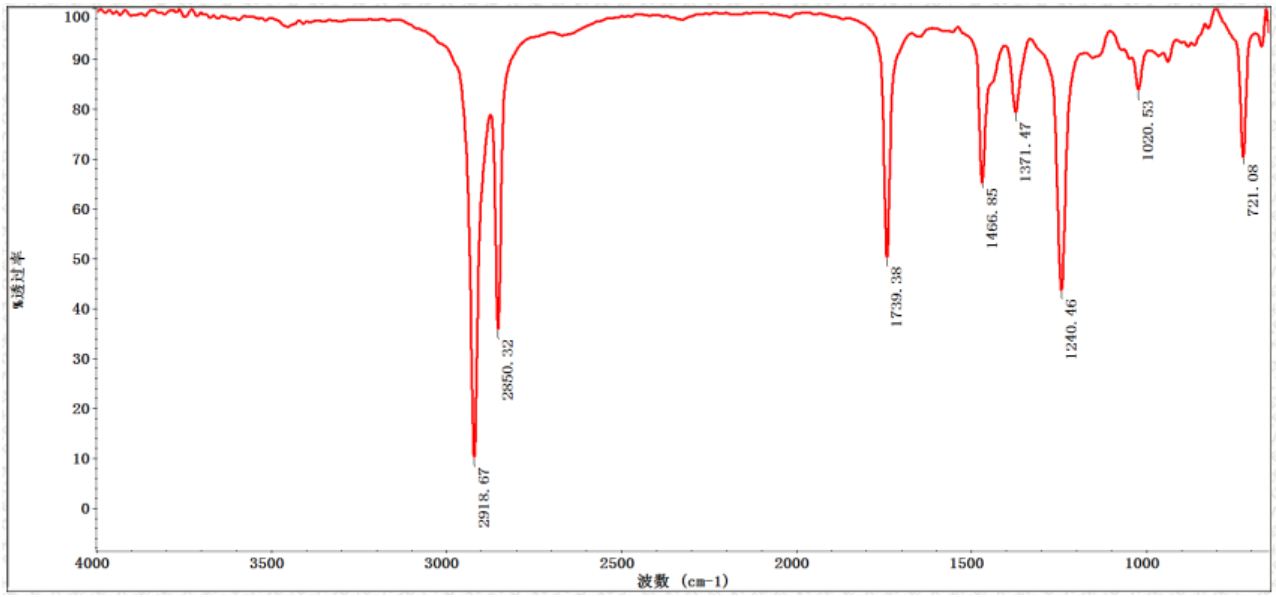
Remark: The test was carried out by external laboratory assessed as competent

DETAILED RESULTS:

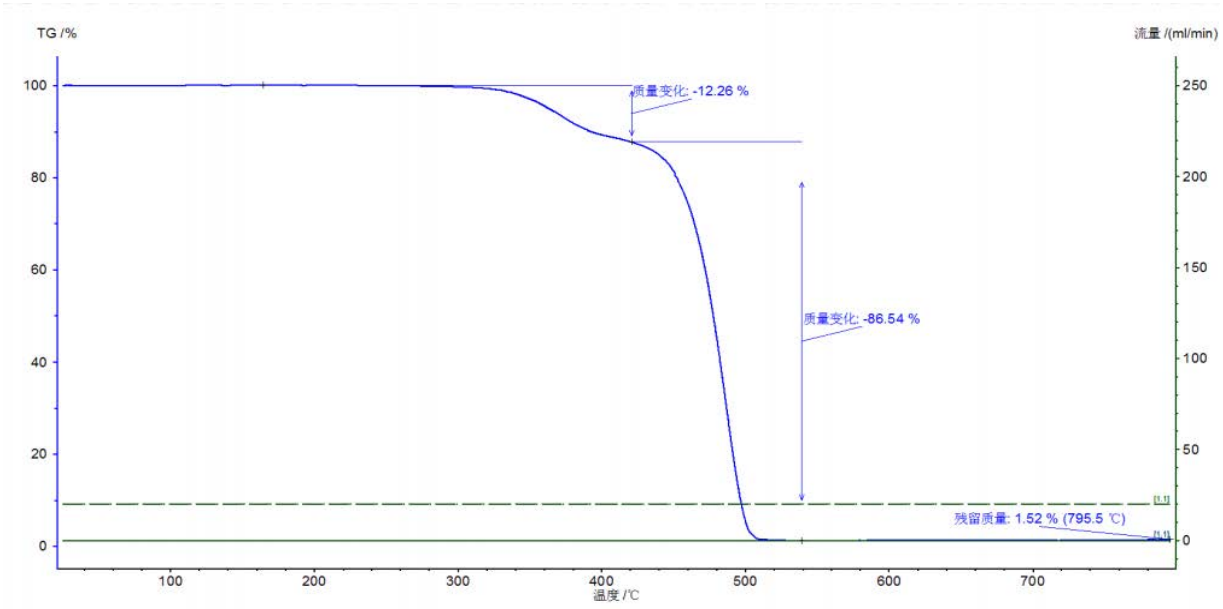
Quantitative Composition Analysis

Test result:

Sample FTIR spectrum



Sample TG image



Remark: The test was carried out by external laboratory assessed as competent

DETAILED RESULTS:

Client's Requirement for Static Load Test

Test Item	Test Method	Requirement	Conclusion
Static Load test	Place the test load on the bag with 50lb for 2 hours.	No damage	PASS

SPECIMEN DESCRIPTION:

Specimen No.	Specimen Description	Location
1	Grey foam	Filler of strap
2	Grey plastic	Plastic buckle of strap
3	Transparent soft plastic	Inner
4	Light silver metal	Zipper head
5	Grey plastic	Zipper teeth
6	Grey soft plastic	Inner
7	Backpack with water-resistant tech pocket,water bottle pocket	Finished product
8	Black mesh	Raw material

SAMPLE PHOTO:

SAMPLE PHOTO:

SAMPLE PHOTO:

-End Report-