

Test items

A. Colour Fastness (ความคงทนของสี)	Standard Test Methods (มาตรฐานการทดสอบ)
1. Washing (การซัก)	a. Low to medium temp. (30°C/85°F-60°C/140°F) <ul style="list-style-type: none"> • AATCC 61 (1A, 2A) • BS EN 20105 C01-C03, C06 Test A-C • BS EN ISO 105 C01-C03, C06 Test A-C • BS 1006 C06 Test A-C • ISO 105 C01-C03, C06 Test A-C, C10 • JIS L 0844 Test A1-A3, B1, C1-C3, C5 • TIS 121 book 3 <hr/> b. High temp.(above 60°C/140°F) <ul style="list-style-type: none"> • AATCC 61 (3A, 4A) • BS EN ISO 105 C06 Test D-E • BS EN 20105 C06 Test D-E • BS 1006 C06 Test D-E • ISO 105 C04, C06 Test D-E, C10 • JIS L 0844 Test A4-A5, C4 • TIS 121 book 3 • BS EN ISO 105 C05, BS 1006 C05, ISO 105 C05 • AATCC 61 No.5A (with chlorine)
2. Perspiration (เหงื่อ)	<ul style="list-style-type: none"> • AATCC 15 • BS EN ISO 105 E04, ISO 105 E04 • JIS L 0848 A • TIS 121 book 4
3. Rubbing / Crocking (ขัดถู) - GAKUSHIN type rubbing tester - Organic solvents - Crocking (leather)	<ul style="list-style-type: none"> • AATCC 8 , 116, 165 • BS EN ISO 105-X12 • ISO 105-X12 , X16 • JIS L 0849 type I, JIS K 6328 • TIS 121 book 5 • JIS L 0849 Type II • BS EN ISO 105-D02, ISO 105-D02, BS 1006 D02 • JIS L0863 • ISO 20433
4. Light & Perspiration (แสงและเหงื่อ)	<ul style="list-style-type: none"> • AATCC 125 • JIS L 0888A, B
5. Saliva & Perspiration (น้ำลายและเหงื่อ)	<ul style="list-style-type: none"> • DIN 53160
6. Light (แสง)	<ul style="list-style-type: none"> • AATCC 16 E • BS EN ISO 105-B02, ISO 105-B02, JIS L0842, JIS L0843, TIS 121 book 2
7. Water (น้ำ)	<ul style="list-style-type: none"> • AATCC 107, BS EN ISO 105-E01, ISO 105 E01 • JIS L0846, TIS 121 book 25
8. Water Spotting - Water spotting (leather)	<ul style="list-style-type: none"> • AATCC 104, BS EN ISO 105-E07, ISO 105-E07 , JIS L 0853 • ISO 15700
9. Acid Spotting (กรด)	<ul style="list-style-type: none"> • AATCC 6, BS EN ISO 105-E05, ISO 105-E05 , JIS L 0851
10. Alkali Spotting (ด่าง)	<ul style="list-style-type: none"> • AATCC 6, ISO 105-E06, JIS L 0852
11. Organic Solvent (สารละลายอินทรีย์)	<ul style="list-style-type: none"> • ISO 105-X05, JIS L 0861
12. Sea Water (น้ำทะเล)	<ul style="list-style-type: none"> • AATCC 106, ISO 105-E02, JIS L 0847

Test items

A. Colour Fastness (Cont'd)	Standard Test Methods
(ความคงทนของสี)	(มาตรฐานการทดสอบ)
13. Chlorinated Water (น้ำคลอรีน) - Chlorine bleach spotting	<ul style="list-style-type: none"> • AATCC 162 • BS EN ISO 105-E03, ISO 105-E03, JIS L0884 • AATCC/ ASTM TS-001
14. Dry-cleaning (ซักแห้ง)	<ul style="list-style-type: none"> • AATCC 132, BS EN ISO 105-D01, ISO 105-D01 • JIS L 0860B
15. Non-Chlorine Bleach	<ul style="list-style-type: none"> • AATCC 172 (after 5 washes), ISO 105 C09 • AATCC/ASTM TS-001
16. Hot Pressing (การกดทับด้วยความร้อน)	<ul style="list-style-type: none"> • AATCC 133, ISO 105-X11, JIS L 0850
17. Dry Heat (ความร้อนแห้ง)	<ul style="list-style-type: none"> • AATCC 117, ISO 105-P01, JIS L 0879
18. Bleaching (สารฟอกขาว)	<ul style="list-style-type: none"> • Peroxide (AATCC 101, ISO 105-N02) • Hypochlorite (ISO 105- N01, JIS L 0856) • Sodium chlorite (JIS L 0859)
19. Phenolic Yellowing	<ul style="list-style-type: none"> • Courtaulds Method • ISO 105-X18
20. Bleeding	<ul style="list-style-type: none"> • Daimaru
21. Dye Transfer in Storage Sublimation in storage	<ul style="list-style-type: none"> • AATCC 163 (38°C x 4 hrs.) • AATCC 163 (RT x 48 hrs.) • JIS L0854
22. Ozone (โอโซน)	<ul style="list-style-type: none"> • AATCC 109, ISO 105-G03

Test items

B. Fiber Composition and Other Analytical Tests	Standard Test Methods (มาตรฐานการทดสอบ)
1. Fiber Composition (วิเคราะห์ส่วนผสมเส้นใย)	a. Qualitative Analysis (No Percentage Reported) AATCC 20, JIS L 1030-1, TIS 121 book 15 - By simple identification method b. Quantitative Analysis (Percentage Reported) AATCC 20A, ASTM D 629, ISO 1833/ 5088, JIS L 1030-2, TIS 121 book 26
2. Moisture Content (ปริมาณความชื้น)	<ul style="list-style-type: none"> • ASTM D629, ASTM D2495, BS4784 • JIS L 1019, JIS L1095, JIS L1096, JIS L3203
3. Moisture Regain	<ul style="list-style-type: none"> • ASTM D629, JIS L1096
4. Extractable Matter	<ul style="list-style-type: none"> • AATCC 97 • ASTM D1574 (wool and other animal fibers) • ASTM D2257 (textiles) • AS 2001.3.4, JIS L1015 • BS 8459
5. Silicone Detect with FTIR	<ul style="list-style-type: none"> • AATCC 94
6. Sizing Analysis	<ul style="list-style-type: none"> • JIS L 1096 (qualitative) • JIS L 1096 (quantitative)
7. Barium Number	<ul style="list-style-type: none"> • AATCC 89
8. BHT Content for Plastic Bag	<ul style="list-style-type: none"> • HPLC Method (based on ASTM D4275) • BS EN 1400-3 (for rubber)
9. Alkali in Wet Processed Textiles: Total	<ul style="list-style-type: none"> • AATCC 144
10. Cross Section Photography (ถ่ายภาพตัดขวาง)	<ul style="list-style-type: none"> • In-house method
11. Melting Point	<ul style="list-style-type: none"> • AATCC 20, ASTM D276
12. PVC Identification	<ul style="list-style-type: none"> • Beilstein , FTIR
13. Total Solid Content	<ul style="list-style-type: none"> • ASTM D4906
14. Identification of Dyestuff in Textile (วิเคราะห์ประเภทสีย้อมบนสิ่งทอ)	<ul style="list-style-type: none"> • JIS L1065 (Direct, Vat, Sulfer, Disperse, Pigment)
15. Viscosity	

Test items

C. Yarn Tests (ทดสอบเส้นด้าย)	Standard Test Methods (มาตรฐานการทดสอบ)
1. Yarn Numbers (ขนาดของเส้นด้าย)	Woven Fabric • ASTM D1059, ISO 7211/5, JIS L 1096, TIS 121 book 6
	Knitted Fabric • ASTM D1059, JIS L 1018
	Skein Form • ASTM D1907, ASTM D6717(elastomeric yarns) • BS EN ISO 2060, ISO 2060, JIS L1013, JIS L1095, TIS 121 book 6
2. Yarn Twist (จำนวนเกลียวของเส้นด้าย)	• ASTM D1422, 1423, BS EN ISO 2061, JIS L1013 JIS L1095, ISO 2061, ISO 7211/4, TIS 121 book 7
3. Unevenness, Hariness (ความไม่สม่ำเสมอของเส้นด้าย)	• ASTM D1425 • ISO 16549
4. Breaking force and elongation	• ASTM D2256, ISO 2062, JIS L1013, JIS L1095, TIS 121 book 8
5. Tenacity, elongation, RKM - Modulus	• ASTM D2256, ISO 2062, JIS L1013, JIS L1095 • ASTM D7269 (Aramid Yarns) • ASTM D7269 (Aramid Yarns)
6. Extension elastic modulus	• JIS L1013, JIS L1095
7. Tensile, Tenacity, elongation; elastomeric yarns	• ASTM D2653
8. Count Strength Product (C.S.P.)	
9. Hot water shrinkage	• ASTM D2259, JIS L1013, JIS L1095
10. Dry hot shrinkage	• ASTM D2259, JIS L1013, JIS L1095
11. Crimp Number	• ASTM D3937, ASTM D3883 (yarn in woven fabric)
12. Number of Ply (จำนวนเส้นควบ)	• In-house method
13. Number of Filament Per Yarn (จำนวนฟิลาเมนต์)	• In-house method
14. Direction of Twist (ทิศทางการเข้าเกลียว)	• ISO 2061
15. Type of Yarn (Spun/Filament) (ชนิดของเส้นด้าย)	• In-house method
16. Length of Thread (ความยาวของเส้นด้าย)	• JIS L 1095

Test items

D. Fabric Construction (การทดสอบโครงสร้างผ้า)	Standard Test Methods (มาตรฐานการทดสอบ)
1. Threads per Unit Length (Woven Fabric) (จำนวนเส้นด้ายต่อหน่วยความยาว)	<ul style="list-style-type: none"> • ASTM D3775 • ISO 7211-2 • JIS L 1096 • TIS 121 book 13
2. Stitch Density (Knitted Fabric) (จำนวนห่วงถักต่อหน่วยพื้นที่)	<ul style="list-style-type: none"> • ASTM D3887 • JIS L 1018
3. Fabric Width (ความกว้างผ้า)	<ul style="list-style-type: none"> • ASTM D3774 • ISO 3932, 22198 • JIS L1018 , JIS L1096 • TIS 121 book 10
4. Fabric Weight (น้ำหนักผ้า)	<ul style="list-style-type: none"> - per unit area - per length • ASTM D3776 , ASTM D6242, ASTM D5848 • BS 2471, BS EN 12127 • ISO 3801, ISO 9073-1, ISO 2286-2 • JIS L 1018, JIS 1096, JIS K6328 • TIS 121 book 12
5. Fabric Thickness (ความหนาของผ้า)	<ul style="list-style-type: none"> • ASTM D1777 • ISO 5084, ISO 2286-3 • JIS L 1018/ 1096 • TIS 121 book 24
6. Type of Weave (ลักษณะการทอ)	<ul style="list-style-type: none"> • In-house method
7. Measuring Bow & Skewness (<i>as received</i>)	<ul style="list-style-type: none"> • ASTM D3882 • JIS L 1018, 1096
8. Density (ความหนาแน่น; มวล/ปริมาตร)	<ul style="list-style-type: none"> • In-house method
E. Fiber Tests (การทดสอบเส้นใย)	Standard Test Methods (มาตรฐานการทดสอบ)
1. Fineness (ขนาดของเส้นใย)	<ul style="list-style-type: none"> • ASTM D1577C, ISO 1973, JIS L1015
2. Maturity (ความสมบูรณ์ของฝ้าย)	<ul style="list-style-type: none"> • ASTM D1442
3. Micronaire (ความละเอียดของเส้นใยฝ้าย)	<ul style="list-style-type: none"> • In-house method
4. Cotton Fiber Quality - Length, uniformity, strength, elongation, micronaire, color, trash) (คุณภาพเส้นใยฝ้าย)	<ul style="list-style-type: none"> • By HVI
5. Wire Diameter (เส้นผ่าศูนย์กลางเส้นใย)	<ul style="list-style-type: none"> • In-house method
6. Tensile strength (g/D, N/Tex) and elongation (ความแข็งแรงของเส้นใย)	<ul style="list-style-type: none"> • ASTM D3822, ISO 5079, JIS L 1015
7. Modulus of elongation elasticity(%)	<ul style="list-style-type: none"> • JIS L 1015

Test items

F. Dimensional Stability Tests (การเปลี่ยนแปลงขนาด)	Standard Test Methods (มาตรฐานการทดสอบ)
1. Dimensional Stability to Washing (การเปลี่ยนแปลงขนาดหลังการซัก)	<ul style="list-style-type: none"> • AATCC 135, AATCC 150, ISO 5077/6330, TIS 121 book 21 • JIS L 0217 method 103, 104, 105, 106 • JIS L 1096 D, G
2. Appearance After Washing (ลักษณะทั่วไปหลังการซัก)	<ul style="list-style-type: none"> - Wash & wear-durable press - Fabric; AATCC 124 , ISO 7768, JIS L-1072 - Garment ; AATCC 143, ISO 15487 - Seam; AATCC 88B, 88C, ISO 7769
3. Dimensional Stability to Dry-cleaning (การเปลี่ยนแปลงขนาดหลังซักแห้ง)	<ul style="list-style-type: none"> • AATCC 158 • BS EN ISO 3175
4. Appearance After Dry-cleaning (ลักษณะทั่วไปหลังการซักแห้ง)	<ul style="list-style-type: none"> • Fabric • Garment
5. Skewness (5 washes)	<ul style="list-style-type: none"> • AATCC 179 (5 washes) • ISO 16322 part 1, 2, 3
6. Dimensional Stability to water	<ul style="list-style-type: none"> • ISO 7771 • TIS 121 book 20
7. Water Immersion	<ul style="list-style-type: none"> • JIS K6328
8. Care Label Recommendation	
G. Performance Tests(การทดสอบสมรรถนะของผ้า)	Standard Test Methods (มาตรฐานการทดสอบ)
1.Abrasion Resistance (ความต้านต่อการขัดถู)	Martindale <ul style="list-style-type: none"> • ASTM D4966 , BS EN ISO 12947-2, ISO 12947-2, JIS L1096 , JIS L1018, IWS TM112 Carpet Abrasion <ul style="list-style-type: none"> • WIRA Test Method 20, IWS TM 122 • IWS TM 122 • ISO 5470-2 - Rubber or plastic coated fabric
2. Taber Abrasion	<ul style="list-style-type: none"> • ASTM D 3884, , ISO 5470-1
3. Pilling Resistance (ความต้านต่อการขึ้นขน/เม็ด)	ICI Pilling box <ul style="list-style-type: none"> • BS 5811, BS EN ISO 12945-1 • ISO 12945-1, IWS TM152, JIS L1076A Random Tumbler <ul style="list-style-type: none"> • ASTM D3512, JIS L1076D Nu-Martindale <ul style="list-style-type: none"> • ASTM D4970 • BS EN ISO 12945-2, ISO 12945-2 • IWS TM 196
4. Snagging Resistance (ความต้านต่อการตะกุด)	ICI Mace Snag Tester <ul style="list-style-type: none"> • ASTM D3939, JIS L1058A, D2
5. Air Permeability (การซึมผ่านของอากาศ)	<ul style="list-style-type: none"> • ASTM D737, EN 868-2, ISO 9237, JIS L1096A
6. Stiffness (ความกระด้างของผ้า)	<ul style="list-style-type: none"> • BS3356, JIS L 1096
7. Drapeability (การหิ้งตัวของผ้า): fabric	<ul style="list-style-type: none"> • BS 5058, JIS L 1096
8. Drapeability (การหิ้งตัวของผ้า): non woven	<ul style="list-style-type: none"> • EN 29073-9, ISO 9073-9, JIS L1085
9. Fabric handle: Tensile, Shear property	<ul style="list-style-type: none"> • KES-FB1
10.Fabric handle: Bending property	<ul style="list-style-type: none"> • KES-FB2
11.Fabric handle: Compression property	<ul style="list-style-type: none"> • KES-FB3
12.Fabric handle: Surface property (roughness)	<ul style="list-style-type: none"> • KES-FB4

Test items

H. Flammability Tests (การทดสอบการติดไฟ)

Standard Test Methods (มาตรฐานการทดสอบ)

1. Flammability Test

(การทดสอบการติดไฟ)

Textile & Cloth

- 16 CFR Part 1610, ASTM D1230, TIS 121 book 31
- JIS L1091 Method A1,A2
- JIS L1091 Method C, D, JIS K 6328
- BS EN 1103, DIN EN 1103

Textile Fabrics (vertically oriented textile fabrics)

- BS 5438 Test 1A,1B, 2A, 2B, 3A, 3B
- BS EN ISO 6940(A, B), BS EN ISO 6941(A, B)

Children Sleepwear

- 16 CFR Part 1615/ 1616, ASTM D6545
- JIS L1091 Method A4

Sleepwear and dressing gowns/ Nightwear garments

- BS 5722
- EN 14878 class A (Children's nightwear, not pyjamas)
- EN 14878 class B (Children's nightwear, pyjamas)

Curtains and Drapes

- BS 5867-2 A, B, C
- BS EN 1101, 1102
- BS EN 13772
- BS EN 13773 class 1, 2, 3
- BS EN 13773 class 4, 5

Motor Vehicle Safety Standard

- FMVSS 302 , ISO 3795

Federal Aviation Regulation

- FAR 25.853

Carpets & Rugs

- ASTM D2859
- CFR 1630, 1631
- JIS L1091 method B, B'
- SURFACE BURNING TEST, AIRMIX BURNER 45 DEGREE (JFRA)

Upholstered Furniture

- BS 5852 : Part 1
 - Smouldering cigarette (S0)
 - Match flame equivalent (S1)
- BS 5852 : Part 2 (S2-S7)
- BS 7176 (low , medium and high hazard)
- BS 7177 (low hazard)
- ISO 8191-1 (Smouldering cigarette)
- ISO 8191-2 (Match flame equivalent)
- EN 1021-1 (Smouldering cigarette)
- EN 1021-2 (Match flame equivalent)

Test items

H. Flammability Tests (Cont'd) (การทดสอบการติดไฟ)

Standard Test Methods (มาตรฐานการทดสอบ)

- Heat resistance	Protective Clothing <ul style="list-style-type: none"> • BS EN 532 • BS EN 533 • Washing only (12 cycles at 75°C) • Water soak and dry cleaning (5 cycles) • BS EN ISO 15025 A, B • BS 6249 (tested by BS 5438) • EN 469, ISO 14116, ISO 11611, ISO 11612 • EN 469, ISO 11611, ISO 11612/ ISO 17493 Camping Tentage <ul style="list-style-type: none"> • BS 6341 class E, F, G
2. Flame Propagation of Textiles and Films	NFPA 701 method 1 - curtains, draperies, other window treatments (interior products) : as received NFPA 701 method 2 - awning, tents, tarps and banners (outdoor materials)
3. Flammability testing of plastic materials used in consumer electric devices and appliances (Horizontal Vertical Flame Chamber)	<ul style="list-style-type: none"> • ASTM D635, 3801, 4986, 5048 • ISO 9773 • UL 94 (Horizontal HB) • UL 94 (Horizontal 5VA, 5VB) test both bar and plaque • UL 94 (Vertical V0 V1 V2) • UL 94 (Thin Material Vertical VTM-0, VTM-1, VTM-2) • UL 94 (Foam Material HBF, HF-1, HF-2)
4. Thermal Protective Performance Test	<ul style="list-style-type: none"> • ISO 17492 • NFPA 1971
5. Flammability for toys	<ul style="list-style-type: none"> • EN 71-2 • TIS 685

Test items

I. Strength Tests (การทดสอบความแข็งแรง)	Standard Test Methods (มาตรฐานการทดสอบ)
1.Tensile Strength (แรงดึงขาด)	Grab Test <ul style="list-style-type: none"> • ASTM D5034 , BS EN ISO 13934-2 • ISO 5082, ISO 13934-2 • JIS L 1096B, TIS 121 book 16/ 2138 <hr/> Strip Test <ul style="list-style-type: none"> • ASTM D5035, BS 2576, BS EN ISO 13934-1 • ISO 5081, ISO 13934-1 • JIS L 1096A, TIS 121 book 9
2.Tensile and elongation; Jute Felt	<ul style="list-style-type: none"> • JIS L3203
3.Tensile and elongation; nonwovens	<ul style="list-style-type: none"> • ISO 9073-3
4.Tensile and elongation; rubber or plastic coated fabrics	<ul style="list-style-type: none"> • ISO 1421-1, ISO 1421-2
5.Tensile and elongation ; paper and board	<ul style="list-style-type: none"> • ISO 1924-2
6.Tensile and elongation(wet); paper and board	<ul style="list-style-type: none"> • ISO 3781
7. Tearing Strength (ความต้านแรงฉีกขาด)	Elmendorf <ul style="list-style-type: none"> • ASTM D1424, BS EN ISO 13937-1, EN 21974 • ISO 9290, ISO 13937-1 • JIS L 1096, TIS 121 book 18 Tongue Tear- Single Rip <ul style="list-style-type: none"> • ASTM D2261, ASTM D5587 (trapezoid) • BS EN ISO 13937-2 , ISO 13937-2, ISO 13937-3 • JIS L 1096A1, A2, TIS 121 book 17 <hr/> Tongue Tear - Double Rip <ul style="list-style-type: none"> • BS EN ISO 13937-4, ISO 13937-4, JIS L 1096B <hr/> Tongue Tear - Wing Rip <ul style="list-style-type: none"> • BS EN ISO 13937-2, ISO 13937-3
- Rubber or plastic coated fabrics	<ul style="list-style-type: none"> • ISO 4674-1 method A, B , ISO 4674-2
- Non woven	<ul style="list-style-type: none"> • ISO 973-4
8. Bursting Strength (ความต้านแรงดันทะลุ)	Diaphragm Bursting <ul style="list-style-type: none"> • ASTM D3786 • BS EN ISO 13938-1, BS4768, ISO 13938-1 • BS 3137 • BS3424 (pt 6), 2758, 2960 • JIS L 1018 • JIS L1093 • ISO 3689 (after immersion in water)
- Paper and board	
- Coated fabrics	
Seam bursting strength	
9. Seam Properties (สมรรถนะของตะเข็บ)	Slippage <ul style="list-style-type: none"> • ASTM D434, ISO 13936, JIS L 1096 <hr/> Strength <ul style="list-style-type: none"> • ASTM D1683, ISO 13935-1, ISO 13935-2 • JIS L 1093
10. Stretch Recovery	<ul style="list-style-type: none"> • ASTM D4964, BS 4952, IWS TM 179
11. Bonding Strength of Laminated Fabric	<ul style="list-style-type: none"> • AATCC 136 • ASTM D2724

Test items

I. Strength Tests (Cont'd) (การทดสอบความแข็งแรง)	Standard Test Methods (มาตรฐานการทดสอบ)
12. Elastic properties :Force at specified elongation (FASE), Stress decay(%) Permanent deformation (Set)%	<ul style="list-style-type: none"> • ASTM D2731 • ASTM D2731
13. Button Pull Strength Test	<ul style="list-style-type: none"> • ASTM D 6644
14. Strength of Button	<ul style="list-style-type: none"> • BS 4162, 7907, EN71
15. Button Tension Test	<ul style="list-style-type: none"> • 16 CFR 1500.51-53
16. Button Torque Test	<ul style="list-style-type: none"> • 16 CFR 1500.51-53
17. Button Impact Tester	<ul style="list-style-type: none"> • ASTM D 5171
18. Physical and Mechanical test for toys - Small part, Sharp edge, Sharp point, Drop test, Torque test, Tension test, Compress test, Impact test, Seam tension, Flexure, Abuse test	<ul style="list-style-type: none"> • CPSIA, EN 71-1, TIS 685
J. Eco-Textile Tests	Standard Test Methods (มาตรฐานการทดสอบ)
1. Formaldehyde Content (ปริมาณฟอร์มาลดีไฮด์)	Textile <ul style="list-style-type: none"> • AATCC 112 • BS EN ISO 14184-1, 14184-2 • DIN EN ISO 14184-1, 14184-2 • ISO 14184-1, 14184-2 • Japan Law 112, JIS L 1041 / 1096 Leather <ul style="list-style-type: none"> • DIN 53315 • ISO / TS 17226
2. pH Value (ค่าความเป็นกรด-ด่าง)	Textile <ul style="list-style-type: none"> • AATCC 81, BS EN 1413, ISO 3071, ISO 6588, IS 1390, JIS L1018 Leather <ul style="list-style-type: none"> • ISO 4045, TIS 186 Paper <ul style="list-style-type: none"> • TIS 214
3. Heavy Metal (ปริมาณโลหะหนัก) - Paints - Cadmium - Chromium (VI) in leather - Chromium (VI) - Lead in paint - Lead in substrate	Extractable Heavy Metal <ul style="list-style-type: none"> • Cd, Cr, Co, Cu, Fe, Ni, Pb, Mn, Hg, As, Sb, Sn • ISO 3856 (Cd, Cr(VI), Pb, Hg) • EN 1122 • ISO 17075 • EPA 3060A/EPA 7196A • CPSC-CH-E 1003-09.1 • CPSC-CH-E 1001-08.3 (metal) • CPSC-CH-E 1002-08.3 (non-metal)

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J. Eco-Textile Tests (Cont'd)	Standard Test Methods
	(มาตรฐานการทดสอบ)
	EN 71 part 3
	<ul style="list-style-type: none"> • Sb, As, Cd, Cr, Hg, Pb, Ba, Se • Sb, As, Cd, Cr, Hg, Pb, Ba, Se, Ni, Co • Heavy metals 19 elements (EN 71-3: 2013); Al, Sb, As, Ba, B, Cd, Cr III, Cr VI, Co, Cu, Pb, Mn, Hg, Ni, Se, Sr, Sn, Organic Tin, Zn
	WEEE & RoHS
	<ul style="list-style-type: none"> • IEC 62321(4 Elements : Cd, Cr(VI), Pb, Hg) • IEC 62321 (Cd, Cr(VI), Pb, Hg, PBB, PBDE)
4. Nickel Release of Metal Parts	<ul style="list-style-type: none"> • DIN EN 1811, BS EN 1811 • BS EN 12472
5. Azo dyestuffs (สีเอโซ)	Non-Polyester or Acrylic Blend <ul style="list-style-type: none"> • BS EN 14362-1, ISO 24362 Polyester or Acrylic Blend <ul style="list-style-type: none"> • BS EN 14362-1, ISO 24362
	Leather
	<ul style="list-style-type: none"> • DIN 53316 • ISO/TS 17234
6. Pentachlorophenol (PCP)	<ul style="list-style-type: none"> • DIN 53313-GC • ISO 17070 • ISO 15320 (paper)
7. 2,3,5,6,-Tetrachlorophenol (TeCP)	<ul style="list-style-type: none"> • DIN 53313-GC • ISO 17070
PCP + TeCP	<ul style="list-style-type: none"> • DIN 53313-GC • ISO 17070
8. o-Phenylphenol (OPP)	<ul style="list-style-type: none"> • In-house method
9. Phthalates	<ul style="list-style-type: none"> • BS EN 15777, CPSC-CH-C1001-09.3
10. VOC	<ul style="list-style-type: none"> • In-house-GC/MS Head space - First Substance • Each Additional
11. PBB, PBDE	<ul style="list-style-type: none"> • IEC 62321
12. Alkyl Phenol (AP)	<ul style="list-style-type: none"> • In-house-GC/MS
13. APEOs	<ul style="list-style-type: none"> • In-house-LC/MS/MS
14. PFOS, PFOA	<ul style="list-style-type: none"> • In-house-LC/MS/MS
15. Isocyanate	<ul style="list-style-type: none"> • In-house-GC/MS
16. Allergenic and sensitizing dyestuff	<ul style="list-style-type: none"> • DIN 54231
17. Organotin compounds	<ul style="list-style-type: none"> • DIN EN ISO 17353
K. Measurement	Standard Test Methods
	(มาตรฐานการทดสอบ)
1. Colour Difference (ความแตกต่างของสี)	<ul style="list-style-type: none"> • Visual Rating (with grey scale) • Spectrophotometer
2. Whiteness (ค่าความขาว)	<ul style="list-style-type: none"> • Spectrophotometer

Test items

L. Microbiology Tests	Standard Test Methods
	(มาตรฐานการทดสอบ)
1. Anti-bacterial Test- Qualitative	<ul style="list-style-type: none"> • AATCC 147 • AATCC 174-1 (per side) • ISO 20645, JIS L1902 • TIS 121 book 29
2. Anti-bacterial Test- Quantitative	<ul style="list-style-type: none"> • AATCC 100 • AATCC 174-2 • ISO 20743, JIS L1902 • TIS 121 book 30
3. Anti-bacterial Test - Dynamic Contact Conditions	<ul style="list-style-type: none"> • ASTM E2149
4. Anti-fungi Test- Qualitative Method- Single Fungus	<ul style="list-style-type: none"> • AATCC 30 - III, AATCC 174 -III
5. Biodegradable for chemical	<ul style="list-style-type: none"> • OECD 301D
M. Functional Textile Tests	Standard Test Methods
(การทดสอบสิ่งทอสมบัติพิเศษ)	(มาตรฐานการทดสอบ)
1. Moisture Management (MMT) (การจัดการความชื้น)	<ul style="list-style-type: none"> • AATCC 195
2. Thermal Resistance (Rct) Water Vapour Resistance (Ret) (การต้านความร้อนและไอน้ำ)	<ul style="list-style-type: none"> • ISO 11092 • ISO 11092
3. Thermal Transmittance (การผ่านของความร้อน)	<ul style="list-style-type: none"> • ASTM D1518
4. Warm Keeping Ratio (การเก็บความร้อน)	<ul style="list-style-type: none"> • JIS L 1096
5. Water Vapour Permeability (ความสามารถในการผ่านของไอน้ำ)	<ul style="list-style-type: none"> • BS 3424, 7209
6. Antistatic Test (การต้านไฟฟ้าสถิตย์)	<ul style="list-style-type: none"> • ISO EN 1149-1, ISO EN 1149-2
7. Ultra Violet Transmission / UPF (การป้องกันรังสียูวี)	<ul style="list-style-type: none"> • AATCC 183 (dry) • AATCC 183 (dry and wet) • AS/NZS 4399 appendix A, ASTM D6544/ 6603 • BS 7914, BS EN 13758-1
8. Water Absorbency (การดูดซับน้ำ)	<ul style="list-style-type: none"> • AATCC 79 • JIS L1907 (Dripping method) • JIS L1907 (Sinking method)
9. Vertical Wicking Test	<ul style="list-style-type: none"> • JIS L 1907 (Byreck method)
10. Drying Rate	<ul style="list-style-type: none"> • In-house method
11. Fabric Drying Property (อัตราการแห้ง)	<ul style="list-style-type: none"> • JIS L1018/ 1096
12. Water Repellency (ความสะท้อนน้ำ)	Spray Test <ul style="list-style-type: none"> • AATCC 22, BS EN 24920, ISO 4920, • JIS L 1092 , JIS K 6328 • TIS 121 book 22
13. Oil Repellency Test (ความสะท้อนน้ำมัน)	<ul style="list-style-type: none"> • AATCC 118 • ISO 14419

Test items

M. Functional Textile Tests (Cont'd) (การทดสอบสิ่งทอสมบัติพิเศษ)	Standard Test Methods (มาตรฐานการทดสอบ)
14. Aqueous Liquid Repellency	<ul style="list-style-type: none"> • AATCC 193
15. Repellency to low surface tension liquid	<ul style="list-style-type: none"> • EN 868-2 Annex A
16. Soil Release	<ul style="list-style-type: none"> • AATCC 130
17. Water Resistance (ความต้านน้ำซึม)	Hydrostatic Test <ul style="list-style-type: none"> • AATCC 127, BS EN 20811, EN 20811 • BS 2823, DIN EN 20811, ISO 811, JIS L1092 • TIS 121 book 23
18. Wrinkle Recovery (การคืนตัวต่อการยับ)	Recovery Angle Method <ul style="list-style-type: none"> • AATCC 66, BS EN 22313, ISO 2313, JIS L 1018/ 1096 Appearance Method <ul style="list-style-type: none"> • AATCC 128, ISO 9867
19. UV Exposure (QUV) - Xenon light exposure - Carbon light exposure - Ozone exposure	<ul style="list-style-type: none"> • ASTM D4329, ASTM D4587, ASTM G151/154 • EN 12224/ 13523 • ISO 4892/ 11507/ 11997
20. Q-max (measuring warm/cool feeling)	<ul style="list-style-type: none"> • KES-F7 Thermo Labo IIB
21. Thermal conductivity (W/cm °C)	<ul style="list-style-type: none"> • KES-F7 Thermo Labo IIB
22. Heat retention property (%)	<ul style="list-style-type: none"> • KES-F7 Thermo Labo IIB
N. Carpet Tests (การทดสอบพรม)	Standard Test Methods (มาตรฐานการทดสอบ)
1. Number of Piles (จำนวนขนพรม)	<ul style="list-style-type: none"> • JIS L 1021
2. Net Pile Weight (น้ำหนักขนพรม)	<ul style="list-style-type: none"> • ISO 8543
3. Pile Height (ความสูงขนพรม)	
4. Tensile strength	<ul style="list-style-type: none"> • ASTM D 2646
5. Tuft Withdrawal Force	<ul style="list-style-type: none"> • ASTM D 1335, ISO 4919, TIS 2502
6. Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering	<ul style="list-style-type: none"> • ASTM D 3936
7. Thickness loss after prolonged, heavy static loading	<ul style="list-style-type: none"> • ISO 3416
8. Dimensional Stability	<ul style="list-style-type: none"> • ISO 2551

Test items

O. Automotive Tests	Standard Test Methods (มาตรฐานการทดสอบ)
1. Xenon weathering test	<ul style="list-style-type: none"> • ASTM D4355
2. Carbon weathering test	
3. QUV weathering test	
4. Cold, heat resistance	
5. Ozone exposure	
6. Webbing materials - Breaking strength - Light condition - Cold condition - Heat condition - Exposure to water	<ul style="list-style-type: none"> • ECE Regulation No.16
7. Flammability	<ul style="list-style-type: none"> • FMVSS 302, ISO 3795, SAE J369 • ECE Regulation 118, Annex 6 • ECE Regulation 118, Annex 8
8. Fogging test	<ul style="list-style-type: none"> • ISO 6452
9. Taber abrasion	<ul style="list-style-type: none"> • SAE J948
P. Geotextile Tests	Standard Test Methods (มาตรฐานการทดสอบ)
1. Breaking load and elongation - Grab	<ul style="list-style-type: none"> • ASTM D4632
2. Breaking load and elongation - Wide- width Strip	<ul style="list-style-type: none"> • ASTM D4595, ISO 10319
3. Trapezoid tearing strength	<ul style="list-style-type: none"> • ASTM D4533
4. Xenon weathering exposure	<ul style="list-style-type: none"> • ASTM D4355
5. Mass per unit area	<ul style="list-style-type: none"> • ASTM D 5261
6. Puncture test	<ul style="list-style-type: none"> • ISO 12236