Clean Gloves

Espansione®

Clean Gloves are the highly efficient gloves
with extremely low lint
welding Espansione®

Lynbond 2000
Tel:+44 (0)1707 259996 Fax:+44 (0)1707 259997
solutions@lynbond2000.com www.lynbond2000.com

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These air permeable gloves for clean rooms are made of Espansione® and prevents fine dust generation.

Polyurethane spunbond is a thermoplastic, polyurethane elastomeric spandex that fits snugly and continues to keep its shape as it remains comfortable to wear.

Main Characteristics

1. Performance – Ability to stretch in all directions.
2. Flexibility – Very pliable due to polyurethane elastic filaments.
3. High air permeability Randomly- webbed fine filaments with only the intersections melt-bonded.
4. Dust catching – Prevents minute dust from penetrating because filaments are tightly webbed.
5. Dust / Lint free – Closely layered fibres prevent escape of fine dust, continuous filaments are thermally melt-bonded to defect particles.
6. High coefficient of frictions – shows high spillage resistance.
7. Welding/fuse cutting – using high frequency welder or a heater

Cross section taken by electron micrograph at 500×

Electron micrograph at 500×

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Extracts taken from Manufactures specifications

Physical Properties & Performance

IV. General Physical Properties

Item			Unit / No.	Soft type					Hard type				
				ESO25	ESO75	ESO100	ESO150	ESO180	UHO25	UHO75	UHO100	UHO150	UHO180
Weight			(g/m^2)	25	75	100	150	180	25	75	100	150	180
Thickness			(mm)	0.12	0.29	0.38	0.54	0.63	0.12	0.29	0.37	0.53	0.63
Elongation at 100%	Stress	wp	(g/cm)	45	135	180	250	290	80	250	330	480	575
		wf		55	160	210	290	350	65	195	255	370	440
	Recovery	wp	(%)	92	92	92	92	92	91	90	90	90	90
		wf		92	92	92	92	92	90	90	90	90	90
Breakage	Strength	wp	(kg/cm)	0.13	0.43	0.57	0.79	0.90	0.24	0.81	1.10	1.71	2.08
		wf		0.15	0.56	0.75	1.07	1.23	0.16	0.62	0.86	1.33	1.64
	Elongation	wp	(%)	445	550	585	630	645	365	425	455	490	505
		wf		480	600	650	710	730	355	410	430	460	475
Stiffness		wp	(mm)	11	22	27	34	39	18	36	44	58	66
		wf		14	26	31	39	44	15	32	39	52	59

- Test method: JIS L-1096.
- All values are estimates and not guaranteed.

V. Performance

Treatment conditions		Performance retention after treatment (%)			Shrinkage (%)	Discoloration (Class)
		Strength	Elongation	Recovery at 100% elongation		
Flexing 20,000 times		78.6	90.9	100.7	–	–
Light	(20H)	86.1	94.9	100.0	–	3–4
	(40H)	32.3	26.3	98.6	–	2–3
NO_2 gas		100.0	119.6	99.8	–	3
Chlorine (300 ppm, 24H)		107.9	105.1	100.6	–	–
Sea water (3 days)		100.1	97.9	100.8	–	–
Washings	10T	100.3	97.3	100.7	0.4	–
	20T	84.6	88.1	100.9	0.4	–
Dry cleanings	10T	82.4	91.3	101.3	0.5	–
	20T	79.3	80.5	101.4	0.5	–
30min. of dry heat	80°C	100	97	100	0.3	–
	100°C	100	107	100	0.3	–
	140°C	95	95	101	3.3	–
30min. of cold	−30°C	94	94	100	–	–

Test method: Light JIS L-0842, NO_2-JIS L-0855
Sea water-JIS L-0847, Dry cleaning-Perchloroethylene

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Chemical Resistance

Chemical resistance category		
Alcohol	Methanol	○
	Ethanol	○
	Isopropanol	○
	Ethylene glycol	○
Hydrocabons	Benzene	○
	Toluene	○
	Xylene	○
	n-hexane	○
Other organic compouds	Acetone	○
	Dioxane	×
	Tetrahydrofuran	×
	Dimethylformamide	×
	Kerosene	○
	Acetic acid (conc.)	×
	Acetic acid (10%)	○
	Nitric acid (conc.)	×
	Nitric acid (10%)	×
Chlorohydro-carbons	Carbon tetrachloride	○
	Trichloroethylene	○
	Perchloroethylene	○

○ ····· Good ×·····Poor

Chemical resistance category		
Inorganic compounds	1N sulfuric acid	×
	0.1N sulfuric acid	○
	1N hydrochloric acid	×
	0.1N hydrochloric acid	○
	Liquid ammonia (25%)	×
	1N caustic soda	×
	0.1N caustic soda	○
	Hydrogen peroxied (3%)	○
	Sodium hypochlorite (0.01%)	○
Ethyl acetate		○
Methyl acetate		○
Gasoline		○
Lamp oil		○
Light oil		○
Heavy oil		○
Soybean oil		○
Castor oil		×
Linseed oil		×
Glycerine		○
Methyl ethyl ketone		○
Methyl isobutyl ketone		○

Treatment condition		Retention (%)			Shrinkage (%)	Discoloration (class)
		Strength	Elongation	Recovery from 100% elongation		
Exposure to carbon arc lamp	20 hrs.	70	75	99	——	1-2
	40 hrs.	50	35	98	——	1
Resistance to No_2 gas		92	98	99	——	3-4
Resistance to chlorine (at 300 ppm for 24 hrs.)		82	105	98	——	3
Washing	After 10 washings	100	100	100	0.4	4-5
	After 20 washings	96	96	99	0.6	4
Dry cleaning (perchloroethylene)	After 10 dry cleanings	99	100	100	0.6	4-5
	After 20 dry cleanings	95	98	99	0.8	4-5
Dry heat (30 min.)	At 80°C	100	101	100	0.2	——
	At 100°C	105	106	100	0.5	——
	At 140°C	97	98	99	3.0	——
Steaming (30 min.)	At 130°C	95	105	98	2.5	——
Cold resistance	At −30°C	100	100	100	——	——

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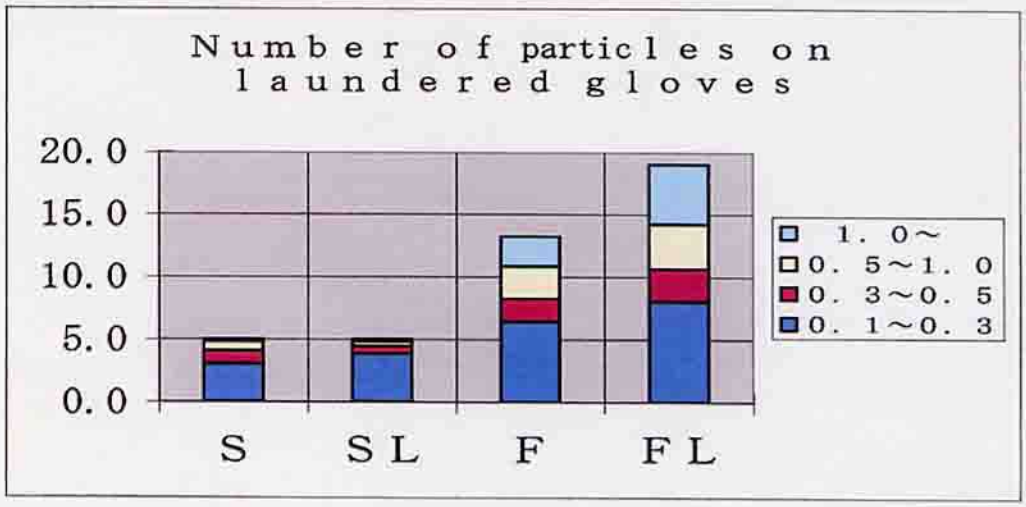
Particle Testing

of particles on laundered

Testing machine:MET ONE 2100B、Tumbling ma

Number of samples:20 pairs (each type)

		TYPE			
		S	SL	F	FL
1time	0.1～0.3	5	4	6	6
	0.3～0.5	2	1	1	2
	0.5～1.0	0	0	1	3
	1.0～	0	0	0	13
2time	0.1～0.3	2	2	4	10
	0.3～0.5	2	0	1	1
	0.5～1.0	2	0	1	5
	1.0～	0	0	1	0
3time	0.1～0.3	2	5	11	14
	0.3～0.5	1	2	5	5
	0.5～1.0	2	2	7	4
	1.0～	1	1	4	6
4time	0.1～0.3	3	6	7	9
	0.3～0.5	0	0	1	3
	0.5～1.0	0	0	2	6
	1.0～	0	0	2	4
5time	0.1～0.3	3	2	4	1
	0.3～0.5	0	0	1	2
	0.5～1.0	0	0	2	0
	1.0～	0	0	5	1
		S	SL	F	FL
average	0.1～0.3	3.0	3.8	6.4	8.0
	0.3～0.5	1.0	0.6	1.8	2.6
	0.5～1.0	0.8	0.4	2.6	3.6
	1.0～	0.2	0.2	2.4	4.8
1 aver	0.1～	5.0	5.0	13.2	19.0



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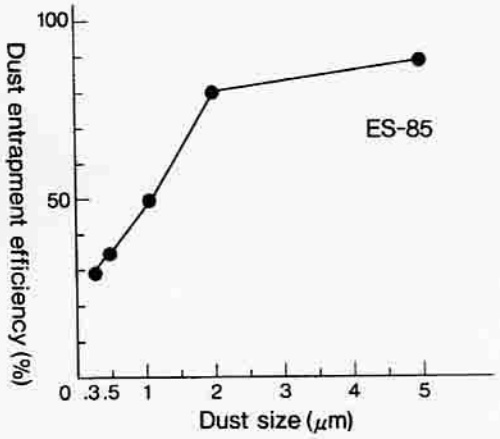
Dust Entrapment Efficiency

Size of dust (μm)	Test air (pcs/0.01 ft^3)	After filtering (pcs/0.01 ft^3)	Entrapment efficiency (%)
0.3	70,362	49,872	29.1
0.5	7,014	4,562	35.0
1	652	322	50.6
2	177	40	77.4
5	23	1	95.7



Clean Glove Specification

Code	Type	Size	Composition	Characteristic
G5020	S	25cm	(both sides) Espasnsion®	Normal type
G5030	SL	29cm		Long sleeve type
G5021	F	25cm	(palm side of hand) PU film (90μ)	One side film type
G5031	FL	29cm		One side film long sleeve type

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