LAKELAND FIRE + SAFETY Asia Pacific
LAKELAND INDUSTRIES ASIA PACIFIC

Technical Data Sheet

Summary	
Product	**ChemMAX 3**
Description	Wide ranging chemical barrier fabric. Soft and flexible – use with the unique "Permasure" App for hand-held devices – real world safe-use duration data for over 1500 chemicals
Fabric & weight	Multi-layer composite film including a high barrier film. 165 gsm
Style *(see overleaf)	CT3S428
Seam Type	Stitched and PE taped
Colour	Grey/Orange

CE Certification

EN Standard*	Description	Result
EN 340: 2002	Protective Clothing : general Requirements	Pass
EN 13034: 2005	Type 6: Protection against light spray of liquids	Pass
EN 13982: 2004	Type 5: protection against hazardous dry particles	Pass
EN 14605: 2004	Type 3 & 4: Protection against splashes and sprays of liquid chemicals	Pass
EN 1073: 2002	Protection against dust particles that may be contaminated with radiation	Pass
EN14126: 2003	Protection against infectious agents	Pass
EN 1149-5: 2008	Anti-static garment requirements: (ATEX regulations exclude certification for PPE: However, both ATEX and BGR 132 / TBRS2153 reference certification to EN 1149 as a suitable measure for protective clothing for explosive atmospheres.)	2.85×10^6 Pass

* All Lakeland garments are certified to the latest versions of standards where possible

Mechanical Properties

EN Standard	Description	Result	EN Class
EN 13934	Tensile Strength	139/92.3 N	Class 2
EN 530	Abrasion Resistance	>500 Cycles	Class 2
EN 863	Puncture Resistance	11.4 N	Class 2
ISO 2960	Burst Strength	81.6 kPa	Class 2
ISO 7854	Flex Cracking	15000 Cycles	Class 1
ISO 9073	Trapezoidal tear md/cd	88.2/50.4 N	Class 4/3
ISO 9073	Trapezoidal tear-mean	69.3 N	Class 4
ISO 5082	Seam Strength	165.28 N	Class 4

Chemical Repellency – EN 368 (for Type 6)

Chemical	EN Class	
	Repellency	Penetration
Sulphuric Acid 30%	Class 3	Class 3
Sodium Hydroxide 10%	Class 3	Class 3
O-Xylene	NT	NT
Butan-1-ol	NT	NT

Chemical Permeation – EN 6529 – For Types 1 to 4

The chemical list below is from EN 6529 Annex A2 and is intended to provide a broad spectrum of chemical types if general chemical suit assessment

Chemical	CAS No	Result / EN Class
Acetone	67-64-1	480 / Class 6
Acetonitrile	75-05-8	480 / Class 6
Carbon Disulphide	75-15-8	480 / Class 6
Dichloromethane	75-09-2	480 / Class 6
Diethylamine	109-89-7	Imm / Class 0
Ethyl Acetate	141-78-6	480 / Class 6
n-Hexane	110-54-3	480 / Class 6
Methanol	67-56-01	480 / Class 6
Sodium Hydroxide	1310-73-2	480 / Class 6
Sulphuric Acid (96%)	7664-93-9	480 / Class 6
Tetrahydrafuran	109-99-9	480 / Class 6
Toluene	108-88-3	480 / Class 6

Breakthrough times are a reflection controlled lab tests measuring "Normalised Breakthrough" as the time to reach a permeation rate of 1.0µg/min/cm^2.
This does not imply "no breakthrough" and is not intended to indicate any duration of "safe-use" in any specific application. It is always the users' final responsibility to ensure a garment is suitable for the application.

Key Features

- Soft & flexible multi-layer barrier offers protection against a wide range of chemicals
- Stitched & taped seams for full seam seal
- Permeation tested against a wide range of chemicals
- Lakeland double zip / storm flap front fastening
- Use with Lakeland PermaSure –real-world safe-use duration data against over 1000 chemicals
- Tested against a range of Chemical Warfare agents

Suggested Applications

- Higher hazard chemical protection
- Petrochemical & Refining applications
- Chemical handling & distribution
- Contaminated land clearance
- Oil-spill clearance
- Civil defence / emergency applications

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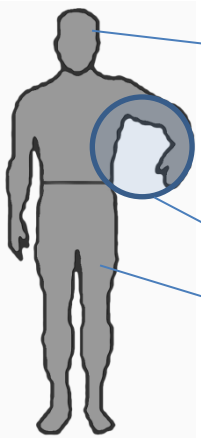
Other Information

Lakeland Super-B Style Pattern – ergonomic design for freedom of movement, comfort and durability

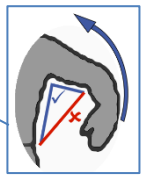
All Lakeland coveralls are constructed using Lakeland's "Super-B" style pattern. Using the company's global knowledge and experience of protective clothing this takes European CE and North American ANSI styles to produce a garment design which combines the best elements of both to produce a garment which is generous in size yet better fitting and allows greater freedom of movement.



The Super-B style consists of 3 key elements:-

Three Piece Hood

Many cheaper garments feature a 2 piece hood. Lakeland's 3-piece hood creates a 3D profile which fits the head better and allows greater freedom of movement. It also fits better with face masks when worn.



Inset Sleeves

Most European styles use a "bat-wing" style (red line) in which the under-arm reaches down to the waist. The argument is that it creates more room in the chest. However, THIS CLEARLY RESTRICTS MOVEMENT WHEN THE USERS REACHES ABOVE HIS HEAD, PLACING STRESS ON THE CROTCH AREA.

However, Lakeland use an inset sleeve (blue line) which follows the contours of the body and allows much greater freedom of movement

Two-piece diamond crotch gusset

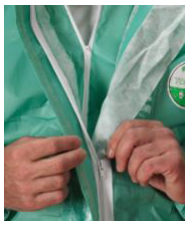
Commonly garments have four seams – two body and two leg – that meet at one point in the crotch. This is a key weak point and often results in tearing and rip-outs. Lakeland inserts a two-piece diamond shaped crotch that spreads the stress and creates a more 3D fitting shape, improving wearer movement, comfort and enhancing coverall durability

The unique combination of three key elements of the Super-B style coverall makes Lakeland garments the best designed available

Other Design Features

All Lakeland chemical suits (TomteX & ChemMAX) feature a front fastening consisting of a double zip with storm flaps. This ensures both full protection against sprays to the front of the garment and easy donning and doffing.

In addition ChemMAX garments (Except ChemMAX 4) feature wide double layer knee-pads to enhance comfort, durability and safety.

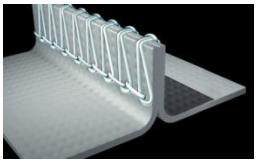


Sizing

Size	Body Height	Chest
S	164-170cm	84-92cm
M	170-176cm	92-100cm
L	176-182cm	100-108cm
XL	182-188cm	108-116cm
XXL	189-194cm	116-124cm
XXXL	194-200cm	124-132cm

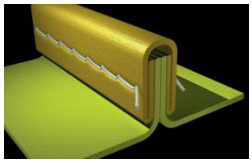
Seams

Lakeland garments use 3 types of seams:-



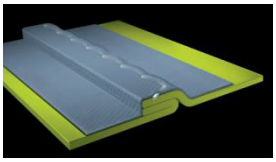
Serged or Stitched

Safegard GP
MicroMAX NS



Bound

Safegard GP
Safegard 76 / Diamant
MicroMAX
Cool Suit



Stitched & Taped

MicroMAX TS
Tomtex
ChemMAX

Storage, Shelf-life and Disposal

Storage

Lakeland garments can be stored in normal storage areas and require no special condition. Keep in cool, dry areas where possible and away from direct heat and sunlight

Shelf-Life

Lakeland coveralls are primarily manufactured from inert polymers (usually polypropylene and/ or polypropylene which should normally degrade over longer periods in excess of 10 years. Garments are supplied in sealed bags and so a shelf life of ten years or more should be reasonable under normal conditions. However, we recommend that after 5 years Type 3 and 4 chemical suits should be disposed of and replaced or used for training only. Some discoloration of especially white fabrics may occur over time though this will not affect performance. In any circumstances it is the users' responsibility to check garments for damage tears or wear before use

Disposal

Polymers used in Lakeland garments are generally inert, non-harmful and non-toxic and can be disposed of by incineration or to landfill according to local regulations. However, any garments contaminated with chemicals must be disposed of according to the requirements of the chemical or cleaned before disposal

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