



Ventilated

Chemical Protective Clothing


MICROGARD[®]
High Performance Protection in Comfort

Microgard Limited offers a comprehensive range of ventilated/air-supplied suits providing combined respiratory and body protection from hazardous substances



PAPR **AIRline** **AVANT AIRline** **AVANT₂ AIRline**

This innovative product range has been developed in conjunction with major global companies from a range of industries; including nuclear power generation, pharmaceuticals and automotive manufacturing.

FEATURES PRODUCT	Panoramic Visor Design	Emergency Rip-cord	Internal Air Distribution Channels	Low Flow Warning Whistle	Attached Glove Options	Attached Boots With Anti-slip Sole	Socks With Boot-flaps
PAPR	✓	✓	-	✓	-	Model 705	Model 700 Model 701 Model 704
AIRline	✓	✓	-	✓	-	Model 752	Model 750
AVANT AIRline	✓	✓	✓	✓	✓	Model 754	Model 755
AVANT₂ AIRline	✓	✓	✓	-	✓	Model 756	Model 757

Microgard Limited is a leading manufacturer of protective clothing. The company has built its reputation on introducing new technology and designs to the market to improve wearer protection and comfort for over 35 years.

Microgard Limited was one of the world's first manufacturers of limited life protective clothing. Today, millions of MICROGARD® and MICROCHEM® products are worn around the globe, protecting people throughout industry and the public sector.

Protecting people while they work in dirty or hazardous environments has always been the focus of Microgard Limited. Whether you are working with liquid or solid chemicals, pharmaceuticals, asbestos, paint, oil, grease, viruses and blood borne pathogens, or one of the countless other workplace contaminants in evidence today, trust Microgard Limited to help keep you protected.



Wearer Protection

Particulate Protection - the ability of the whole suit to protect the wearer against hazardous particulates is a critical measure of ventilated chemical protective clothing.

Whole Suit Particulate Inward Leakage (IL) & Total Inward Leakage (TIL)* Performance Data and Protection Factors					
Product Range	Test Method	IL (%)	TIL (%)	NPF	APF
PAPR	EN ISO 13982-2	<0.01	<0.005	20,000†	40**
AIRline	EN 1073-1	<0.004	<0.002	50,000†	200‡
AVANT AIRline		<0.004	<0.002	50,000†	200‡
AVANT ₂ AIRline		<0.004	<0.002	50,000†	200‡

NOTE: When applying protection factors always refer to the national regulations for your country.
 *Maximum value for one activity (IL) and for all activities (TIL) in accordance with EN 1073-1: 1998.
 †Nominal Protection Factor according to EN 1073-1: 1998 Classification
 **UK Assigned Protection Factor according to EN 529: 2005
 ‡ UK Assigned Protection Factor according to HSG 53

Liquid Protection

The MICROGARD® and MICROCHEM® ventilated suit range has been engineered liquid-tight to provide a barrier which exceeds the minimum performance requirement of European Standards. The MICROCHEM® products offer an exceptional permeation barrier to numerous industrial chemicals, biological and chemical warfare agents. For more information on MICROCHEM® chemical barrier performance visit www.microgard.com.

Whole Suit Liquid Inward Leakage Performance Data				
Product Range	Fabric	Test Method	"Type"	Result
PAPR	2500 PLUS	EN ISO 17491-3	3	Pass (No leakage)
	3000			
	4000			
AIRline	2500 PLUS	EN ISO 17491-3	3	Pass (No leakage)
	3000			
	4000			
AVANT AIRline AVANT ₂ AIRline	2500 PLUS	EN ISO 17491-3	3	Pass (No leakage)
	3000			
	4000			

Wearer Comfort

Ensuring an acceptable level of comfort for the wearer is essential to reduce the risk of heat stress and maintain productivity levels. MICROGARD® and MICROCHEM® air-supplied suits offer an unmatched balance of protection and comfort with an even distribution of air and adequate ventilation. The fabric technology utilised is also lightweight, flexible and yet relatively strong and durable; exceeding the minimum physical performance requirements of European Standards.

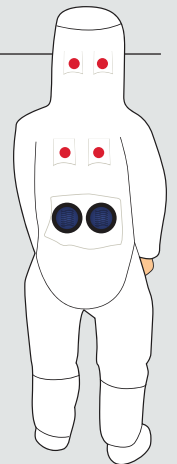
Safety Features

Panoramic Visor Design – exceeds European respiratory device standards for optical clarity and field of vision.

Exhalation Valves – with two mounted in the hood and two in the back to allow CO₂ to escape and equalise pressure in the suit; ensuring a full range of movement without the risk of excessive air pressure causing harm to the wearer or the protective suit.

Emergency Rip Cord – permits rapid doffing of the suit, particularly in cases of emergency or undue distress to the wearer.

Low Flow Warning Whistle – designed to activate if the air flow drops below the airline regulator manufacturers minimum designed flow rate.



Fabric Technology

MICROGARD® 2500 – a unique material offering exceptional mechanical strength, liquid and particulate protection. MICROGARD® 2500 achieves the highest classifications for protection from biological agents, in accordance with EN 14126: 2003 and ASTM F1671.

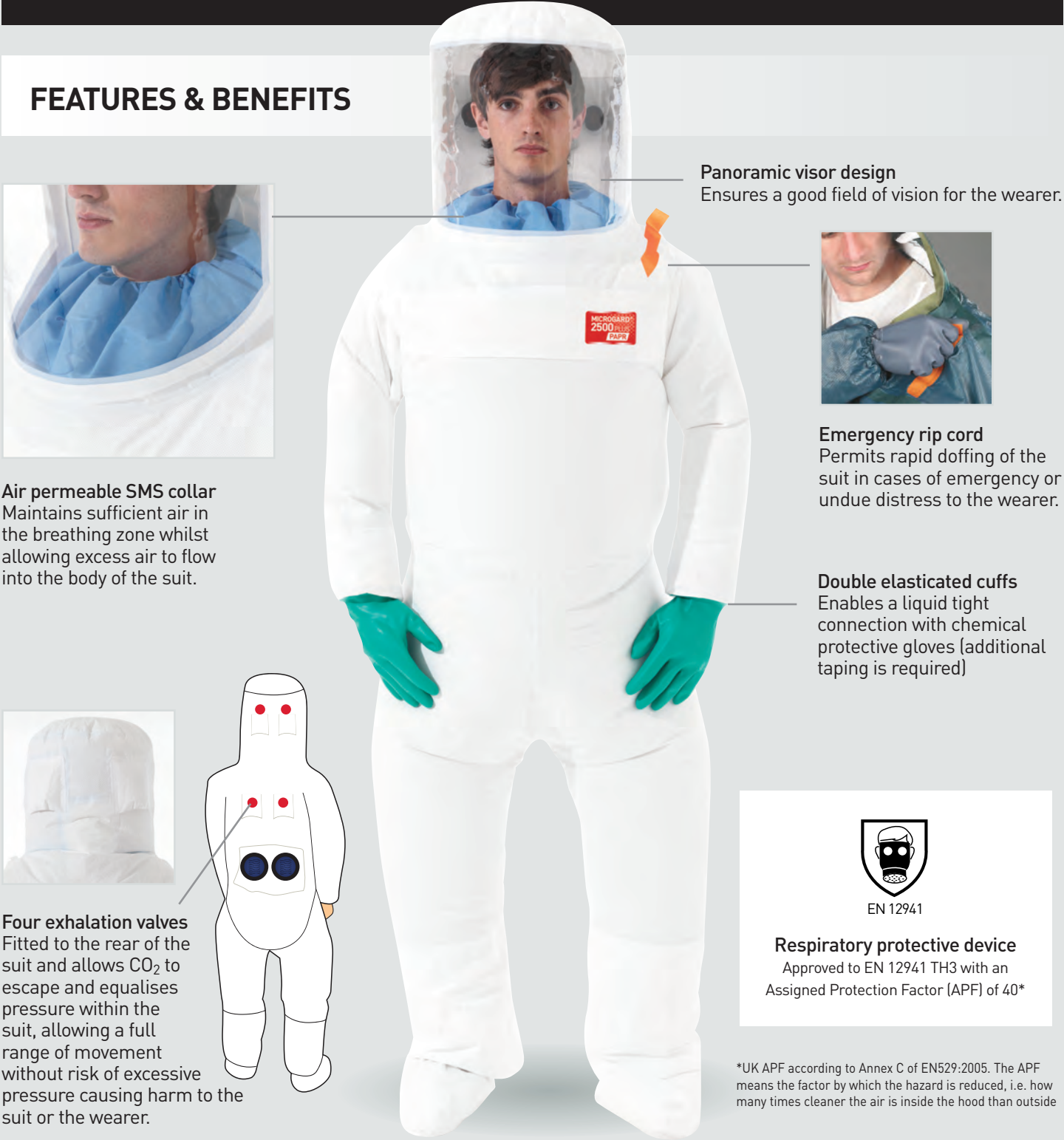
MICROCHEM® 3000 – one of the lightest and most comfortable chemical protective fabrics on the market today. This durable multi-layer fabric provides an extremely effective barrier against both inorganic chemicals and biological hazards.

MICROCHEM® 4000 – an exceptional barrier against many concentrated organic, inorganic chemicals and biological agents. Tested against over 180 chemicals, including chemical warfare agents, this multi-layer fabric is renowned for being lightweight yet durable and comfortable.

PAPR

Ventilated suits with filtered air and MICROGARD®/MICROCHEM® technology providing head and body protection from hazardous substances

MICROGARD®/MICROCHEM® PAPR is a range of suits designed for use with Powered Air Purifying Respirators (PAPRs) and certified to provide both respiratory and body protection from hazardous substances.



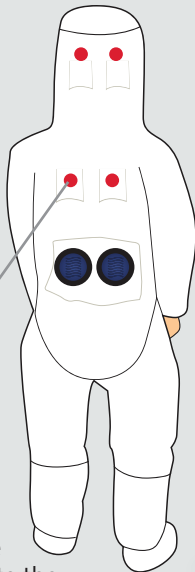
FEATURES & BENEFITS



Air permeable SMS collar
Maintains sufficient air in the breathing zone whilst allowing excess air to flow into the body of the suit.



Four exhalation valves
Fitted to the rear of the suit and allows CO₂ to escape and equalises pressure within the suit, allowing a full range of movement without risk of excessive pressure causing harm to the suit or the wearer.



Panoramic visor design
Ensures a good field of vision for the wearer.



Emergency rip cord
Permits rapid doffing of the suit in cases of emergency or undue distress to the wearer.

Double elasticated cuffs
Enables a liquid tight connection with chemical protective gloves (additional taping is required)



EN 12941

Respiratory protective device
Approved to EN 12941 TH3 with an Assigned Protection Factor (APF) of 40*

*UK APF according to Annex C of EN529:2005. The APF means the factor by which the hazard is reduced, i.e. how many times cleaner the air is inside the hood than outside



SUIT FORMULA - There are various models available to order. You will need to consider each of the options below to build your complete suit structure...



Example: Product: M2500 + Fan Unit: SR500 + Sock: Model 700 = Complete suit

1 PRODUCT OPTIONS

Product	Seam Type	Protection Levels & Additional Properties					
		TYPE 3	TYPE 4	TYPE 5	EN1073-2	EN1149-1	EN14126
	Stitched & Taped Seams Increased strength and an effective liquid & particle barrier	✓	✓	✓	✓	✓	✓
	Ultrasonically Welded & Taped Seams Provides a high barrier to liquid and particulates	✓	✓	✓	✓	✓	✓
	Ultrasonically Welded & Taped Seams Provides a high barrier to liquid and particulates	✓	✓	✓	✓	✓	✓

2 FAN UNIT, BREATHING HOSE & FILTER OPTIONS

MICROGARD[®] & MICROCHEM[®] PAPR coveralls are certified for use in combination with the below fan units and filters.

Sundström



SR500 / SR500EX PAPR fan units & filters**

Model 700

www.srsafety.com

SCOTT



Proflo SC / EX fan units and filters**

Model 701

www.scottsafety.com

CleanAIR



Chemical 2F Plus fan unit and filters**

Model 704 & 705

www.malina-safety.cz

**Please note: Sundström, Scott and CleanAIR fan units, breathing hoses and filters sold separately. For advice please contact Microgard Ltd or your distributor.

3 SOCK OPTIONS

SOCK OPTIONS



Model 700, 701 & 704

Attached socks with elasticated boot over-flap Socks are designed to be worn inside chemical protective boots with the leg over-flap worn outside to reduce the potential for chemical ingress.



Model 705

Attached sock boots with anti-slip PVC sole Designed to allow soft or protective safety shoes to be worn inside and offer limited resistance to slip.

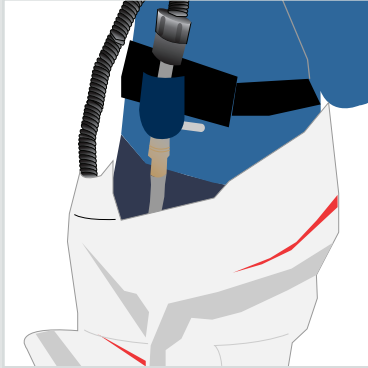
NOTE: Only available in combination with CleanAIR Chemical 2F Regulator.

Ventilated/Air-Supplied suits compatible with continuous flow compressed airline breathing apparatus for protection from hazardous liquids and particulates

This range has been engineered for use in combination with belt mounted, continuous flow airline regulators including the Sündstrom SR507 and Scott T-A-Line.

FEATURES & BENEFITS

Air permeable SMS collar
Maintains sufficient air in the breathing zone whilst allowing excess air to flow into the body of the suit.



Breathing hose to hood connection
Internally mounted breathing hose to eliminate snagging and the risk of contamination.

Internally Worn Regulator
The Airline regulator is worn inside the suit to eliminate any risk of contamination by hazardous substances.



Panoramic visor design
Ensures a good field of vision for the wearer.



Emergency rip cord
Permits rapid doffing of the suit in cases of emergency or undue distress to the wearer.

Double elasticated cuffs
Enables a liquid tight connection with chemical protective gloves (additional taping is required)



Respiratory protective device
Continuous flow compressed air line breathing apparatus.


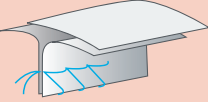

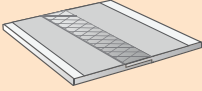

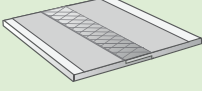


SUIT FORMULA - There are various models available to order. You will need to consider each of the options below to build your complete suit structure...



Example: Product: M3000 + Regulator: SR507 + Sock: Model 752 = Complete suit

1 PRODUCT OPTIONS

			Protection Levels & Additional Properties			
Product	Seam Type		TYPE 3	EN14594	EN1073-1	EN1149-5
	Stitched & Taped Seams Increased strength and an effective liquid & particle barrier		-	-	✓	✓
	Ultrasonically Welded & Taped Seams Provides a high barrier to liquid and particulates		✓	✓	✓	✓
	Ultrasonically Welded & Taped Seams Provides a high barrier to liquid and particulates		✓	✓	✓	✓

2 REGULATOR & BEATHING HOSE OPTIONS

MICROGARD[®] & MICROCHEM[®] AIRline coveralls are certified for use in combination with the two belt mounted, continuous flow airline regulators below. (Sold Separately)



Sundström

Sundstrom SR507
(Sold Separately)

Features:

- Flow meter
- Warning whistle
- Belt mounted control valve
- Airflow rate 175 up to 260 l/min
- Working pressure 5-7 bar (500-700 kPa)

www.srsafety.com



SCOTT T-A-LINE

(Sold Separately)

Features:

- Very quiet in use
- Warning Whistle
- Comfortable belt-mounted lightweight ergonomic design
- Easily connected with disconnection protection
- Airflow rate 175 up to 260 l/min
- Working pressure 5-7 bar (500-700 kPa)

www.scottsafety.com

3

SOCK OPTIONS



Model 750

Attached socks with elasticated boot over-flap Socks are designed to be worn inside chemical protective boots with the leg over-flap worn outside to reduce the potential for chemical ingress.



Model 752

Attached sock boots with anti-slip PVC sole Designed to allow soft or protective safety shoes to be worn inside and offer limited resistance to slip.

AVANT AIRline

Ventilated/air-supplied suits with an integral air-distribution system providing exceptional protection and comfort to the wearer

The AVANT AIRline range is designed for use in combination with the MICROCHEM® AVANT STS continuous flow airline regulator with a series of options available to meet the specific requirements of your workplace.

FEATURES & BENEFITS

Panoramic visor design
Ensures a good field of vision for the wearer.

Emergency rip cord
Permits rapid doffing of the suit in cases of emergency or undue distress to the wearer.

Suit/Belt Mounted Regulator
Complete with low flow warning whistle the AVANT STS regulator can be mounted on the suit and removed for reuse providing cleaning and decontamination is permissible.



Internal distribution channels
HEPA filter provides secondary protection from airline contamination and an SMC silencer ensures the noise inside the suit is always below 70dB (even at maximum airflow).



SOLD SEPARATELY

Continuous Flow Airline Regulator/Pass-Thru Device

Features:

- Affixed by the wearer and detachable for reuse when appropriate
- Air flow adjustable from 340l/min to 590l/min at a working pressure of 3.5 to 5 bar
- Polyester webbing belt with YKK buckle for an assured connection should the airline be snagged or pulled
- Low flow warning whistle
- External connector mount swivels 360°
- A range of external airline connector options are available (contact Microgard Ltd or your distributor for details)

www.microgard.com



Respiratory protective device
Continuous flow compressed air line breathing apparatus.



SUIT FORMULA - There are various models available to order. You will need to consider each of the options below to build your complete suit structure...



Example: Product: M4000 + Regulator: AVANT STS V.1 + CEJN 342 + Sock: Model 754 + Glove: G02 = Complete suit



1 PRODUCT OPTIONS

Product	Seam Type	Protection Levels & Additional Properties			
		TYPE 3	EN14594	EN1073-1	EN1149-5
MICROGARD 2500 PLUS AVANT AIRline	Stitched & Taped Seams Increased strength and an effective liquid & particle barrier	-	-	✓	✓
MICROCHEM 3000 AVANT AIRline	Ultrasonically Welded & Taped Seams Provides a high barrier to liquid and particulates	✓	✓	✓	✓
MICROCHEM 4000 AVANT AIRline	Ultrasonically Welded & Taped Seams Provides a high barrier to liquid and particulates	✓	✓	✓	✓

2 REGULATOR



Continuous Flow Airline Regulator/Pass-Thru Device

(Sold Separately)

3 CONNECTOR OPTIONS

A range of connector options are available including CEJN 342 Series, Staubli AQR06 and Rectus 96KS.

For further information please contact Microgard Ltd or your distributor.

4 SOCK OPTIONS



Model 754

Attached sock boots with anti-slip PVC sole
Designed to allow soft or protective safety shoes to be worn inside and offer limited resistance to slip.

Model 755

Attached socks with elasticated boot over-flap Socks are designed to be worn inside chemical protective boots with the leg over-flap worn outside to reduce the potential for chemical ingress.

Model 755

5 GLOVE OPTIONS



Code	Description
00	Double elasticated cuffs with finger loops attached to inner
G01	Ansell Solvex (nitrile) - Suitable for heavy-duty cleaning applications High levels of flexibility, comfort and dexterity.
G02	Ansell Barrier - Broad spectrum chemical resistance. Can be worn as a liner glove under heavier gloves.
G03	KCL Camapren (neoprene) - A durable glove with good chemical and mechanical resistance.

AVANT₂ AIRline

Ventilated/air-supplied suits with an integral suit mounted airline regulator and an air-distribution system for optimum protection and comfort

AVANT₂ AIRline suits are supplied complete with a permanently affixed airline regulator and are available with a series of optional extras to meet the specific requirements of your workplace.

FEATURES & BENEFITS



INCLUDED WITH THE SUIT

Continuous Flow Airline Regulator/Pass-Thru Device

Features:

- Permanently affixed
- Air flow adjustable from 340l/min to 590l/min at a working pressure of 3.5 to 5 bar
- Polyester webbing belt with YKK buckle for an assured connection should the airline be snagged or pulled
- External connector mount swivels 360°
- A range of external airline connector options is available (contact Microgard Ltd or your distributor for details)

www.microgard.com



Panoramic visor design
Ensures a good field of vision for the wearer.

Emergency rip cord
Permits rapid doffing of the suit in cases of emergency or undue distress to the wearer.

Sleeve options
A range of sleeve options available; including double cuffs and permanently affixed chemical protective gloves.



Internal distribution channels
HEPA filter provides secondary protection from airline contamination and a SMC silencer ensures the noise inside the suit is always below 70dB (even at maximum airflow).


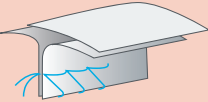

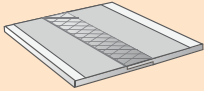

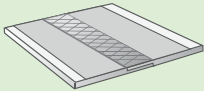


SUIT FORMULA - There are various models available to order. You will need to consider each of the options below to build your complete suit structure...



Example: Product: M2500 + Connector: CEJN 342 + Sock: Model 756 + Glove: G01 = Complete suit

1 PRODUCT OPTIONS

Product	Seam Type	Protection Levels & Additional Properties		
		TYPE 3	EN1073-1	EN1149-5
	Stitched & Taped Seams Increased strength and an effective liquid & particle barrier 	-	✓	✓
	Ultrasonically Welded & Taped Seams Provides a high barrier to liquid and particulates 	✓	✓	✓
	Ultrasonically Welded & Taped Seams Provides a high barrier to liquid and particulates 	✓	✓	✓

REGULATOR



Continuous Flow Airline Regulator/Pass-Thru Device



3 SOCK OPTIONS

Model 756



Model 756

Attached sock boots with anti-slip PVC sole
Designed to allow soft or protective safety shoes to be worn inside and offer limited resistance to slip.

Model 757

Attached socks with elasticated boot over-flap Socks are designed to be worn inside chemical protective boots with the leg over-flap worn outside to reduce the potential for chemical ingress.

2 CONNECTOR OPTIONS

A range of connector options are available including CEJN 342 Series, Staubli AQR06 and Rectus 96KS.
For further information please contact Microgard Ltd or your distributor.

4 GLOVE OPTIONS



Code	Description
00	Double elasticated cuffs with finger loops attached to inner
G01	Ansell Solvex (nitrile) - Suitable for heavy-duty cleaning applications High levels of flexibility, comfort and dexterity.
G02	Ansell Barrier - Broad spectrum chemical resistance. Can be worn as a liner glove under heavier gloves
G03	KCL Camapren (neoprene) - A durable glove with good chemical and mechanical resistance.

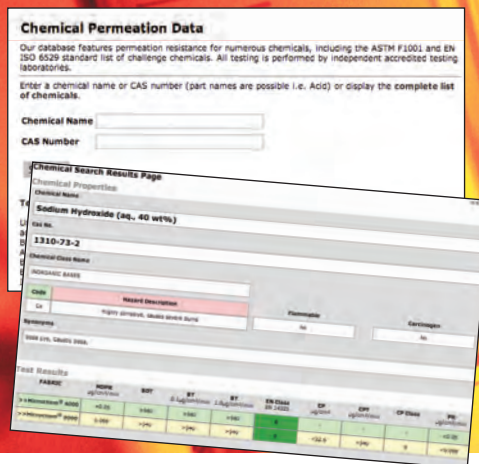
MICROCHEM® chemical database

The MICROCHEM® chemical database is available online and features permeation resistance for a wide range of chemicals, including the ASTM F1001 and EN ISO 6529 recommended list of challenge chemicals.

Key features of the chemical database include:

- ✓ Instant access to over **200 chemicals** with permeation data for MICROCHEM® 3000, 4000 & 5000
- ✓ Easy to use navigation
- ✓ Allows you to compare MICROCHEM® fabric performance

All testing is performed by independent, accredited testing laboratories.



The resistance of MICROCHEM® products to permeation by a hazardous chemical is determined by measuring the breakthrough time and permeation rate of the chemical through the fabric. Permeation tests are carried out by independent, accredited laboratories in accordance with EN ISO 6529, EN369, EN374-3 and ASTM F739.



For more information on test methods or to discuss permeation testing of your specific chemical, or chemical mixture, please contact the technical team on +44 (0) 1482 625444 or email technical@microgard.com

For up to the minute chemical permeation data visit: www.microgard.com



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MICROGARD® and MICROCHEM® garments are designed and manufactured under an ISO 9001 quality control approved system.

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