

## MICROCHEM® 4000



### Applications

- Chemical handling / transportation
- Oil-based mud protection
- Hazardous waste remediation
- Sewage purification Installations
- Industrial / tank cleaning
- HAZMAT Emergency Response (i.e. Level B)
- Pharmaceutical
- Mining
- Agriculture



**MICROCHEM® 4000** is designed to provide an exceptional barrier against organic and inorganic chemicals and biological agents.

### Features & Benefits

**Protection** - Permeation tested against over 160 chemicals, including chemical warfare agents

**Comfort** - Textile like inner improves wearer acceptance

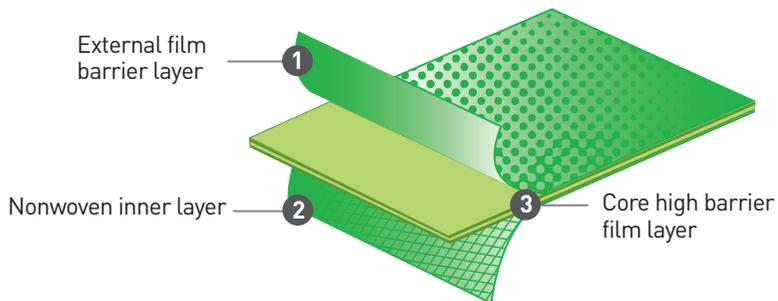
**Anti-static** - Tested according to EN 1149-1

**Designed to protect** - Typical coverall features include dual zip systems and double sleeves

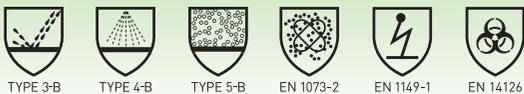
**MICROCHEM®  
4000**

## MICROCHEM® 4000

A unique multi-layer barrier fabric renowned for its lightweight, yet robust textile feel and exceptional barrier to organic & inorganic chemicals.

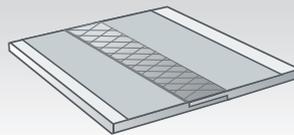


### Protection Levels & Additional Properties

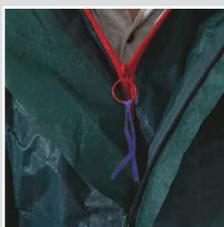


### Ultrasonically Welded & Taped Seams

A feature throughout the MICROCHEM® 4000 range, this seam technology is our highest barrier to liquids and particulates.



### Innovative Design Features



**Double zip system** helps ensure a liquid tight seal without the need for additional taping



**Double cuff design** to enable a spray-tight connection with chemical protective gauntlets (additional taping or Glove Link is required)

### Specialist Approvals

MICROCHEM® 4000 has passed a range of specialist testing methods including:



**Biological Agents**  
EN14126 : 2003  
See page 9



**Suitable for Ex-Zones**  
See page 10

### Technical Support

Contact the Microgard technical team to discuss facilitating independent permeation testing of your specific chemical or chemical mixture

Email: [technical@microgard.com](mailto:technical@microgard.com)

Technical datasheets & product flyers available to download at: [www.microgard.com](http://www.microgard.com)



## MICROCHEM® 4000 Range Overview

### MICROCHEM® 4000

Protection against concentrated organic and inorganic chemicals.



▲ MICROCHEM® 4000

### MICROCHEM® 4000 Model 151

Developed for the emergency services. Rubber face seal for use with full face respirators.



▲ MICROCHEM® 4000 151 - See page 42

### MICROCHEM® 4000 APOLLO

Encapsulated Type B suit developed in conjunction with the UK Fire & Rescue Services.



▲ MICROCHEM® 4000 APOLLO - See page 41

### MICROCHEM® 4000 PAPR

Encapsulated suit for use in conjunction with Sundström SR500 / SR500EX PAPR fan unit & filters.



▲ MICROCHEM® 4000 PAPER - See page 43

# MICROCHEM® 4000

## MICROCHEM® 4000 Technical Data

MICROCHEM® 4000 is extensively tested in accordance with statutory requirements, including physical performance attributes and barrier to hazardous substances. The following tables outline the results obtained in independent laboratories according to European test methods.

Test Method	Result	EN Class (EN 14325)
EN 530 Abrasion	2,000 cycles	6 of 6
EN ISO 7854 Flex Cracking	40,000 cycles	5 of 6
EN ISO 9073-4 Tear Resistance (Machine Direction)	88N	3 of 6
EN ISO 9073-4 Tear Resistance (Cross Direction)	44N	
EN ISO 13934-1 Tensile Strength (Machine Direction)	172N	2 of 6
EN ISO 13934-1 Tensile Strength (Cross Direction)	84N	
EN 863 Puncture Resistance	16N	2 of 6
EN ISO 13938-1 Burst Resistance	116kPa	2 of 6
EN 13274-4 Resistance to ignition	Pass	-
EN 13274-4 Resistance to flame	Pass	1 of 3
EN 1149-1 Electrostatic Properties (Surface Resistance)	$<2.5 \times 10^9$	-
ISO 13935-2 Seam Strength	185.2N	4 of 6

MICROCHEM® 4000 has been tested against over 160 chemicals. For further information on permeation testing and a more extensive list of chemicals see page 55 onwards.

EN ISO 6529 Chemical Permeation Test Results			
Chemical Name	CAS Number	BT at 1.0µg/cm <sup>2</sup> /min	EN Class (EN 14325)
Acetone	67-64-1	>540	6 of 6
Acetonitrile	75-05-8	>540	6 of 6
Chlorine Gas (>99.8 wt%)	7782-50-5	>540	6 of 6
Chromium Trioxide (50 wt%)	1333-82-0	>480	6 of 6
Ethyl Acetate	141-78-6	>540	6 of 6
Heptane-n (99.8%)	142-82-5	>540	6 of 6
Hydrofluoric Acid (71-75 wt%)	7664-39-3	>540	6 of 6
Hydrogen Chloride Gas (>99.0 wt%)	7647-01-0	>540	6 of 6
Hydrogen Peroxide (35%)	7722-84-1	>480	6 of 6
Methanol	67-56-1	>540	6 of 6
Methyl Ethyl Ketone	78-93-3	>540	6 of 6
Nitric Acid conc (70%)	7697-37-2	>540	6 of 6
Sodium Hydroxide (40 wt%)	1310-73-2	>540	6 of 6
Sulphuric Acid (96%)	7664-93-9	>540	6 of 6
Toluene	108-88-3	>540	6 of 6

TNO Protocols – Resistance to permeation of Chemical Warfare Agents			
Chemical	Detection Limit	Temperature (°C)	Breakthrough Time (hh:mm)
Mustard (HD)	0.1µg/cm <sup>2</sup> (pinpoint BT) or 4µg/cm <sup>2</sup> (continuous and homogenous BT)	37	>24:00
Lewisite (L)	Approx. 0.5 µg/cm <sup>2</sup>	37	>05:00 <06:00
Sarin (GB)	Approx. 0.05 µg/cm <sup>2</sup>	37	>24:00
VX	Approx. 0.05 µg/cm <sup>2</sup>	37	>24:00

MICROCHEM® 4000 when tested in accordance with EN 14126: 2003 demonstrates an excellent barrier to infective agents. The specific test results are detailed in the table below and for further information on this European Norm see page 7.

EN14126 Barrier to Infective Agents	Result	EN Class
ISO 16603 Resistance to penetration by blood/fluids under pressure	Pass to 20kPa	Class 6 of 6
ISO 16604 Resistance to penetration by blood borne pathogens	Pass to 20kPa	Class 6 of 6
EN ISO 22610 Resistance to wet bacterial penetration (mechanical contact)	No penetration (up to 75 mins)	Class 6 of 6
ISO/DIS 22611 Resistance to biologically contaminated aerosols	No penetration	Class 3 of 3
ISO 22612 Resistance to dry microbial penetration	No penetration	Class 3 of 3

MICROCHEM® 4000 products have been extensively tested according to European and International requirements, including ASTM, for both physical and barrier performance. More details can be found on our website [www.microgard.com](http://www.microgard.com)

**MICROCHEM®**  
**4000**

**MICROCHEM® 4000 Coverall Models**

**Model 103**

**Suit Features**

- Collar
- Double zip closure
- Double cuffs with knitted inner cuff
- Elasticated outer cuffs, waist and ankles

**Sizes:** S-3XL  
**Colour:** Green



**Model 111**

**Suit Features**

- 2 piece hood
- Double zip closure
- Double cuffs with knitted inner cuff
- Elasticated hood, outer cuffs, waist and ankles

**Sizes:** S-3XL  
**Colour:** Green



**Model 121**

**Suit Features**

- 2 piece hood
- Double zip closure
- Elasticated hood, waist and ankles
- Attached Ansell Barrier Gloves

**Sizes:** S-3XL  
**Colour:** Green



**Model 122**

**Suit Features**

- 2 piece hood
- Double zip closure
- Double cuffs with knitted inner cuff
- Elasticated hood, outer cuffs, waist and boot overflaps
- Integrated socks with boot overlap

**Sizes:** S-3XL  
**Colour:** Green



**Model 125**

**Suit Features**

- 2 piece hood
- Double zip closure
- Elasticated hood, waist and boot overflaps
- Integrated socks with boot overlap
- Attached Ansell Barrier Gloves

**Sizes:** S-3XL  
**Colour:** Green



# MICROCHEM® 4000 APOLLO

MICROCHEM®  
**4000**  
APOLLO

## Trusted by fire and rescue crews around the world

Developed with the UK Fire & Rescue services MICROCHEM® 4000 APOLLO is a fully encapsulated liquid tight chemical suit designed for use in conjunction with self contained breathing apparatus (SCBA)



### MICROCHEM® 4000 APOLLO

#### Protection Levels & Additional Properties



TYPE 3-B



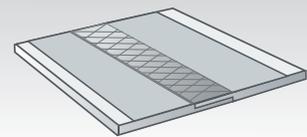
TYPE 4-B



EN 14126

#### Ultrasonically Welded & Taped Seams

A feature throughout the MICROCHEM® 4000 range, this seam technology is our highest barrier to liquid and particulates.



#### Applications

- Chemicals
- Oil and petrochemicals
- Pharmaceutical
- Agriculture
- Sewage purification installations
- Industrial and tank cleaning
- Emergency Services (HAZMAT, CBRN)

...may also be suitable for use in Level B applications

(according to US Environmental Protection Agency (EPA) & NFPA guidelines).

Contact the Microgard tech team for full details or email [technical@microgard.com](mailto:technical@microgard.com)

### Model 126

#### Suit Features

- Rear entry double zip system
- Rear mounted BA (breathing apparatus) pouch – universal fit with most BA
- Attached socks with boot overlap
- Attached Ansell Barrier® Gloves
- Exhalation valves
- Clear face visor
- Ultrasonically welded and taped seams
- Bat-wing design enables air gauge checking within the suit
- Chest strap for DSU (Distress Signal Unit)
- Adjustable internal support braces



**Sizes:** M-2XL  
**Colour:** Green

#### Specialist Approvals



**Biological Agents**  
EN14126 : 2003  
See page 9



**Suitable for Ex-Zones**  
See page 10



SCBA rear pouch



Rear mounted BA pouch



Decontamination process example

# MICROCHEM® 4000 Model 151

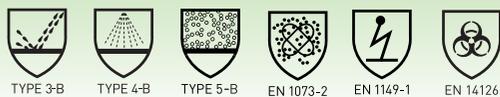
MICROCHEM®  
4000

## Developed for first responders and the emergency services

Rear entry suit, with neoprene rubber face seal for a close fit to full face respirators. Ideal for use in hazardous areas where protection against concentrated chemicals and biological agents is required.

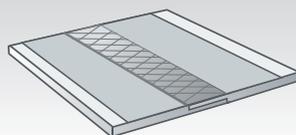
### MICROCHEM® 4000 Model 151

#### Protection Levels & Additional Properties



#### Ultrasonically Welded & Taped Seams

A feature throughout the MICROCHEM® 4000 range, this seam technology is our highest barrier to liquid and particulates.



#### Model 151 - G00 & G02

##### Suit Features

- Neoprene rubber face seal
- Rear horizontal zip entry
- Attached socks with boot overflap
- Ultrasonically welded and taped seams

##### 151-G02

- Includes attached Ansell Barrier Gloves, with over sleeves and finger loops



**Sizes:** S-3XL  
**Colour:** Green

#### Model 151 also available in...



Socks with boot overflap



Rear entry double zip system



Neoprene rubber face seal



#### Applications

- Chemicals
- Oil and petrochemicals
- Pharmaceutical
- Agriculture
- Sewage purification installations
- Industrial and tank cleaning
- Emergency Services (HAZMAT, CBRN)

#### Specialist Approvals



**Biological Agents**  
EN14126 : 2003  
See page 9



**Suitable for Ex-Zones**  
See page 10

# MICROCHEM® 4000 Accessories

MICROCHEM®  
4000

## MICROCHEM® 4000 Accessories

### Model 212



#### Apron

- Tie fastening to waist
- 100cm long tie fastening

**Size:** One Size  
**Colour:** Green

### Model 301



#### Trousers

- Elastication to waist and ankles
- No pockets
- Welded and taped seams

**Sizes:** S-2XL  
**Colour:** Green

### Model 510



#### Cape Hood with visor

- Underarm fastening with velcro straps
- Welded seams

**Size:** One Size  
**Colour:** Green

### Model 215



#### Hospital Gown

- Velcro fastening to neck
- Tie fastening at the waist
- Double cuff with knitted inner cuff
- Welded and taped seams

**Sizes:** S-3XL  
**Colour:** Green

### Model 406



#### Overboots

- Elastic to top of boot
- Tie fastening
- Welded seams

**Size:** One Size (fits size 42-46)  
**Colour:** Green

### Model 600



#### Oversleeves

- Elasticated at both ends
- Welded seams

**Size:** One Size  
**Colour:** Green

### Model 230



#### Jacket

- 2 piece hood
- Double zip closure
- Elasticated wrists and hem
- Welded and taped seams

**Sizes:** S-3XL  
**Colour:** Green

### Model 507



#### Cape Hood

- Balaclava style cape hood covering part of shoulders
- Velcro fastening to front
- Welded seams

**Size:** One Size  
**Colour:** Green

For more information on our range of accessories, or if you can't see the accessory you are looking for, please contact Microgard Limited customer services Tel: **+44 (0) 1482 625444**, email **sales@microgard.com** or visit **www.microgard.com**