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

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

**Features & Benefits**

**Protection** - Permeation tested against over 180 chemicals, including chemical warfare agents

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

**Anti-static** - Tested according to EN 1149-5

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

**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)

**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

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Specialist Approvals

- Biological Agents EN 14126:2003
- Suitable for Ex-Zones
MICROCHEM® 4000 Coveralls

Model 103

Suit Features
• Collar
• Double zip closure
• Double cuffs with knitted inner cuff
• Elasticated outer cuffs, waist and ankles

Sizes: S-5XL
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-5XL
Colour: Green

Model 121

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

Sizes: S-5XL
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 overflap

Sizes: S-5XL
Colour: Green

Modello 125

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

Sizes: S-5XL
Colour: Green

Model 162

Suit Features
• Pass-thru device for use with fall arrest equipment
• 2-piece hood
• Double zip closure
• Double cuffs with knitted inner cuff
• Elasticated hood, outer cuffs, waist and ankles

Sizes: S-5XL
Colour: Green
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

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

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

Specialist Approvals

Biological Agents
EN 14126:2003

Suitable for Ex-Zones

Model 126

Ultrasonically Welded & Taped Seams

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

Sizes: M-2XL

Colour: Green

Contact the Microgard tech team for full details or email technical@microgard.com

MICROGARD Limited
9 Saltmarsh Court · Priory Park · Hessle · Kingston upon Hull · UK · HU4 7DZ
Tel +44 (0) 1482 625444 · Fax +44 (0) 1482 630400
Email sales@microgard.com · www.microgard.com
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.

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 oversleeves and finger loops

Sizes: S-5XL
Colour: Green

Model 151 also available in...

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

Specialist Approvals
- Biological Agents
  EN 14126:2003
- Suitable for Ex-Zones

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Email sales@microgard.com · www.microgard.com
MICROCHEM® 4000 Accessories

**Model 212**
- Apron
  - Tie fastening to waist
  - 100cm long tie fastening

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

**Model 215**
- Apron with Sleeves
  - Velcro fastening to neck
  - Tie fastening at the waist
  - Double cuff with knitted inner cuff
  - Welded and taped seams

  **Sizes:** S-5XL  
  **Colour:** Green

**Model 230**
- Jacket
  - 2 piece hood
  - Double zip closure
  - Elasticated hood, wrists and hem
  - Welded and taped seams

  **Sizes:** S-5XL  
  **Colour:** Green

**Model 301**
- Trousers
  - Elastication to waist and ankles
  - No pockets
  - Welded and taped seams

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

**Model 406**
- Overboots
  - Elastic to top of boot
  - Tie fastening
  - Welded seams

  **Size:** One Size (fits size 42-44)  
  **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

**Model 516**
- Cape Hood with visor
  - Hood with visor and 3 inch velcro body panel
  - Welded & taped seams

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

**Model 600**
- Oversleeves
  - Elasticated at both ends
  - 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
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

<table>
<thead>
<tr>
<th>EN Class (EN 14325)</th>
<th>EN Class (EN 14325)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;2,000 cycles</td>
<td>&gt;2,000 cycles</td>
</tr>
<tr>
<td>&gt;40,000 cycles</td>
<td>&gt;40,000 cycles</td>
</tr>
<tr>
<td>&gt;60N</td>
<td>&gt;60N</td>
</tr>
<tr>
<td>&gt;10N</td>
<td>&gt;10N</td>
</tr>
<tr>
<td>&gt;80kPa</td>
<td>&gt;80kPa</td>
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<tr>
<td>Pass</td>
<td>Pass</td>
</tr>
<tr>
<td>Pass</td>
<td>Pass</td>
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</tbody>
</table>

**MICROCHEM® 4000 has been tested against over 180 chemicals.**

### EN ISO 6529 Chemical Permeation Test Results

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>BT at 1.0µg/cm²/min</th>
<th>EN Class (EN 14325)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetone</td>
<td>67-64-1</td>
<td>&gt;480</td>
<td>6 of 6</td>
</tr>
<tr>
<td>Acetonitrile</td>
<td>75-05-8</td>
<td>&gt;480</td>
<td>6 of 6</td>
</tr>
<tr>
<td>Chlorine Gas (≥99.8 wt%)</td>
<td>7782-50-5</td>
<td>&gt;480</td>
<td>6 of 6</td>
</tr>
<tr>
<td>Chromium Trioxide (50 wt%)</td>
<td>1333-82-0</td>
<td>&gt;480</td>
<td>6 of 6</td>
</tr>
<tr>
<td>Ethyl Acetate</td>
<td>141-78-6</td>
<td>&gt;480</td>
<td>6 of 6</td>
</tr>
<tr>
<td>Heptane- n (99.8%)</td>
<td>142-82-5</td>
<td>&gt;480</td>
<td>6 of 6</td>
</tr>
<tr>
<td>Hydrofluoric Acid (71-75 wt%)</td>
<td>7664-39-3</td>
<td>&gt;480</td>
<td>6 of 6</td>
</tr>
<tr>
<td>Hydrogen Chloride Gas (≥99.0 wt%)</td>
<td>7647-01-0</td>
<td>&gt;480</td>
<td>6 of 6</td>
</tr>
<tr>
<td>Hydrogen Peroxide (35%)</td>
<td>7722-84-1</td>
<td>&gt;480</td>
<td>6 of 6</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>&gt;480</td>
<td>6 of 6</td>
</tr>
<tr>
<td>Methyl Ethyl Ketone</td>
<td>78-93-3</td>
<td>&gt;480</td>
<td>6 of 6</td>
</tr>
<tr>
<td>Nitric Acid conc (70%)</td>
<td>7697-37-2</td>
<td>&gt;480</td>
<td>6 of 6</td>
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<tr>
<td>Sodium Hydroxide (40 wt%)</td>
<td>1310-73-2</td>
<td>&gt;480</td>
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<tr>
<td>Sulphuric Acid (96%)</td>
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<td>&gt;480</td>
<td>6 of 6</td>
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<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>&gt;480</td>
<td>6 of 6</td>
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</tbody>
</table>

### TNO Protocols – Resistance to permeation of Chemical Warfare Agents

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Detection Limit</th>
<th>Temperature (°C)</th>
<th>Breakthrough Time (hh:mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mustard (HD)</td>
<td>0.1µg/cm² (pinpoint BT) or 4µg/cm² (continuous and homogenous BT)</td>
<td>37</td>
<td>&gt;24:00</td>
</tr>
<tr>
<td>Lewisite (L)</td>
<td>Approx. 0.5 µg/cm²</td>
<td>37</td>
<td>&gt;05:00 - 06:00</td>
</tr>
<tr>
<td>Sarin (GB)</td>
<td>Approx. 0.05 µg/cm²</td>
<td>37</td>
<td>&gt;24:00</td>
</tr>
<tr>
<td>VX</td>
<td>Approx. 0.05 µg/cm²</td>
<td>37</td>
<td>&gt;24:00</td>
</tr>
</tbody>
</table>

**MICROCHEM® 4000 when tested in accordance with EN 14126: 2003 demonstrates an excellent barrier to infective agents.**

### EN14126 Barrier to Infective Agents

<table>
<thead>
<tr>
<th>EN Class (6 of 6)</th>
<th>EN Class (6 of 6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass to 20kPa</td>
<td>Class 6 of 6</td>
</tr>
<tr>
<td>Pass to 20kPa</td>
<td>Class 6 of 6</td>
</tr>
<tr>
<td>No penetration</td>
<td>Class 6 of 6</td>
</tr>
<tr>
<td>No penetration</td>
<td>Class 3 of 3</td>
</tr>
<tr>
<td>No penetration</td>
<td>Class 3 of 3</td>
</tr>
</tbody>
</table>

**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).**