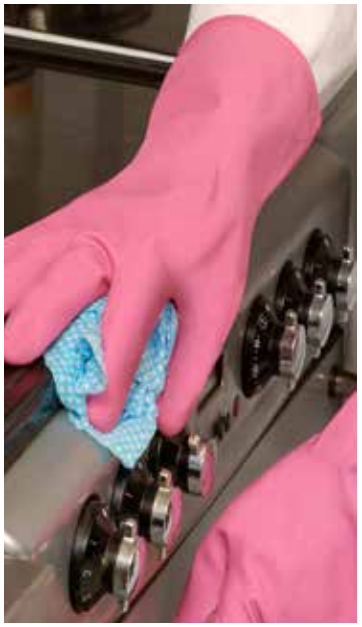
Ansell

Chemical Protection

CUSTOMER CONVERSATION Guide



Ansell Resources

Helping you sell.

How to use this guide

The Customer Conversation Guide: Chemical Protection is one of four guides of Ansell product categories — Cut Protection, Chemical Protection, General Purpose Gloves, and Disposable Gloves. This guide will help facilitate the conversation with your customers on the importance of safety and protection in the workplace, and where Ansell PPE products fit into their safety initiatives.

Chemical Protection Gloves

Conversations with your customer

The Ansell Chemical Glove Program is an important part of managing safety and productivity in your customers' operations. As a global leader in chemical glove technologies, we ensure that we're offering your customers only proven, highest-quality products—a full line of protective gloves that provide comfort and dexterity across a wide range of applications and conditions.

"Why is chemical protection important?"

- 89% of workers in the automotive, metal, machinery and chemical industries encounter some level of oil and grease...
- 65% of these same workers also encounter chemicals
- Workers can suffer from an Irritant Contact Dermatitis (ICD) as a result of direct contact with oils/greases and irritant fluids
- Exposure to toxic chemicals causes nearly 100,000 deaths and 390,000 illnesses a year

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"What goes into chemical protection gloves?"

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Glove Materials

Material	Strengths	Weaknesses	# of Styles
Natural Rubber Latex	• Insulating • High Elasticity • Sensitivity & dexterity • Good dry & wet grip, abrasion • Low cost compared to other polymers	• Risk of sensitisation/Type I allergy due to proteins • Bad chemical resistance to oils and greases (degrades NRL) • High competition, low differentiation	44 Brand: VersaTouch
Nitrile	• Excellent resistance to puncture & abrasion • Sensitivity & dexterity • Good dry grip • Resistance to many (organic) solvents, including aliphatic hydrocarbons, oils, fat	• Less dexterity than NRL • More expensive than NRL • Wet and oily grip	30 Brands: AlphaTec / Solvex
Neoprene	• More flexible than nitrile • Excellent chemical resistance to acids and bases • Ozone resistant properties	• More expensive than nitrile • Not recommended for most organic and hydrocarbon solvents • More elastic and dense than nitrile	12 Brand: Scorpio
PVC	• Good abrasion resistance • Low cost • Good protection against many strong acids, bases & alcohols	• Cuts & punctures easily • Not recommended for • ketones & organic solvents • Environmentally unfriendly	11 Brand: Snorkel
LLDPE - Barrier	• Excellent chemical resistance to a broadest range of chemicals • Cheaper than Butyl/Vton® • No risk of allergies	• Low mechanical resistance: abrasion, puncture & tear • Low wear comfort: stiff, poor fit & sweaty - "plastic bag feeling" • Poor dexterity & grip (need over-glove)	1 Brand: Barrier
Butyl	• Gas proof • High resistance to polar chemicals, i.e Acetone, phenols • Comfort	• Excellent chemical resistance to a broadest range of chemicals • Cheaper than Butyl/Vton® • No risk of allergies	2 Brand: Chemtek

Viton®	• Gas proof
	• High resistance to non-polar chemicals, i.e aliphatic & aromatic solvents and chlorinated hydrocarbons
	• Comfort
		• No resistance to polar chemicals:
		  • Alcohols, several acids, gases, caustics
		  • Acetone, Phenoles
		  • Aldehydes, Esters, Amines
			1
			Brand: Chemtek

PVA (polyvinylalcohol)	• High chemical resistance to aliphatics, aromatics, chlorinated solvents, esters & most ketones • Good physical properties: resistant to puncture & abrasion	• Quickly breaks down when exposed to water solution or air • Not very flexible • Expensive	2 Brand: PVA

These materials are commonly used across numerous industries and applications. Natural Rubber Latex (NRL) and Nitrile are the most

Note: Not all materials are suitable for use with all chemicals, as defined by their strengths and weaknesses. Ensure that the proper glove

Glove Types

Chemical protection gloves have different types of construction, grip patterns and cuff lengths, each offering advantages appropriate to the application or process.

Construction

Gloves come in two types of construction: Supported gloves are made by dipping a knitted or woven cloth liner into a liquid glove compound such as nitrile or neoprene; the liner "supports" the coating and adds strength. Unsupported gloves are made by dipping porcelain hand forms directly into a glove compound; the dried film or "skin" is later stripped off the forms, leaving perfectly molded gloves, with no liner or fabric "supporting" the compound.

Grip Pattern

Gloves have various grip patterns to improve handling of objects depending on the application:

- Smooth
- Raised or Large Diamond
- Sandpatch or Rough Finish
- Fishscale
- Pebble Embossed
- Crinkle

Cuff Type

Gloves have various cuff designs to improve functionality based on environment and applications:

- Rolled Beaded Cuff
- Pinked Cuff
- Straight Cuff
- Gauntlet Cuff

Rolled Beaded – Provides increased protection from liquid droplets, as well as increased cuff strength

Pinked – Traditional cuff finish

Straight – Provides additional length to protect forearm from liquid runoff

Gauntlet – Provides added protection and length (usually 4" or longer), allowing maximum movement of the wrist

"How do I select the proper glove...

...based on the type of work I do?

What you need to know:

- Chemical hazard
- Level or length of exposure
- Other application needs (e.g., thermal protection, anti-static, dexterity, wearer comfort...)

Identifying the specific chemical hazard is key for glove material choice. Leverage the Ansell Chemical Resistance Guide / Chart for proper material selection.

"Why is dexterity important when selecting a chemical resistance glove?"

Ansell's studies show that 89% of workers in the automotive, metal, machinery and chemical industries encounter some level of oil & grease AND 65% of these same workers also encounter chemicals1

Despite the need for chemical protection, mechanical gloves are typically used due to the strong needs for dexterity & comfort when performing necessary tasks

Although, mechanical gloves provide some level of coating, workers are not fully protecting their skin from contact with irritant fluids

As a result, many workers suffer from an inflammation of the skin called Irritant Contact Dermatitis (ICD) as a result of direct contact with neat oils and irritant fluids. Signs of ICD include redness of the skin, blisters, scales or crusts.

Ansell provides a light duty chemical glove with an advanced ergonomic design. It provides needed protection while assuring proper dexterity and fit, which is essential to ensure workers' comfort and enhanced productivity.

“How does Ansell test for chemical resistance?”

Chemical Protection – Test Method

Chemical permeation is the process in which chemicals move through protective glove material on a molecular or microscopic level—or “breakthrough.” The international EN374 standard establishes requirements for chemical resistance in work gloves based on defined test methods.

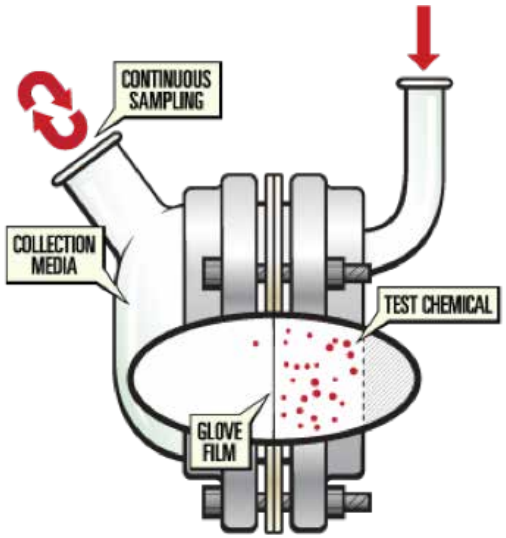
Permeation testing determines the time for a breakthrough to happen, i.e., the time for the molecule to go through the material on a surface of the material. Three samples are taken from 3 gloves and the lowest breakthrough time determines the performance level.

The breakthrough time is reported in minutes for each sample, and determines the appropriate glove pictogram/marking.

Ansell uses the ASTM F739 **Permeation Test methodology:**

ASTM F 739 – PERMEATION TEST METHOD

Chemical permeation tests are based on any 3 of the 12 chemicals from the list shown at right. If the permeation time is 30 minutes for those 3 chemicals, the glove can receive the Erlenmeyer “chemical resistant” pictogram with at least 3 code letters.



This does not mean this glove only works with the selected chemicals, but that the selection reflects the glove material’s primary application.

Code Letter	Chemical	CAS Number	Class
A	Methanol	67-56-1	Primary alcohol
B	Acetone	67-64-1	Ketone
C	Acetonitrile	75-05-8	Nitrile Compound
D	Dichloromethane	75-09-2	Chlorinated paraffin
E	Carbon disulfide	75-15-0	Sulphur containing organic compound
F	Toluene	108-88-3	Aromatic hydrocarbon
G	Diethylamine	109-89-7	Amine
H	Tetrahydrofurane	109-99-9	Heterocyclic and ether compound
I	Ethyl acetate	141-78-6	Ester
J	N-Heptane	142-82-5	Saturated hydrocarbon
K	Sodium hydroxide 40%	1310-73-2	Inorganic base
L	Sulphuric acid 96%	7664-93-9	Inorganic mineral acid

The EN374 standards also determine:

- Gloves achieving a breakthrough time less than 30 minutes but pass penetration test requirements (Acceptable Quality Level [AQL] <= 4.0) shall carry the “waterproof” pictogram (commonly seen with disposables);
- Gloves that pass penetration test requirements and achieve an acceptable quality level (AQL <= 1.5) shall carry the “microorganism” pictogram.

[SAMPLES OF THESE? SEE 20600-D]

Penetration time is used to determine the material’s performance level or rating. Levels range from “0” (under 10 minutes) to “6” (up to 480 minutes, the maximum time that can be claimed under the current EN374 standards). Penetration test requirements are met when no evidence of air or water leak occurs, based on an acceptable quality level (the percentage of allowable rejects from a known number of inspected samples).

PERMEATION BREAKTHROUGH TIMES ACCORDING TO EN374 (minutes)							
Performance level	0	1	2	3	4	5	6
Measured BTT	<10	10-30	30-60	60-120	120-240	240-480	>480
	Not Recommended	Splash Protection		Medium Protection		High Protection	

Gloves not complying with the permeation test but meeting penetration requirements must use the pictogram marking with a question mark.

[SAMPLE?]

“How do I know the right glove for the chemical?”

Ansell Chemical Guardian program evaluates resistance of glove materials with chemicals to offer a personalized glove assessment with expected permeation times.
The benefits of utilizing Ansell’s Chemical Guardian program are confidence in your PPE chemical selection. Insight into chemical contact in processes via breakthrough times. Enhanced chemical protection for your workers. And meeting compliance while providing best performance in chemical hand protection.All that is required is providing Ansell with your MSDS information in order to provide the right glove selection to protect your workers from harmful chemicals.

How it works...

Ansell Chemical GuardianTM database contains over 4,500 single chemicals and 1,000 mixed chemicals

The result is...

PERMEATION BREAKTHROUGH TIMES ACCORDING TO EN374 (MINUTES)						
0	1	2	3	4	5	6
< 10	10-30	30-60	60-120	120-240	240-480	>480
Not Recommended	Splash Protection		Medium Protect		High Protect	

"How can you help me choose the correct glove for my needs?"

At no cost to you: Ansell's Guardian program can help with a decision. Ansell Guardian® is a patented, proven and proprietary "plant audit" service which defines immediately actionable business performance improvements. Helping you choose the right PPE solution to increase your company's Safety, Productivity and Cost Performance.

By understanding your key objective(s)...

Increased Health and Safety Standards and Regulations

Increased Focus on Sustainability and Waste Reduction

Vendor Standardization and Consolidation

Global Standardization Supply and Process

...Ansell can offer the best solution to meet your needs...

Product optimization solution identifying the most appropriate and comfortable hand and arm protection.

Benefits: Lower cost of ownership

Safety solution that analyzes job requirements and provides recommendations based on best practices and analytical risk assessment procedures.

Benefits: Employee safety

Business performance improvement and implementation across 7 cost drivers that measure financial progress.

Benefits: Business performance

Ansell Chemical Guardian matches glove materials with your chemicals to offer a personalized glove assessment with recommended permeation times.

Benefits: Chemical glove recommendation

Best-in-class portfolio that maximizes profit from vending efficiencies, improves worker compliance and offers better product performance.

Benefits: Lower total cost of ownership, increased safety, compliance and accessibility and improved productivity

The quantifiable benefits to you for utilizing Ansell Guardian are:

INCREASED SAFETY/COMPLIANCE

- Increase safety awareness and worker motivation
- Professional risk management advice
- Regulatory compliance

ENHANCED PRODUCTIVITY

- Reduced waste
- Simplified accessibility and inventory
- Solutions for reuse, recycling and disposal

IMPROVED TOTAL COST OF OWNERSHIP

- Reduced cost of injuries
- Lower PPE costs
- SKU Reduction/Standardization

The Ansell Guardian Steps

1. Data collection
2. Plant assessment
3. Initial report of findings
4. Validation testing
5. Implementation planning
6. Training
7. Expansion

By focusing on the most relevant of the key areas, Ansell can deliver recommendations with the most impact for your business. The Ansell Guardian® solution may be implemented within a single application or manufacturing plant, corporate-wide or globally.

“Why should I choose Ansell over another glove manufacturer?”

Ansell offers the broadest, widest and most complete product range in the business. Including the most recognized brands in the business. Ansell is mission-focused on selling protection and enable superior performance. They have world-class technology and engineering, a growing patent portfolio, and engineering creativity. And through Ansell Guardian-they sell outcomes (less injuries, lower costs) not just the product.

Ansell use of feedback from you (“Voice of Customer”) to develop best in class PPE products

Overview of Ansell’s Process:

- Best of breed understanding of manufacturing applications, environments, length of use and specific materials handled
- Process focused to understand customer voiced and unvoiced protection, performance and comfort needs by industrial vertical and product segment
- Robust product trial and validation process to ensure success and accelerate adoption via testimonial / case study marketing
- Distinct product portfolio segment strategies built by the user

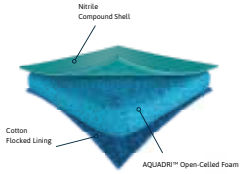
Ansell’s Approach to Innovation

1. PERFORMANCE EXPECTATIONS
   Understand the End User and their critical needs
2. PROTOTYPE DEVELOPMENT
   Create designs, concepts and prototypes with cutting-edge technology
3. FIELD TESTS & TESTING
   Test these protoytpes with the End Users
4. PRODUCT LAUNCH
   Launch a best-in-class product

Ansell Glove Technologies

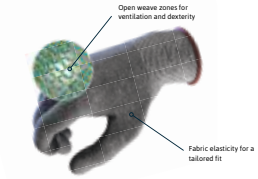
AQUADRI™
Moisture Management Technology

AQUADRI™ patented technology creates an open-celled layer of nitrile foam on the inner surface of a glove that absorbs hand perspiration and provides a cooler, drier and more comfortable fit.



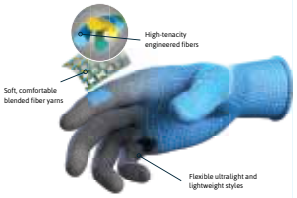
ZONZ™
Comfort Fit Technology

ZONZ™ knitting comfort technology uses selected yarns and varying knit construction to optimize overall glove fit and enhance hand movement for higher dexterity and reduced fatigue.



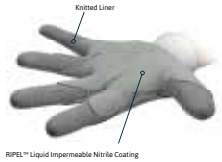
INTERCEPT™
Cut Resistance Technology

INTERCEPT Technology® blends engineered, synthetic and natural fibers into high-performance yarns that provide high cut protection along with great comfort and high dexterity.



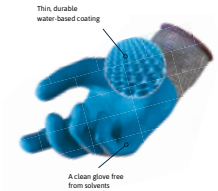
RIPEL™
Liquid Repellence Technology

RIPEL™ technology creates a liquid repellent barrier in knit glove styles that enhances hand health by preventing oil or lubricants from making even incidental contact with the wearer’s skin.



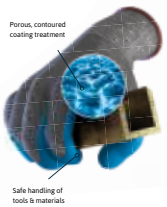
FORTIX™
Abrasion Resistance Technology

FORTIX™ technology applies a thin, resilient polymer coating to knitted and cut and sewn gloves to extend their working life and improve their comfort in abrasive applications.



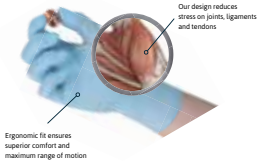
ANSELL GRIP
Ansell Grip Technology™

ANSELL GRIP TECHNOLOGY™ is a coating treatment that minimizes the force required to grip dry, oily and wet tools or materials, reducing hand and arm fatigue and improving dexterity, safety and productivity.



ERGOFORM™
Ergonomic Design Technology

ERGOFORM™ is a technology that enables Ansell to design safety solutions that support musculoskeletal health during repetitive tasks to improve worker performance.



About Ansell

Ansell Protects™ Ansell, founded over 100 years ago, is a global leader in protection solutions. Ansell’s vision is to create a world where people and products enjoy optimal protection against the risks to which they are exposed.
With operations in North America, Latin America/Caribbean, EMEA and Asia, Ansell employs 15,000 people worldwide and holds leading positions in the personal protective equipment and medical gloves market, as well as in the sexual health and well-being category worldwide.

www.ansell.com

SUPERIOR PRODUCTS BASED ON ANSELL'S TECHNOLOGY PLATFORMS

These performance technologies help differentiate Ansell products from that of competitive products.

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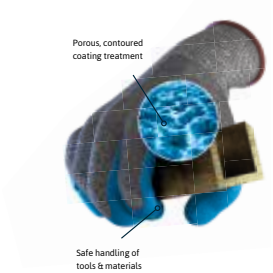

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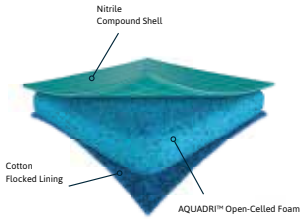

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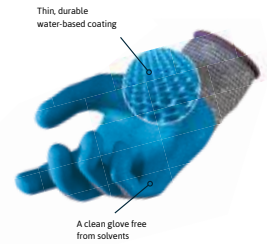

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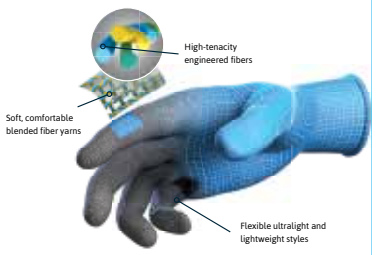

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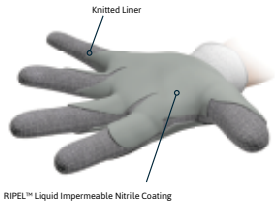

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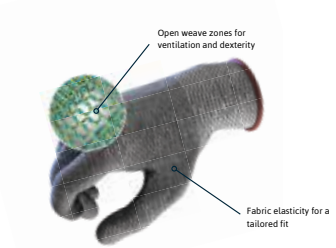

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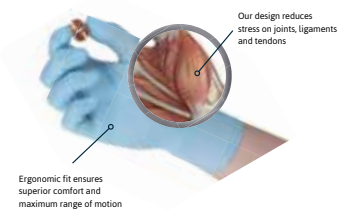

Ansell Antimicrobial – Helps reduce risk of infection due to glove breach and cross-contamination.

Ansell HydraSoft® – Restores moisture and rehydrates the skin during wear.

Ansell Polyisoprene – A material engineered by Ansell to deliver extreme sensitivity in surgical gloves.

Ansell Sensoprene™ – Delivers unprecedented comfort and sensitivity, with advanced allergy protection against both latex and chemical allergies.