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AnsellGUARDIAN® Chemical Report

September 09, 2025

Ansell

Disclaimer

In this report, you will find information related to the barrier performance of certain personal protective equipment (PPE) against the chemicals you selected. This information is intended to enable the Health and Safety professional at your organization make more informed decisions about the Ansell PPE that may offer the greatest protection in the intended circumstances and assist with carrying out a risk assessment for your organization.

We wish to highlight that permeation times do not equate to safe wear time. Safe wear time may vary depending on whether the PPE is donned correctly, the surrounding temperature, the chemicals' toxicity, and other factors. Permeation information offered here is limited to the main protective material. Permeation times may vary around seams, zips, visors or any other joins or components of the PPE. It is the responsibility of your organization's Health and Safety professional to undertake a risk assessment before choosing the appropriate PPE for the task at hand. If you want to discuss any aspect in detail, please contact us.

Estimations of the barrier properties of PPE are based on currently available data and extrapolations from laboratory test results and information regarding the chemicals' composition. Synergistic effects of mixing chemicals have not been accounted for. Estimations are subject to change if new testing is carried out or new information is available providing better grounds for extrapolations. For these reasons, any information in this report is provided for informational purposes only and Ansell fully disclaims any liability including warranties related to any statement contained herein.

Legend for Body Protection

Permeation Barrier Performance
No Barrier
Splash/Limited Barrier
Medium Barrier
Good Barrier

PS = Physical State: A = Aerosol, G = Gas, L = Liquid, P = Paste, S = Solid

Permeation Breakthrough Times - $BT_{1.0}$

The $BT_{1.0}$ is the time taken (in minutes) for the chemical in question to be permeating through the material at a rate of 1.0 µg /cm^2/min. This can be determined with a number of standard test methods including EN 16523-1 and ISO 6529. It is commonly used mainly within the regions concerned with EN and ISO standards.

Permeation Breakthrough Times - $BT_{0.1}$

The $BT_{0.1}$ is the time taken (in minutes) for the chemical in question to be permeating through the material at a rate of 0.1 µg /cm^2/min. This can be determined with a number of standard test methods including ASTM F739. It is commonly used mainly within the regions concerned with ASTM standards.

Cumulative Permeation

Cumulative permeation (as opposed to breakthrough times) deals with the amount of chemical permeating through the material, and not the speed (rate) as with the breakthrough times. The two results concerned with this for ISO 16602 are: CPt, the time in minutes it takes for the cumulative permeation to reach 150 µg /cm^2, and CP, the cumulative permeation (in µg /cm^2) by the end of the test (usually 480 minutes).

Permeation Breakthrough Times - $BT_{1.0}$

Colored cells with numbers and the symbol C correspond to experimentally determined data generated by an external accredited laboratory. Colored cells with numbers and the symbol V correspond to experimentally determined data generated by an internal accredited laboratory. Colored cells without numbers correspond to estimations
For inquiries about chemical testing, please contact anselltesting@ansell.com.

Brand				AlphaTec®	MICROCHEM®	AlphaTec®	AlphaTec®	AlphaTec®	AlphaTec®	AlphaTec®
Product Group				Flash	6000	4000 CFR	2300	3000	4000	5000
CAS	Chemical Name	%	PS							
7695-91-2	(+)-alpha-Tocopheryl acetate	100	l							
464-43-7	(+)-Borneol	100	s							

Permeation Breakthrough Times - $BT_{0.1}$

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Product Group				Flash	6000	4000 CFR	2300	3000	4000	5000
CAS	Chemical Name	%	PS							
7695-91-2	(+)-alpha-Tocopheryl acetate	100	l							
464-43-7	(+)-Borneol	100	s							

Cumulative Permeation - ISO 16602

Colored cells with numbers and the symbol C correspond to experimentally determined data generated by an external accredited laboratory. Colored cells with numbers and the symbol V correspond to experimentally determined data generated by an internal accredited laboratory.
CPt = Cumulative Permeation Times (in minutes) CP = Cumulative Permeation (in µg /cm^2)
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Brand				AlphaTec®	MICROCHEM®	AlphaTec®	AlphaTec®	AlphaTec®	AlphaTec®	AlphaTec®
Product Group				Flash	6000	4000 CFR	2300	3000	4000	5000
CAS	Chemical Name	%	PS							
				CPt | CP	CPt | CP	CPt | CP	CPt | CP	CPt | CP	CPt | CP	CPt | CP
7695-91-2	(+)-alpha-Tocopheryl acetate	100	l							
464-43-7	(+)-Borneol	100	s							

“No data”

What does “No data” mean in a Chemical Guardian report?

The Chemical Guardian team works constantly on providing the most accurate estimations for our users. In some instances, however, we are unable to provide permeation breakthrough times or degradation ratings for specific chemicals. When this occurs, the remark “**No data**” will appear in our reports.

What are chemical estimations based on?

When a new chemical is entered in our database, the Chemical Guardian team will then try to evaluate the chemical resistance of our gloves and suits against this compound. Depending on the available information, **the team will either**:

- Identify similar chemicals in the database that have been tested, and perform comparisons based on chemical structures and properties to assess the expected performance of our products

- Research external resources such as scientific articles, books, databases, and patents to help assess the compatibility of polymeric materials with the new chemical

If **no similar chemicals or external resources** are found to evaluate the chemical resistance of our products against the requested chemical, then the Chemical Guardian team will not provide permeation times or degradation ratings.

What should you do when you see the “No Data” remark in your report?

As the team continuously updates the Chemical Guardian database, permeation times or degradation ratings for certain chemicals may become available in the future. We therefore recommend checking the database regularly for the most up-to-date information.

We also offer comprehensive testing services for our customers. Upon request, we can conduct **chemical, mechanical, physical, electrical, microbiological and material testing** with costs covered by the requester.

As a global safety company, Ansell brings extensive experience, expertise, and state-of-the-art equipment to deliver both standardized and customized testing. Our skilled team ensures confidentiality, clear turnaround times, and reliable results from a trusted global partner.

Ansell’s world class accredited laboratories will make every effort to test your chemicals. However, some chemical testing may not be possible due to a number of reasons including but not limited to the chemical hazards (e.g. shock sensitive explosive, pyrophoric or other special or extreme hazard), chemical acquisition, incompatibility with test equipment, insufficient data to perform a test etc.

Learn more from our website or contact us directly at anselltesting@ansell.com and see what we can do for you and your safety.

WHY ANSELL TESTING?

20+ LABS AND GLOBAL PRESENCE

INTERNATIONALLY RECOGNIZED STANDARDS

ACCREDITED FOR DOZENS OF TEST METHODS

CUSTOMIZED TESTING

SUSTAINABLE OPERATIONS

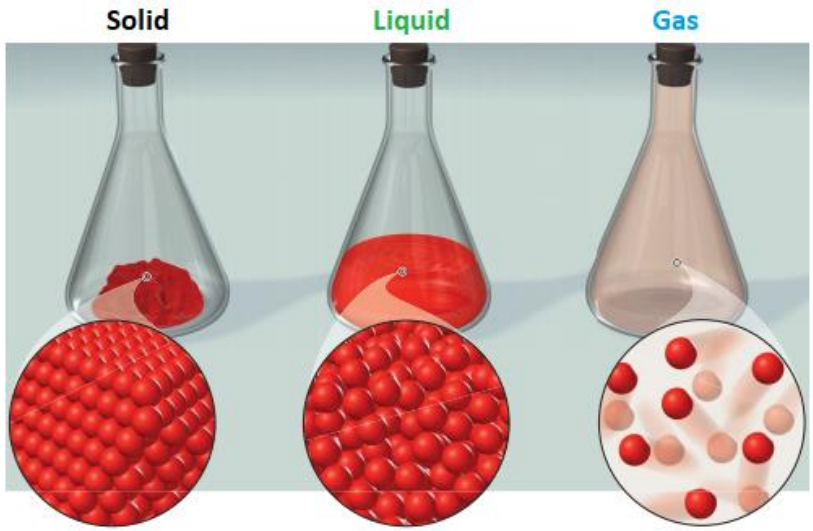
Please note that our recommendations are global and general. Any product should be tested in practice to verify its practical suitability against the chemical at hand. The precise application and conditions of use should also be considered while performing a risk assessment and choosing an appropriate PPE.

Chemical solids

What are solid chemicals and their characteristics?

Solids are one of the three fundamental states of matter possible at standard room temperature and pressure, the others being liquids and gasses. The biggest and most noticeable difference between these states of matter is the shape and volume

1. Solids have a ***fixed shape and volume*** making their forms difficult to change.



2. Solids ***cannot*** be easily ***compressed***
3. Solids have different classes such as metals, minerals, ceramics, glass ceramics, or advanced materials like nanoparticles and biomaterials.
4. Solids can come as powders, crystals, pellets, shards, dust, or other particles.

Typically, **section 9** of an (**M)SDS** provides information on the **physical state** of the chemical at room temperature (usually 23 °C /73 °F). This Section can also indicate the melting point of the chemical. Some chemicals melt at extremely high temperatures (i.e. sodium chloride, commonly known as salt, melts at 801°C(1474°F) whereas other chemicals melt just above room temperature (e.g. gallium melts at just 30 °C (86 °F).

Where are solid chemicals used?

Solids are commonly used in many industries and can't be narrowed down to a set list of uses. Just looking around there are likely hundreds of uses for solids in any given location. Some common general uses (but by no means comprehensive) of solids are for transporting chemicals which are then diluted for use, or for applications where physical properties are needed rather than chemical e.g. insulation, support, electrical insulation etc. or a variety of other materials e.g. polymers, ceramics, glass, nanomaterials etc.

What are the associated health risks of exposure to solid chemicals?

This depends on the chemical itself, each kind of chemical substance having different and possible health risks. For instance, ***Quartz dust*** can cause Silicosis, lung cancer and pulmonary. Another example is ***Nanoparticles*** such as ***Titanium Oxide*** (TiO_2) which is produced and used in varying particle sizes. When the particle size is very small (e.g. ***Nanoparticles***), low doses of TiO_2 can affect mucosa, the brain, the heart and other internal organs. This can lead to an increased risk of developing diseases or tumors.

What kind of hand protection is needed for Solid chemicals?

Chemical solids

Majority of dry solid materials, either at or near room temperature, can be handled by Ansell chemical-resistant gloves. However, keep in mind the following:

1. There are some solid chemicals that can eventually permeate into the glove polymer and degrade its physical properties (i.e. Nanoparticles). Even though the outside of the glove is thoroughly cleaned, solid material may remain outside or inside of the glove. Unfortunately, there is no practical way to stop the diffusion of solid chemicals by cleaning the surface of barrier material.
2. If the solid is in fine powder form, one may need to have some type of facial protection (e.g., from inhalation) besides hand protection
3. If the solid is chemically reactive (e.g., reacts with oxygen or moisture from air), appropriate precautions must be taken during its handling.
4. If solid chemicals are mixed with other chemicals that are either in liquid or solid form, it is important to remember that synergistic effects of mixture may impact glove performance. While a glove offers a good protection against a specific single chemical, the same glove may perform poorly when that chemical is mixed with another one.

If solids cannot permeate, then what is the problem?

Although solids are not usually a permeation hazard, they can penetrate protective clothing through holes, zips, seams or other openings in the materials. Solids can be toxic, corrosive and harmful. For example, sodium hydroxide or phosphoric acid, which are both solids when pure. Against the fabrics, one would almost always expect a full permeation barrier against solids. This is because, as stated earlier, the molecules in solids are not free to permeate (they are fixed in a rigid structure). Exceptions are when the solids sublime (turn straight from a solid to a gas) or release a lot of vapors, in which case it is the gas that is permeating and not technically the solid. Some solids can take up moisture from the atmosphere to become more liquid and then cause a permeation hazard (e.g. Potassium hydroxide).

Unlike liquids or gasses, the major factor when trying to protect from solids is the particle size rather than what the chemical is. Solids will behave similarly when **penetrating** a material. However, their particle size will determine what size hole or imperfection they can use to bypass the protective barrier. Remember, the difference between **penetration** and **permeation** is that **penetration** is the chemical avoiding the barrier by moving through a hole, opening or imperfection. This happens on a relatively large scale (usually visual). **Permeation** is where the chemical can pass through the barrier at a molecular level and doesn't need there to be any holes. It is based on the chemical properties of the chemicals and the barrier.

What kind of body protection is needed for solid chemicals?

Many of Ansell suits are EN ISO 13982-1 "type 5" certified suits. This means they have undergone and passed tests to measure how much solid dust particulates can penetrate a whole suit while worn. Any of our suits that have been certified as EN Type 5 will possess the following symbol.