

## What are Hydrocarbons and which gloves can be recommended against them?

A hydrocarbon is one of the simplest class of organic compounds which is made exclusively of the elements Hydrogen (H) and Carbon (C).

They appear in nature as petroleum (crude oil). Petroleum is the degradation product of living organisms (plants and animals), which existed hundreds of million years ago. Crude oil, a dark viscous liquid, is a mixture of several hundreds of different hydrocarbons.

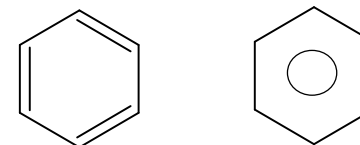
A process called distillation is used to isolate fractions, based on the difference in volatility of those fractions. With this process, crude oil is separated in heavy fractions (like asphalt, diesel fuel, waxes, etc.), liquids (gasoline, naphtha, kerosene, etc.) and gases (LPG, natural gas, propane, etc.). There is a chemical process called steam cracking where heavy fractions are broken down into smaller fragments. This process is commercially used for the production of gasoline.

There are approximately 300,000 different natural hydrocarbon compounds, which come mostly from oil reservoirs or coal deposits

### What is the difference between aliphatic and aromatic hydrocarbons?

Aliphatic hydrocarbons are made of a straight or branched chain of C- and H-atoms, or also cyclic structures (excluding benzene rings). Typical aliphatic hydrocarbons are methane, propane, butane, hexane, cyclohexane, iso-octane.

Aromatic hydrocarbons have one or more benzene rings in their structure. The schematic drawing for benzene is shown below:



The name aromatic is derived from the fact that aromatic compounds have strong, characteristic odor. Typical aromatics are benzene, toluene, xylene, styrene.

### What hazards are related to aliphatic and aromatic hydrocarbons?

The hazards related to the product are widely varying. Because this is a very wide group of chemicals, each sub-group has its own properties and hazards which cannot be generalized to all hydrocarbons.

For example: benzene is widely known as an extremely hazardous product, due to its carcinogenic properties.

## What are Hydrocarbons and which gloves can be recommended against them?

What gloves are recommended to protect against aliphatic and aromatic hydrocarbons?

- Against aliphatic hydrocarbons, nitrile rubber, Barrier® and PVA® gloves are recommended in general.
- Against aromatic hydrocarbons, Barrier®, Viton/Butyl\* or PVA® gloves give the best protection.

Natural rubber, PVC, Butyl or neoprene gloves are generally not recommended for use with such products.

\*Note: The material is Viton (outer layer) over Butyl (inner layer). Butyl by itself does not protect from hydrocarbons.

*Recommendations made in this note are based on extrapolations from laboratory test results and information regarding the composition of chemicals and may not adequately represent specific conditions of end use. Synergistic effects of mixing chemicals have not been accounted for. For these reasons, and because Ansell has no detailed knowledge of or control over the conditions of end use, any recommendation must be advisory only and Ansell fully disclaims any liability including warranties related to any statement contained herein.*

## What are Hydrocarbons and which gloves can be recommended against them?

Below is an overview on permeation data performed following EN374 on:

- Aliphatic hydrocarbons

Material				Butyl	LLDPE	Neoprene	Neoprene	Nitrile	Nitrile	Nitrile/Neoprene	PVA	PVC	Viton Butyl
Thickness (mm)				0.35	0.062	0.13	N.A.	0.12	0.38	0.19	N.A.	N.A.	0.2
Product Name / Style				ChemTek	Barrier	NeoTouch	Scorpio	TouchNTuff	Solvex	Microflex	PVA	Snorkel	ChemTek
Type	CAS	Chemical name	%	38-514	02-100	25-101.201	08-352.354	92-500.600.605 / 93-250.300.700	37-675.676	93-260	15-554	04-414	38-612
sgl	110-82-7	Cyclohexane	100	<10'	>480'	<5'	60-120'	>480'	>480'	>480'	>480'	<10'	>480'
sgl	64742-81-0	Kerosene	100	<10'	>480'	<10'	>480'	>480'	>480'	>480'	>480'	10-30'	>480'
sgl	64742-88-7	White spirit	100	<10'	>480'	<10'	60-120'	285'	>480'	240-480'	>480'	10-30'	>480'
sgl	68476-34-6	Diesel fuel	100	10-30'	>480'	30-60'	60-120'	>480'	>480'	>480'	>480'	240-480'	>480'
sgl	8012-95-1	Mineral oil	100	<10'	>480'	<10'	60-120'	240-480'	>480'	>480'	>480'	10-30'	>480'
sgl	8030-30-6	Naphtha	100	<10'	>480'	<10'	60-120'	240-480'	84'	>480'	>480'	10-30'	>480'

- Aromatic hydrocarbons

Material				Butyl	LLDPE	Neoprene	Neoprene	Nitrile	Nitrile	Nitrile/Neoprene	PVA	PVC	Viton Butyl
Thickness (mm)				0.35	0.062	0.13	N.A.	0.12	0.38	0.19	N.A.	N.A.	0.2
Product Name / Style				ChemTek	Barrier	NeoTouch	Scorpio	TouchNTuff	Solvex	Microflex	PVA	Snorkel	ChemTek
Type	CAS	Chemical name	%	38-514	02-100	25-101.201	08-352.354	92-500.600.605 / 93-250.300.700	37-675.676	93-260	15-554	04-414	38-612
sgl	100-41-4	Ethylbenzene	100	<10'	>480'	<10'	<10'	<10'	10-30'	<10'	>480'	<10'	>480'
sgl	100-42-5	Styrene	100	10-30'	>480'	<10'	<5'	<10'	24'	<10'	>480'	13'	>480'
sgl	108-88-3	Toluene	100	<5'	>480'	<1'	<5'	1'	23'	6'	>480'	<5'	>480'
sgl	1319-77-3	Cresol, isomeric mixture	100	>480'	>480'	10-30'	>480'	10-30'	60-120'	10-30'	>480'	60-120'	>480'
sgl	1330-20-7	Xylene, isomeric mixture	100	10-30'	>480'	<5'	17'	<5'	48'	12'	>480'	6'	>480'
sgl	71-43-2	Benzene	100	9'	>480'	<10'	<5'	<10'	9'	5'	>480'	<5'	240-480'
sgl	95-63-6	1,2,4-Trimethylbenzene	100	<10'	>480'	<10'	<10'	<10'	10-30'	<10'	>480'	<10'	>480'