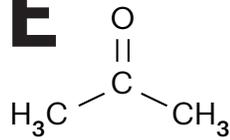


ACETONE



A NATURAL SOLVENT

Acetone is an interesting substance that evokes many different responses. Some relate to it as the smelly ingredient in nail polish removers. Others remember it as the name of a California rock band that toured with The Verve in the 90s. But they all might be surprised to learn that this natural substance is one they constantly encounter in nature — in the air they breathe and even in their own bodies!

Among those in the science world, acetone is well understood and appreciated for all of the contributions it makes to organic chemistry, both in the laboratory and in the human body.

SETTING THE RECORD STRAIGHT ABOUT ACETONE

Acetone is an indispensable compound that serves as a building block, whether in the body or in an organic chemistry lab.

MADE IN OUR BODIES

In the human body, acetone is known as a ketone body. It is one of three that is naturally produced through normal metabolism in the liver. Our bodies use ketones, such as acetone, as an important source of energy. Ketones are especially useful during strenuous exercise and while on low-carbohydrate diets for weight loss or fasting. These situations lead to low amounts of glucose (blood sugar), the common energy fuel. Without enough fuel to meet its energy needs, the body must increase fat breakdown in order to generate more ketones as fuel. We can

intentionally increase our production of acetone to help reduce excess body fat.

Even the brain uses ketones for energy if it has to, but it would rather use them for creating vital brain lipids. Normally, the brain only uses glucose for energy, but during starvation, ketones can become the main energy source.

Any ketones that are not needed by the body will end up in the urine as waste or exhaled out of the lungs in breath. It's been shown that pregnant and nursing mothers and children make higher levels of ketones in their bodies because their energy needs are greater. Some diabetics might produce very high levels of ketones if their blood sugar is not managed well. These excess ketones can be detected on their breath as a "sweet and fruity" odor as their bodies try to normalize.

MADE IN THE LAB

Acetone is widely used as an industrial solvent that dissolves things and keeps them in solution. At low levels, it does not cause adverse effects on health or the environment. It's interesting that roughly 97% of the acetone released into our atmosphere comes from nature through decaying vegetation and natural forest fires. We encounter acetone through air, food and water — it is virtually everywhere!

Acetone is also an indirect additive often found in consumer products such as cosmetics and foods. As such, acetone is rated as a GRAS (Generally Regarded As Safe) at concentrations of 5 to 8 ppm,

present in foods such as beverages, baked goods, preserves and desserts. One extensive study on childhood exposures to acetone from products such as nail polish remover, spray paint and spot removers reported that a reference dose of 8.7 ppm per day of acetone is not likely to pose a significant health risk and that 90% of acetone found in children was naturally produced in their bodies. The researchers determined that the rest of the acetone came mainly from natural food sources such as human breast milk, grapes, tomatoes, beans, dairy, cauliflower and onions. Unfortunately, some consumer products also contain known harmful substances such as phthalates, aldehydes (formaldehyde/acetaldehyde), benzene and toluene that may be found in formulas along with acetone. Although acetone is a common, daily-use cleanser used in medical practices, some consumers assume it is toxic. As an ingredient in a skin care product, it may be mistakenly associated with common nail polish remover, but that is incorrect. This “guilt-by-association” concept has led to an unfortunate misunderstanding of acetone.

Acetone has been extensively studied and is recognized by regulatory agencies to have relatively low acute and chronic toxicity if ingested or inhaled. Based on studies, these agencies do not regard or classify acetone as a carcinogen, mutagen, neurotoxin or genotoxin. The EPA (Environmental Protection Agency) conducted an extensive review of the available toxicity data on acetone and verified its low potential to toxicity in chronic studies.

ACETONE IN SKINCERITY

QUESTIONS AND ANSWERS

1) IF ACETONE EVAPORATES OFF THE SKIN, HOW IS IT PART OF THE SKINCERITY DELIVERY SYSTEM?

Acetone keeps the polymer “film” masque in a liquid form while it is in the bottle. It is the activating agent that turns the liquid into a film when the liquid touches the skin, and then the acetone evaporates away. The acetone in Skincerity evaporates too quickly to be absorbed through the skin.

2) WHAT IS THE DELIVERY SYSTEM?

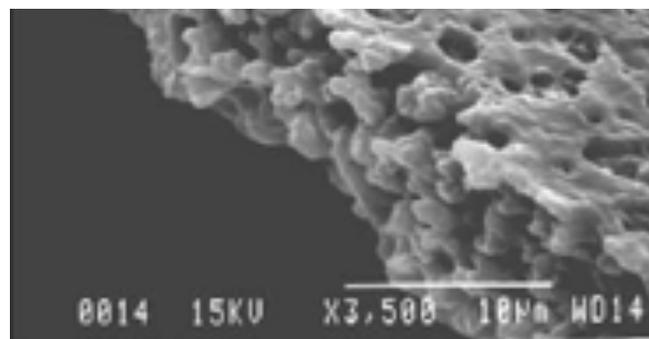
The delivery system is a roller-ball bottle that delivers a thin layer of liquid that dries into an oxygen-porous film in 2–4 seconds. The delivery system is a polymer film that is engineered to contain microscopic holes or pores. Development as a unique delivery system was funded by the National Institutes of Health/National Institute of Allergy and Infectious Diseases (SBIR No. R42AI041777) and was presented at the American Academy of Dermatology 64th Annual Meeting (San Francisco, CA, USA, 2006).

3) WHAT IS THE FUNCTION OF THE ACETONE?

In Skincerity, the acetone serves four purposes:

- Prepares and cleans the skin
- Keeps the masque in liquid form so it can easily be rolled on
- Keeps bacteria from growing in the bottle (the roller ball makes contact with both skin and bottle contents)
- Is a catalyst that creates micro-porous holes that allow oxygen to reach the skin, which is vital for healthy skin. The acetone evaporates so fast (it is on the skin for only 2–4 seconds) that it creates tiny holes in the film. See a magnified picture of the masque below:

4) IS ACETONE TOXIC?



Acetone as a component of Skincerity is not toxic, as shown in an FDA-approved protocol clinical study funded by the National Institutes of Health/National Institute of Aging (SBIR No. 2R44AG12881-0).

5) HOW IS THIS ACETONE “NON-TOXIC”?

The acetone and the Skincerity formula were shown to be non-toxic in a United States FDA protocol study under research grants funded by the National Institutes of Health/National Institute of Arthritis and Musculoskeletal and Skin Diseases (SBIR No. 5R42AR44435). In another study performed in conjunction with the University of Texas Health Science Center in San Antonio, Texas, results demonstrate that acetone alone or present in a mixture of acetone/polymer coating is non-toxic and nonirritating to skin. The study was funded by the National Institutes of Health/National Institute of Aging (SBIR No. 2R44AG12881-0).

6) FOR WHAT PERIOD OF TIME WAS THIS PRODUCT RESEARCHED AND TESTED?

More than 10 years of National Institutes of Health-funded research went into the product. Some of the research is available publicly through publications and abstracts that were presented at scientific meetings such as the American Academy of Dermatology Annual Meeting.

SUMMARY

Skincerity was born as a medical innovation. While there are medical research studies of the product, Skincerity was commercialized as a cosmetic and is marketed as a cosmetic, not a pharmaceutical. A clinical study on the cosmetic benefits of Skincerity was presented at the American Academy of Dermatology 63rd Annual Meeting (New Orleans, LA, USA, 2005).

Credible sources from scientific and government agencies confirm the general non-toxic nature of acetone. The acetone in Skincerity evaporates quickly and its vapors are at established non-toxic levels.



1. American Chemistry Council, Acetone VCCEP Submission, September 10, 2003.

2. Wikipedia — Acetone, Ketone Bodies.