



SOLVAY

asking more from chemistry®

IXPER® C
calcium peroxide

Solvay is an international chemical group and world leader in the peroxide chemicals market. As part of the Solvay portfolio of inorganic peroxide compounds, IXPER® C is the Solvay branded family of Calcium Peroxide based products.

IXPER® C products are available in powder or granular form and they consist predominantly of calcium peroxide. The balance is made up of calcium carbonate and calcium hydroxide with natural binding agents and fillers that can be used in a number of specialty applications.



IXPER[®] C

Product characteristics

Active ingredient	CaO ₂	
Molecular weight	72.08	
Classification	CAS Number	1305-79-9
	EINECS Number	215-139-4
	TSCA Number	R117-7967
Physical properties	Appearance	Yellow-white powder or granules
	Odour	Odourless
	Solubility in water at 20°C	Sparingly soluble 1.65 gL ⁻¹
	pH at 20°C (10g/l)	ca 11.7

IXPER[®] C is a solid carrier of active oxygen, which upon contact with water releases hydrogen peroxide and calcium hydroxide. The generated hydrogen peroxide releases oxygen and water upon reaction and decomposition.

The low solubility of IXPER[®] C allows the user to control the rate of oxygen generation and to provide performance benefits in a wide range of applications. It can be used as a stand-alone product, or mixed with other ingredients into a formulated or compounded product.

The IXPER[®] C grades

▶ **IXPER[®] 75C**, with minimum amount of active ingredient equal to 75%, is the preferred grade of calcium peroxide, for use in many applications due to its high activity.

▶ **IXPER[®] 60C** in powder or the granular grade **IXPER[®] 70CG** with minimum amount of active ingredient respectively equal to 60% and 70% are the lower strength grades that are supplied to meet specific customer needs.

▶ **IXPER[®] 75C FCC** is the most suitable grade for food and cosmetic applications: it complies with the requirements of the Food Chemical Codex and is Halal & Kosher certified (please be aware that some applications of this product may be regulated or restricted by national or international standards).

Applications

The applications of IXP^{ER}® products are based on their ability to generate a combination of oxygen and hydrogen peroxide under various conditions.

In the presence of water at their natural pH IXP^{ER}® decomposes to release oxygen and heat as follows:



In buffered systems with a pH substantially lower than their natural pH, IXP^{ER}® products exhibit a different behavior: as the pH drops, these products become more soluble, and generate progressively higher ratios of hydrogen peroxide (active oxygen) to gaseous oxygen.



Under acidic conditions, the available oxygen can be liberated within minutes.

Soil and groundwater remediation

IXP^{ER}® C finds large application in soil bioremediation as an effective source of oxygen.

In enhanced aerobic bioremediation, the ability of aerobic microbes to biologically degrade contaminants can be limited by inadequate levels of oxygen: IXP^{ER}® C due to its low solubility in water, ensures an adequate source of oxygen over an extended period of time.

The compounds that can be aerobically degraded include: benzene, toluene, ethylbenzene, and xylene (BTEX), methyl tertiary butyl ether (MTBE), total petroleum hydrocarbons (TPH), non-halogenated volatile solvents and some halogenated compounds such as vinyl chloride.

In particular, IXP^{ER}® 75C is a high quality calcium peroxide powder most likely used for soil remediation and groundwater treatment, it can be injected as a slurry into a contaminated soil or aquifer to support enhanced aerobic microbial activity.

Pond treatment and Aquaculture

IXP^{ER}® C products can be used in oxygenating parts of artificial or natural lakes as well as wastewater and effluents. Oxygen concentrations near the bottom of lakes are very low and many methods of increasing this are unsatisfactory either because they require excessive agitation, which moves nutrients to the surface encouraging algae growth, or because they do not ensure sufficient oxygenation.

By sinking to the bottom and dissolving slowly in the water, IXP^{ER}® C breaks down into calcium hydroxide and oxygen and provides a more satisfactory method of oxygenating the lower layers, releasing its oxygen over a period.

In Aquaculture, thanks to the above described characteristics, the use of IXP^{ER}® C improves the environment for aquatic life breeding like shrimps and crabs.

Agriculture and seed coating

IXP^{ER}® C can be used as a source of oxygen in agricultural, horticultural and forestry applications.

When coated onto seeds or applied to the soil near seeds or the roots of plants, IXP^{ER}® C powders grades slowly decompose in the moist conditions releasing oxygen. This can exert a beneficial effect on the soil, the seed or the plant leading to earlier germination, stronger growth and increased yields. The benefit would be expected to be greatest under anaerobic conditions caused by, for example, high water content or compacted soil or the presence of toxins formed from decomposing vegetation.

IXP^{ER}® C may also be used by amateur gardeners. Uniform release of oxygen in the soil improves germination, encourages root growth and promotes adaptation in transplanted seedlings.



Cosmetics

IXP^{ER}® 75C FCC is the suitable grade for cosmetic applications.

An important use of IXP^{ER}® 75C FCC is in toothpaste formulations, where through the release of hydrogen peroxide to enhance the removal of superficial staining, the generation of oxygen bubbles to help removal of particles, and calcium hydroxide to neutralize food acids, IXP^{ER}® 75C FCC helps to clean teeth and improve oral hygiene.

The low solubility of IXP^{ER}® C products means that they are easier to formulate into stable and safe products with a longer lasting activity than other forms of active oxygen.

Metallurgy

IXP^{ER}® C is used as a source of oxygen in aluminothermic processes and in other metallurgical applications. The addition of IXP^{ER}® C to aluminothermic mixtures assists in ignition at lower temperatures and increases the temperature of the melt, making it easier to separate the slag from the metal. Exothermic mixtures containing IXP^{ER}® C can also be used during casting to increase the temperature of the feed metal, preventing defects.

Storage and handling

IXPER® C should be stored in cool, dry conditions, preferably in the original sealed containers. Although IXPER® C is not hygroscopic, the packages should be protected from moisture.

In the absence of moisture, in fact, the available oxygen loss is very small and when stored in the original containers at room temperature and protected from moisture and contamination, the product can be stored for up to 2 years. In the presence of water, decomposition occurs with the release of oxygen and the formation of calcium hydroxide solution.

The product should be stored under common and proper warehouse conditions and contact with moisture and foreign materials should be avoided.

It is strictly recommended not to store outside warehouses in open areas.

IXPER® C has an irritating effect on the skin, mucous membranes and eyes.

Gloves, dust mask and dust proof goggles should be worn when handling the product, particularly when it is in the powder form. In the case of contact with eyes or skin it should be washed off with plenty of water.

Equipment used for handling IXPER® C should be clean and made of suitable materials of construction, e.g. plastic, stoneware, glass, stainless steel (e.g. 316L). Holding equipment must be adequately vented to prevent a pressure burst in the event of decomposition. Further advice on handling is available on request from Solvay.

Mixing

When mixing or compounding IXPER® C with other substances, such mixtures should first be made on a small scale in the laboratory under protected conditions and tested for compatibility and storage stability. IXPER® C must not be mixed with reducing products, organics or those that cause catalytic decomposition, such as metal salts, as this can lead to a violent reaction.

Decomposition is accompanied by the liberation of oxygen, which will support combustion and could cause a pressure build-up in confined places.

Mixing with any organic compounds requires particular care and in-depth safety studies beforehand, because such procedures may greatly increase the potential hazard of the product. Safety consultancy by SOLVAY is recommended here.

Packaging

IXPER 75C calcium peroxide is available in 25 kg cardboard boxes and in 500/600 kg bulk bags.

Transport

IXPER® C is classified as a solid oxidiser (UN 5.1, packaging group II, UN1457) for transport purposes under international conventions.







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