IXPER® 70C Calcium Peroxide Granules for Bioremediation
Application Data Sheet

Give life to earth
Calcium peroxide products are typically very fine powders. This allows their use in a variety of applications, including toothpaste, for dough conditioning, and to make a slurry for injection in soil for groundwater remediation.

In other applications, however, the dust created by these fine powders causes some handling challenges. In these cases, a granular calcium peroxide product is highly desirable.

Properties
IXPER® 70C Calcium Peroxide Granules is a unique material offered by Solvay Chemicals, Inc. It is specifically designed to avoid the dust generated from handling other calcium peroxide products.

Its chemistry is similar to IXPER® 75C Calcium Peroxide powder (see IXPER® 75C Calcium Peroxide Properties technical datasheet for details), but the granules are designed for even greater stability and lower solubility in water. As a result, IXPER® 70C Calcium Peroxide Granules have an even longer oxygen release profile vs. any powder CaO₂.
This was demonstrated in a laboratory study conducted at Western Michigan University which compared the oxygen release profile of IXPER® 70C Calcium Peroxide Granules with the powder CaO₂ grades. The test was done using 1% suspensions of calcium peroxide products in water. The flasks were covered with bubble valves for off-gas release without allowing atmospheric air to enter.

The following graph clearly shows the superior properties of IXPER® 70C Granules vs. two grades of CaO₂ powders. The granules last in water for more than 14 months!

**Bioremediation Applications**

The capability of aerobic microbes to biologically degrade contaminants such as petroleum hydrocarbons can be limited by inadequate levels of oxygen in the soil.

IXPER® 70C Calcium Peroxide Granules offers a passive approach to aerobic bioremediation of target contaminants, ensuring that adequate oxygen is present over an extended period of time. Without this supplemental oxygen source, the degradation of contaminants may either stop or proceed by much slower anaerobic processes.

IXPER® 70C Calcium Peroxide Granules is particularly suitable for projects involving the excavation of contaminated soils, where it is used to line pits before clean soil is introduced. It is also the product of choice in cases of ex-situ soil remediation, in-situ treatment of shallow contaminated soils, or as a reactive barrier.
A laboratory test done at Western Michigan University compared the performance of several calcium peroxide products for the degradation of diesel fuel in a silty clay loam. The soil contained 3.6% carbonates and had a pH of 7.9.

Analysis of Total Petroleum Hydrocarbons (TPH) over time shows that IXPER® 70C Calcium Peroxide outperformed both powder calcium peroxide products. These results were significantly different after 30 weeks.

![Biodegradation of THP in Soil with CaO\(_2\). IXPER 70C Granules Outperforms CaO\(_2\) powder](image-url)
Soil pH for both IXPER products was the same but slightly higher than the pH obtained with a competitor’s calcium peroxide.

**pH in Soil Slurry**

IXPER 75C and 70C CaO₂ have a similar pH