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INNOVOX CALCIUM OXIDES – CHOICE OF GRADE AND PACKAGING

INTRODUCTION

Innox calcium oxides are powerful desiccants that can alleviate problems which develop during the processing of elastomeric and thermoplastic compounds due to the presence of moisture. Moisture can be present in raw materials e.g. polymers (especially hydroscopic types such as ABS, polyamides etc.), fillers and plasticisers. As little as 0.02% moisture can cause porosity in the end product if it is allowed to expand freely into water vapour at polymer processing temperatures. Whilst pre-drying raw materials can help, this is often an expensive and time consuming process, and the use of vented processing does not always solve the problem entirely. In many cases, the addition of Innox remains the only solution to eliminate porosity. Innox calcium oxides are available as powders, damped powders, granules and paste in a variety of packaging forms. This Product Guide considers the factors that will influence the processor in his choice of grade and packaging.

DISPERSION

Ease of dispersion will depend on the type of processing equipment and the choice of product form. Generally, it is accepted that damped powders offer easiest dispersion on all processing equipment. Undamped powders are also easily dispersed in liquid systems and internal mixers but can give problems when incorporated into polymers on a mill. Granules, particularly polymer and wax-bound types, are more difficult to disperse and internal mixing/twin screw compounding is recommended. Pastes disperse easily but are generally only suited to processing in PVC plastisols.

EASE OF ADDITION

Given the hazardous nature of calcium oxide (see the Health & Safety section), processors usually wish their operatives to have minimum exposure to the material. Pre-weighed sachets of granules and damped or undamped powders reduce operator contact via weighing and dosing operations and can eliminate exposure entirely in some compounding processes where the direct addition of calcium oxide in low-melt sachets can be employed. Direct addition is possible when internal mixers and high-speed blenders are used. Granules provide a much more free-flowing alternative to powders and they are particularly suited to automatic weighing systems with auger feeds.

SHELF LIFE

When exposed to the atmosphere, all forms of calcium oxide will readily react with moisture in the air. The speed at which this occurs will depend to a small extent on the form of the product but all products will lose their effectiveness very quickly. It is, therefore, paramount that bags and containers are used immediately after opening. The following figures illustrate the effectiveness lost when products are exposed to the air (23°C, 60% RH):

PRODUCT	PRODUCT TYPE	TIME TO LOSS OF 50% EFFECTIVENESS
Innovox FG	powder	18 hours
Innovox 95	oil-damped powder	20 hours
Innovox G	oil/wax granule	20 hours
Innovox P	paste	48 hours

In order to maximise shelf life, calcium oxide products are usually supplied in sealed containers. Once opened, the material should be used immediately. When small quantities of product are used or material is used on an irregular basis, sachets offer by far the best method of maintaining the shelf life of all calcium oxide products. The following table shows the shelf lives of various products in, unopened, original packaging:

PRODUCT TYPE	PRODUCT	SHELF LIFE (BAGS)	SHELF LIFE (SACHETS)
Innovox FG	powder	3 months	6 months
Innovox 95	oil-damped powder	3 months	6 months
Innovox G	oil/wax granule	3 months	6 months
Innovox P	paste		12 months (pails)

HEALTH & SAFETY

Calcium oxide is an irritant to skin and eyes and can cause a fire risk due to the heat generated when it comes into contact with water. It is recommended that dust-suppressed (oil or DOP damped) grades are used as a minimum precaution against operator exposure. To minimise potential health & safety risks, it is preferable to use the direct addition of low-melt sachets when feasible.

CONSULT THE PRODUCT SAFETY DATA SHEET BEFORE USE AND ENSURE SUPERVISORS AND STAFF ARE AWARE OF THE RISKS INVOLVED.