

DEGRADABLE FILM

PRODUCT CODE: KR-OXO

PRODUCT DESCRIPTION:

Oxo Degradable film produced with d2w™ degradable additive from Symphony.

PROPERTIES:

DEGRADATION PROCESS

The degradation process starts with the heat of the extrusion process and continues in two steps. In step one, chemical degradation happens either by ultraviolet light, heat, oxygen or film stress, where over time the molecular structure of the product is reduced significantly. The film will become fragmented. This process is irreversible and continues to a point where the film becomes water wettable. This is step two, called biodegradation, where the micro - organisms attach themselves and consume the remnants.

RESULT & DEGREE OF DEGRADATION

100% of the product degrades after degradation process is completed. The result of the degradation is carbon dioxide, water and biomass.

ENVIRONMENTAL CONDITIONS NEEDED FOR DEGRADATION

Significantly, the KR-OXO film does not need a biologically active environment to start degrading – this will happen even if the plastic is left in the open air! This is very important if we are to address the serious litter problems caused by waste plastic. The factors that accelerate degradation: ultraviolet light, heat, oxygen, and film stress (such as pulling and tearing). Once the process is initiated it is irreversible and will continue in a landfill or under water.

COMPARISON WITH BIO OR PHOTO DEGRADABLE

Oxo degradable product degrades over time and is speeded up by light, heat or stress and slowed down by cold. It cannot be stopped. Bio degradables will only degrade once buried and microbes are present. Photo degradables will only degrade with UV light. The product will degrade even if unfortunately dropped as litter. With this property, oxo degradable products are especially suitable for the plastic packages that end up in landfill or as litter.

TIME NEEDED FOR DEGRADATION

As little as sixty days or as long as five to six years. The degradation time can be adjusted. With our standard formulation it should give minimum six months to around eighteen months full useful product life.

WASTE MANAGEMENT SYSTEMS

LANDFILL: The product will also degrade in a landfill.

COMPOST: exposure to composting temperatures will result in relatively rapid thermal degradation. (Sixty to ninety days in a compost environment, where typically temperatures are in excess of sixty degrees centigrade are experienced).

LITTER: When exposed to sunlight will also result in photo degradation. Film samples have also degraded under water.

MECHANICAL & OPTICAL PROPERTIES

No difference than non-degradable PE films.

FOOD APPROVAL

The product has food approval, according to Directive 2002/72/EC.

THE LEVEL OF CERTAINTY THAT THE TIMING OF DEGRADATION BE CONTROLLED

As indicated elsewhere, the speed of degradability can largely be controlled by special formulation for any particular application.

The levels of uncontrollable variables – particularly heat, light and stress – to which the plastic is exposed, however, affect the actual speed of degradation. Higher than planned levels of these will speed up the process and lower levels will slow it down (but will not stop it).

For this reason, manufacturers typically build a significant safety margin into the planned degradation time so as to ensure that the properties of the plastic remain intact for the full useful life of the product on question.

RECYCLING

The product can be recycled just like other PE films.

STORAGE AND HANDLING OF FINISHED PRODUCTS

A degree of care is sensible so as to ensure that the products are not exposed to excessive heat, light or stress. For example, degradable plastics should be stored in a cool/shaded place rather than in the open air or in a hot sunny place. Beyond this sort of 'common sense', no special requirements apply.