



Forecasting Tomorrow's Technology

Overview

- **Privately Held**
- **Founded in 1997**
- **Headquartered in Conroe, Texas**
- **Worldwide Warehouse Sites Available:**
 - **Mexico**
 - **Queretaro**
 - **Ireland**
 - **United States**
 - **Texas**
- **Total Manufacturing Capacity 20+ Million Lbs. Year**
- **ISO 9001:2008**

Products

- **Oxo Biodegradables Additives** 
- Stabilizers/ UV Additives
- Cleansing Agents (Purge Compounds)
- Chemical Foaming Agents (CFA)
- Bio-plastic Compounds 
- **Ethylene Scavengers** 
- Flame Retardants
- Vapor Corrosion Inhibitors (VCI)
- **Antimicrobials/ Anti-fungal** 
- Essential Oils 

 Denotes Green Product

Stabilization

Phoenix Plastics Co., Inc. stabilization compounds provide antioxidant that inhibits black specks and char. The stabilization compounds also increases physical properties and UV stability across a broad range of materials and applications.

Before



After



After 8 hours at 330°F

Cleansing Additives

Phoenix Plastics Co., Inc. provides the plastics industry with some of the most unique "Cleansing Agents" tailored for almost every part of our plastics environments.

Engineered to seek out and break-up char, pigments, and degraded material, Phoenix Plastics can lessen your downtime or color changes giving you more



1st Shot

2nd Shot

Final Shot

Foaming Agents

Phoenix Plastics Co., Inc. manufactures a variety of foaming & nucleating agents for almost every aspect of the plastics industry. From large structural foam applications to film, Phoenix Plastics has over 20 years experience and testing capabilities to explore and provide your company the correct system to fit your special needs.



Production Enhancers

Phoenix Plastics Co., Inc. has created a new line of "Production-Enhancers" giving your company the ability to create more cycles, rate or line speed per hour, at the same time reducing your electrical consumption. This unique material can be used in polyolefin's, PS, PVC, ABS, PC, nylons, & thermoplastic polyesters.

Glass Filled Nylon Before



Glass Filled Nylon After



Flame Retardants

Phoenix Plastics Co., Inc. manufactures a variety of halogenated and non-halogenated compounds for injection, extrusion, blow and film applications. We specialize in areas such as polyester fibers, electrical jacketing, and film applications that require VTM-O @ 2 mils thick.



Vapor Corrosion Inhibitors

Phoenix Plastics Co., Inc. manufactures a unique Vapor Corrosion Inhibitor (VCI) concentrate that releases VCI molecules into the air that attaches itself to metal, providing an invisible molecular barrier. This barrier keeps electrons from high-energy areas from flowing to low-energy areas stopping the corrosion process.



Cel-Span® is the trade name for additives that are Engineered and Manufactured by Phoenix Plastics.



Why Purge with a commercial cleansing additive?

- Less Downtime
- Less Wasted Material
- Less Scrap

When do you need to Purge?

- Color Changes
- Material Changes
- Black Specs
- Material or Color Streaking
- Machine Shutdown
- Machine Startup



Cel-Span® 300

- High temp. polyolefins.
- Low Cost

Cel-Span® 300FG

- Enhanced scrubbing effect
- Design for difficult changeovers

Cel-Span® 388

- Nylon 6/6, Polysulfone, Peek, HDPE

Cel-Span® 388N

- Engineer resins

Cel-Span® 388FG

- Additional scrubbing effect

Cel-Span® 313N

- Design for clear Polycarbonate
- Avoids vehicle cross contamination



Cel-Span® 399

- Design for blow molding applications
- Avoids residues on accumulators



Phoenix Plastics has been working in the VCI Industry for over 10 years. We have recently teamed up with the MetPro Group to handle Marketing and Manufacturing in North and South America.

Advantages of Phoenix Plastics products with MetPro Additives:

- Nitrite & Heavy Metal Free
- Conform to US & EU packaging Specs
- Non-Irritant
- Non-Toxic
- Suitable for indirect food contact



Types of VCI

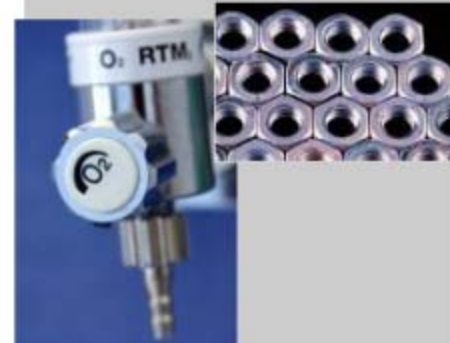
- Film
- Bags
- Stretch wrap Film
- Paper
- Powder

Markets Served

- Automotive
- Agriculture
- Electronic
- Military
- Tool & Dyes

Available Colors

- Natural
- Blue
- Yellow
- Green



* Please inquire with Phoenix Plastics if you need a different color.

Cel-Span® 480

Is a unique additive concentrate in LDPE carrier resin used to chemically degrade polyethylene resins in the presence of sunlight, oxygen, and heat through a chemical process that breaks the polyethylene polymer molecules at the molecular level.

Day 1



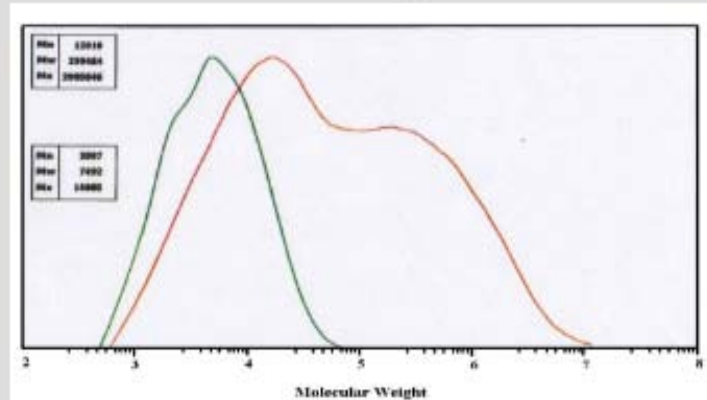
Day 30



Day 60



Cel-Span® 480 G PC Analysis Bimodule Resins



Red- Control w/ out Cel-Span@480

Mn 12,010

Mw 299,484

Mx 2,005,846

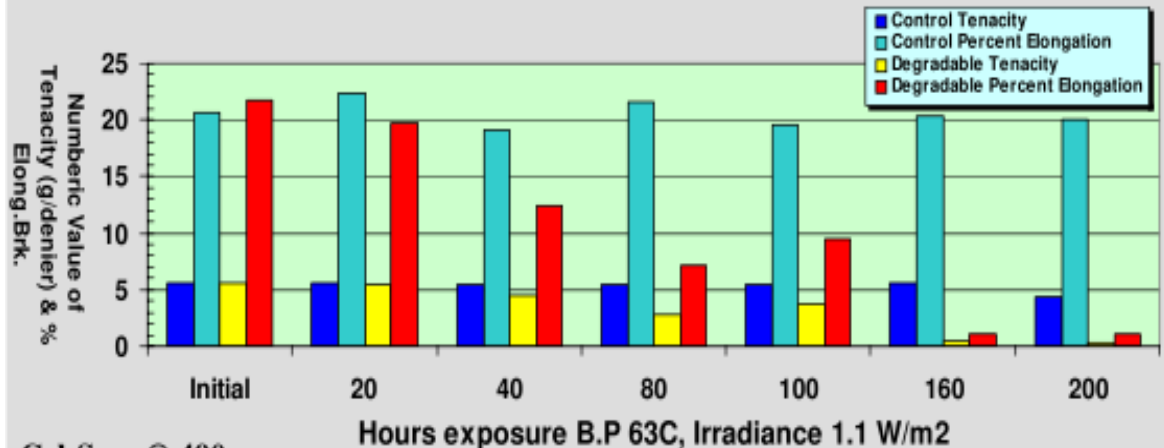
Green- Control with Cel-Span@ 480

Mn 3,807

Mw 7,492

Mx 14,005

Xenon Arc WOM Exposure of Degradable Polypropylene Homopolymer



Cel-Span® 490

Polymer Processing Care (PPC) for Film Market



PRODUCTS	Cleaning	Change Overs	Shut Down	Start Ups	Die Build Up	Gels/ Char/ Black Specs	Melt Fracture	Preventative Maintenance	Process Aid	Stabilizer	Anti-block / Slip	Plate Out	Rate Increase	Clarity	Odor Issues	Bubble Instability	Moisture Scavenger	Printing	Film Gauge	COMMENTS
Cel-Span® 100	●		●		●	●		●						●		●			●	Total PPC System - Continuous Use/ 100% Active Product
Cel-Span® 101											●									100% Slip Concentrate
Cel-Span® 305																	●			Moisture Scavenger Concentrate
Cel-Span® 306				●	●		●	●	●	●										Total PPC System - Clear Films/ - Continuous Use/ Stabilizer Concentrate
Cel-Span® 310			●	●						●						●			●	Thermal stability during long heat-up or downtime cycles.
Cel-Span® 332					●					●		●						●	●	Total PPC System - Pigmented TiO2 Films/ Continuous Use
Cel-Span® 385	●	●																		Cleaning & Scrubbing Compound
Cel-Span® 610L									●	●			●							Compatible Process Enhancer
Cel-Span® 613									●	●		●	●			●			●	Calcium Carbonate Filled Concentrate- Improves Cooling & Output Rates
Cel-Span® 615											●									High Clarity Anti-block & Slip
Cel-Span® 618											●									High Clarity Anti-block
OE 1															●					Odor Absorber Concentrate

주요 제품 소개

■ Ethylene Scavenger

EG-600 PLUS

- 과일, 채소, 꽃 및 발효식품 장기보존

■ Anti-microbial Agent

Renovus

- 제빵, 제과 및 육가공품의 곰팡이 억제

■ Special Barrier Material

Cordon

- 식품 (Oxygen) / 비 식품 분야 (Solvent)

■ Bio-degradable Plastics

Gaia degradable

- PSP (발포 PS)
- Paper Coating



■ Ethylene Scavenger

Cel-Span EG-600 Plus

INTRODUCTION:

Gaia® Fresh is a novel concentrate containing several additives used in film applications that enhance the freshness and controls the ripening process of fruits, flowers, and vegetables; through controlling the ethylene gas absorption, water vapor, and oxygen permeation, Gaia® Fresh increases the life of fresh food items.

- **EG-600 PLUS** is a concentrate that contains several additives used primarily in film applications that enhances the freshness and controls the ripening process. This is accomplished by controlling the ethylene gas absorption, water vapor and oxygen permeation.

- **Markets Served**

- Fruits
- Vegetables
- Flowers



5 Day Test at Room temperature



15 Day Test at Room Temperature



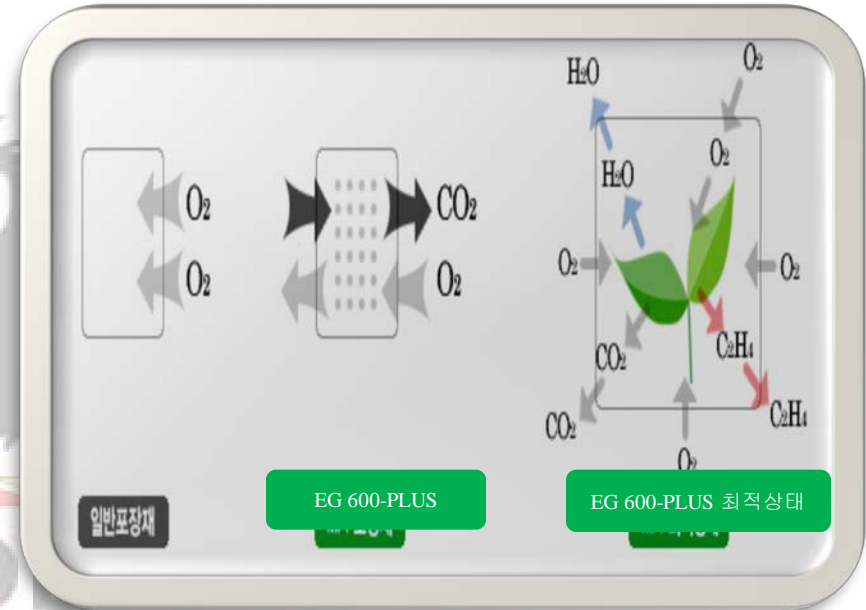
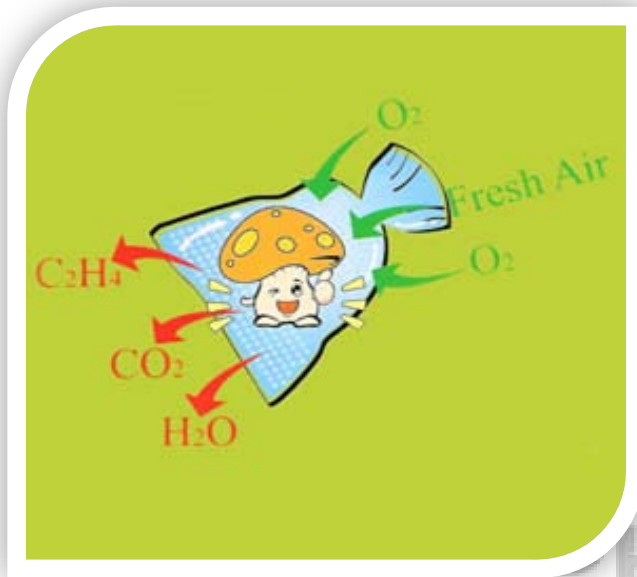
With EG-600 PLUS



Non EG-600 PLUS



Ethylene Scavenger 원리

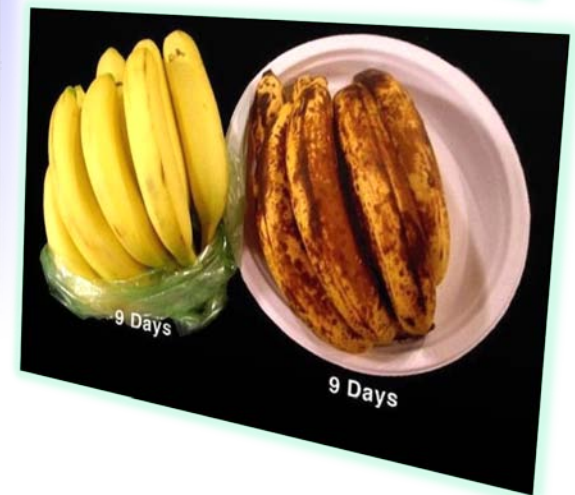


➤ 농산물의 호흡조절(가스투과)을 통한 선도저하 개선

수확 후 식물 호흡은 산소를 마시고 이산화탄소를 발생시키며, 유통과정에서의 농산물 선도저하 원인은 호흡에 의한 체내성분 소비와 수분증발에 의한 것으로 선도유지를 위한 호흡 억제방법이 필요합니다.

EG 600-PLUS 는 포장재 내부의 산소농도를 적정하게 유지하는 호흡 억제 및 조절기능을 합니다.

Ethylene Scavenger 적용 예



참고 : 과채류의 에틸렌 가스 생성 정도 및 민감성

과채 종류	에틸렌 생성	에틸렌 민감성	과채 종류	에틸렌 생성	에틸렌 민감성
사과	◎	○	양배추	△	○
배	◎	○	오이	▲	○
복숭아	◎	○	파	△	○
살구	◎	○	양파	△	▲
자두	○	○	감자	△	○
딸기	▲	▲	호박	▲	○
상추	△	○	토마토	○	◎
시금치	△	○	메론	◎	○
배추	△	○	하니듀 메론	○	◎
감 굴	△	○			

◎ : 매우 높음 ◎ : 높음 ○ : 보통 ▲ : 낮음 △ : 매우 낮음

■ Anti-microbial Agent

ReNovus (Developmental)

INTRODUCTION:

ReNovus is a tailored plastic additive concentrate produced with a TOSCA registered essential oil in a plastic bread bag to enhance the performance and lifetime of the packaged bread from insect and mold contamination. This patent pending product and processed bag design is targeted toward various types of breads and other products that are prone to insect infestation and inhibition of various molds that attack various breads on the market.

Test result on 7 grain bread with the ReNovus additive in 1 mil film for 60 days



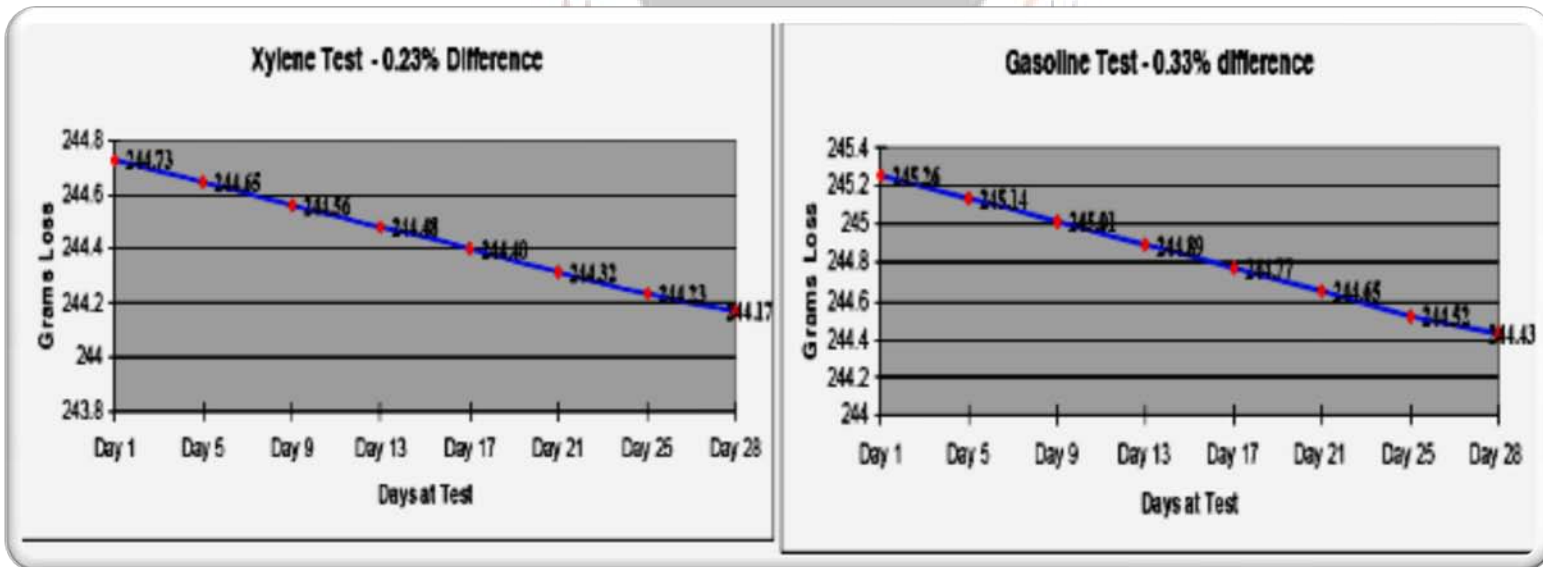
Special Barrier Material

Cordon

INTRODUCTION:

Cordon은 불소화 공정의 차선택으로 개발된 차단성 원료로 HDPE, LDPE, LLDPE 등의 제품 생산 시 추가 공정으로서 불소화 배리어를 필요로 할 경우 접착층 없이 이를 적용이 가능하도록 개발되었으며, 필름 및 시트 압출에도 사용할 수 있습니다.

✓ 베리어 특성 :



✓ 적용용도 : 농약병, 의약 및 화학약품, 연료탱크, 엔진오일 등

Analytical Report for Cordon

Oxygen Permanence by ASTMD 1434

Permanence
cm³/m².Atm.day

Film Thickness

Permeability
cm³.mi1l100in².Atm.dav

Sample: Film

50/50

AV=444.58

25μm

AV=90.36

100%

AV=6.30

25μm

AV=1.28

✓ 적용용도 : 드링크, 요구르트, 밀크, Meat 제품류 등

■ Bio-degradable Plastics

Gaia degradable

- Gaia Element 481

LDPE/LLDPE Metalocene

- Gaia Element 489

PS & Styrofoam Packaging

- Gaia Element 492

BOPP/Fibers High Clarity

- Gaia Element 483

Paper Coating Resin

* 평균 첨가량 : 1~2%



해충 및 미생물 방지

- **CO/WG 300**
 - 곤충 억제 재 (MB)
- **Patio Paradise**
 - 곤충 억제 재 (액)
- **Cedar Oil**
 - 천연 살충제 (Nano Size Grade)
- **Bio Protect**
 - 미생물 억제 (채소 꽃등의 장기보존)
- **Anti Microbial**
 - 물 탱크 정화조 등

