

Structurally Sound

A webinar series

Poly 101:

Key To Success in Polyethylene Maintenance

Hortica's *Structurally Sound*

Objective/Today's Focus

Structurally Sound Objective:

Provide Hortica members with educational programs focused on ensuring a safe, well maintained and efficient greenhouse operation.

Today's Focus:

Assist Hortica members in gaining better understanding of:

- Benefits Associated To Utilizing Polyethylene Film As A Glazing Solution Within Greenhouse Operations
- Keys To Success And Safety When Installing And Maintaining Polyethylene Film
- Hortica's Customized Poly Program Which Can Save Members Up To **30%**

Today's Agenda

- Polyethylene (aka Poly Film) Overview
- Installation & Maintenance Keys To Success
- Hortica Member Program Overview

Polyethylene Product Overview

Polyethylene Overview History

Why Plastic Greenhouses?

- ***Inexpensive*** Compared To A Traditional Glass Or Polycarbonate Greenhouse
- Can Be Utilized As ***Temporary*** Structure To Start Plants
- One Third ***Reduction In Heating Costs*** With Two Layers

Polyethylene Overview History

Why Polyethylene Film?

- PVC Was Available But Came In Smaller Sizes
- Problems With Thickness Control (Gauging)
- PVC Had Problems With Darkening, Collecting Dirt And Stretching
- Mylar Available But Came In Narrow Strips And Was Very Noisy
- Polyethylene Was Less Expensive (US)

Polyethylene Overview

History

Timeline

- Accidentally discovered in 1898 by Hans von Pechmann, Germany
- First practical synthesis in 1935 (ICI of England)
- Further research discovered a use as a plastic film in 1937
- Extensive use during WWII for coaxial cable shielding (England & US)
- Blown bubble fabrication method developed in US during WWII
- 1950's improvements in catalysts reduced production costs

Polyethylene Overview

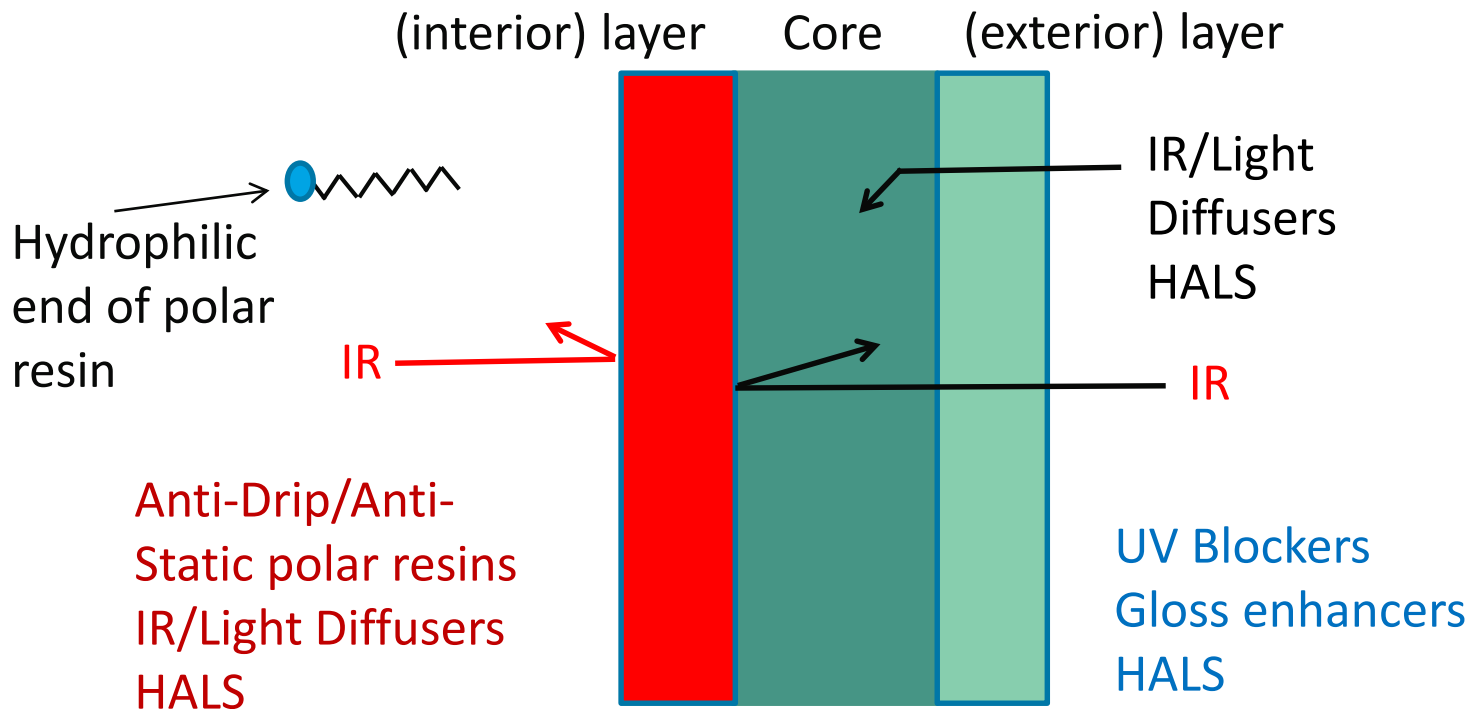
Types

- Ultra High Molecular Weight Polyethylene (UHMWPE)
- High Molecular Weight Polyethylene (HMWPE)
- High Density Cross Linked Polyethylene (HDXLPE)
- Cross Linked Polyethylene (PEX or XLPE)
- High Density Polyethylene (HDPE)
- Medium Density Polyethylene (MDPE)
- Low Density Polyethylene (LDPE)
- Linear Low Density Polyethylene (LLDPE)
- Very Low Density Polyethylene (VLDPE)
- Ultra Low Molecular Weight Polyethylene (ULMWPE or PE WAX)

POLYETHYLENE OVERVIEW

Structure

Most greenhouse film is made of 3 co-extruded layers



Polyethylene Overview

Core Products: Clear Stabilized Greenhouse Film, 4 Year

- Clear greenhouse covers are designed to insure maximum PAR light transmission.



Product Highlights

- 6mm thick thermal polyethylene
- Up to 90% light transmission/layer
- 18% light diffusion
- Guaranteed life of 4 years
- Product widths from 10' – 50'
- Available in full rolls or custom cut

Polyethylene Overview

Core Products: Thermal Anti-Condensate (IRAC) Film, 4 Year

- Combines thermal and anti-condensate solution into one package



Product Highlights

- 6mm thick thermal polyethylene
- Up to 90% light transmission/layer
- 55% light diffusion
- Guaranteed life of at least 4 years
- Product widths from 10' – 50'
- Available in full rolls or custom cut

Polyethylene Overview

Benefits Of Thermal Anti-Condensate (IRAC) Film

Why Use Infrared Poly Film?

- Infrared (IR) radiation is the energy, or heat , that we feel from sunlight
- Although 10-15% higher in cost, IRAC film typically has a one year ROI
 - Reduces heating requirements by up to 20%

Why Use Anti-Condensate Films?

- Formation of condensation is a major issue in polyethylene greenhouses
 - Condensation droplets proven reduce light transmission by up to 50%
 - Crop damage from insects, washout on seed beds and possible pathogens may occur.
- Anti-condensate films contain surface modifiers to help limit the formation of condensation droplets when properly installed

Installation & Maintenance Keys to Success

Polyethylene Overview

Installations – Things To Consider

- Weather
 - Wind, Temperature, Climate
- Structure
 - Type, Support Spacing, Poly Lock, Inflation
- Safety
 - Experience Matters (OSHA)

Polyethylene Overview

Installation – Best Practices

- Safety has become more important than ever before and no one wants to get injured. Most greenhouse owners and installers know it's risky business working on greenhouses, especially when it comes to installing poly.
- Standard OSHA regulations are very difficult to follow and are costly to implement. Recent developments in some areas have found OSHA willing to work with the greenhouse industry in adapting to the challenges presented with greenhouse structures.
- Some of the important safety procedures being utilized today include: safety harnesses, high strength cables in gutters for tying off, better utilization of scissor lifts, better design of structures.

Polyethylene Overview

Routine Maintenance Checklist

Inflation

Tears

Shading

Poly Lock

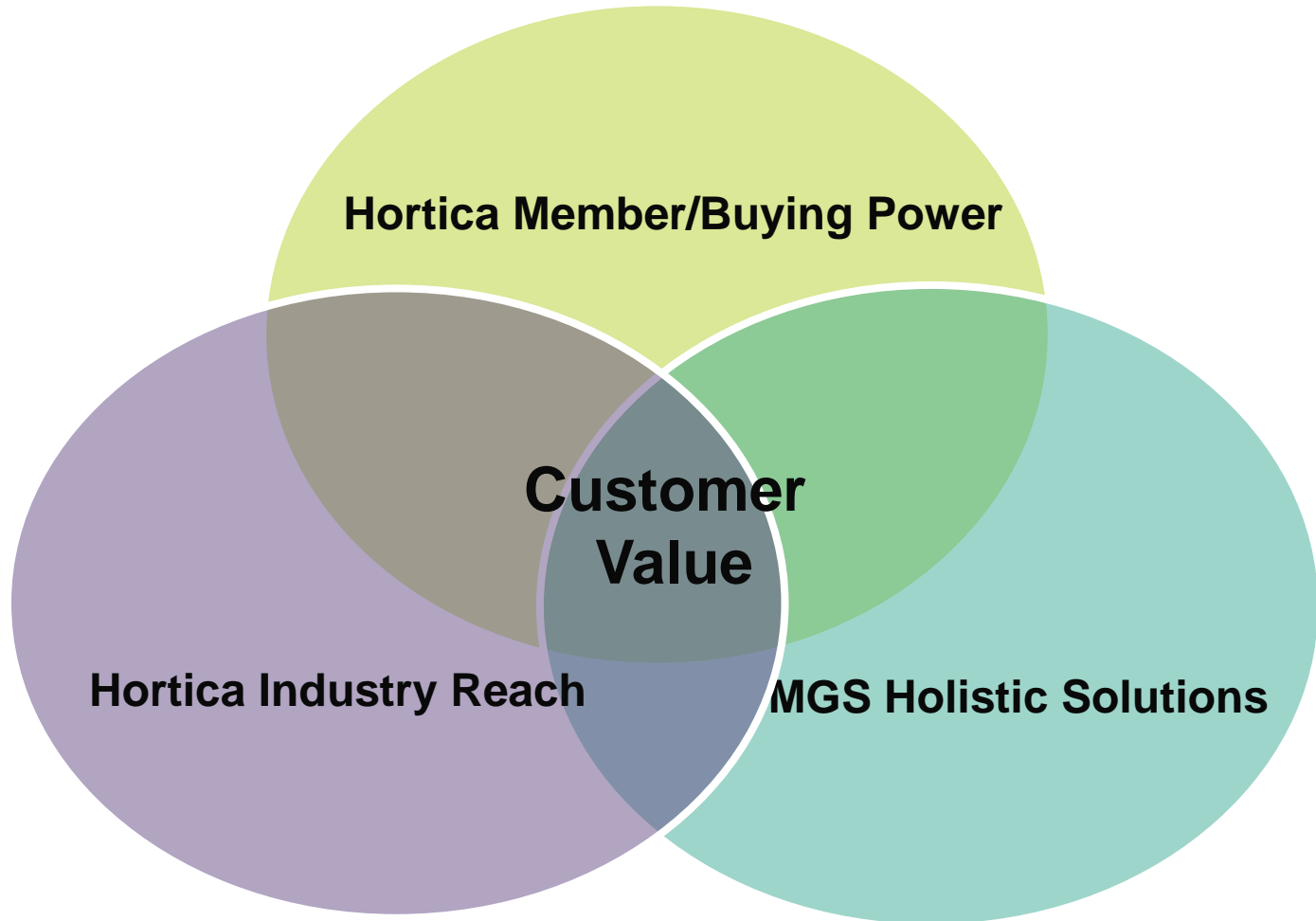
Light Transmission

Hortica's Member Program



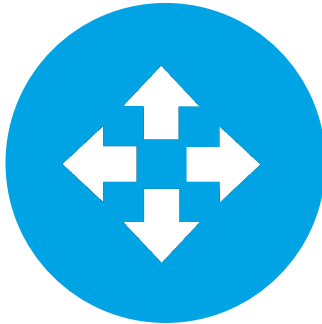
Hortica Membership Program Vision

Leverage Core Competencies To Add Customer Value





Hortica Custom Program Benefits



Consolidates Members
Reach/Buying Power



Reduces Costs For
Hortica/Customers
(Stability)



Establishes Foundation
For Future Offerings



Hortica's Customized Poly Program Overview

Hortica Insurance has teamed up with Midwest Greenhouse Supply (MGS), a greenhouse supply/construction company with 80+ years of industry experience, to deliver substantial savings - up to 30% - on polyethylene covering cost to our members.

Hortica's Customized Poly Program Is Focused On Your Bottom Line

MGS, will work with you to **CUSTOMIZE** your poly to meet desired outcome (e.g., right extrusions, proper inflation or shading).

Upon request, MGS will coordinate a national team of professionals to **INSTALL** your poly.

MGS will help you develop a plan to properly **MAINTAIN** your greenhouse coverings.



Midwest Greenhouse Supply (MGS) Overview

- ***L.L. Klink Has Serviced The Greenhouse Industry Nationwide For Over 80 Years***
 - *Recognized for providing “complete” structural solutions that impact costs/outcomes*
- ***Midwest Greenhouse Supply (MGS) was founded to provide A Solution Based Approach To Greenhouse Structural And Glazing Products***
- ***Partnered With Polyethylene Manufacturers Across The World To Deliver :***
 - ***Customized Solutions To Meet Desired Outcomes***
(E.G.– Proper Inflation, Extrusions, Light Transmission, Diffusion, Etc.)
 - ***Reduced Landed Costs Of Product With Quick Turn Times***
 - ***Installation & Service Where Needed/Requested***
- ***Partnership With LLK Enables MGS To Expand Future Product Offering & Services***
 - ***Examples: Greenhouse Structures & Systems As Well As Glazing Options & Systems***

Structurally Sound

Webinar Series

Future Topics to Include:

- **Maintenance**
 - Fall Tune Up Checklist
- **Safety**
 - Greenhouse Safety Checklist
- **Operations**
 - Seasonal Labor Best Practices



Hortica Insurance & Employee
Benefits
P O Box 428
#1 Horticultural Lane
Edwardsville, IL 62025

800.851.7740

Structurallysound@hortica.com

www.hortica.com

Midwest Greenhouse Supply
14800 Foltz Parkway
Strongsville, OH 44149

440.310.7051

Info@midwestgreenhouse.com

www.midwestgreenhouse.com

L.L. Klink & Sons
14800 Foltz Parkway
Strongsville, OH 44149

440.236.8332

Info@llklink.com

www.llkilinkcom

Questions, Comments, Additional Information?