



The Hanson Group LLC.

Specialty Industrial Chemicals



## ***PolyLink™ 4200***

***•A Processing Aid***

***•The Overall Positive Effects on Spray  
Polyurea Coatings***

**Polyurea Development Association  
Reno, Nevada**

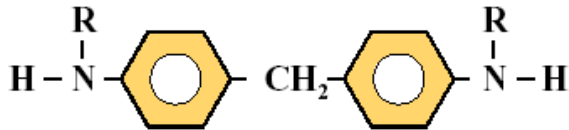
**Ray Scott, John Leon, Dudley Primeaux,  
Lee Hanson, Keith Wilkinson**



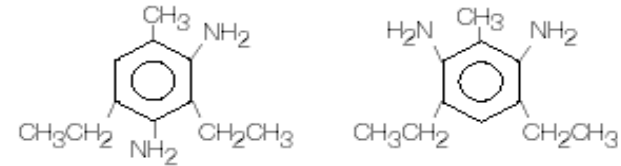
**August 21, 2003**

# Chain Extenders Used in Polyureas

## PolyLink 4200



## Ethacure 100 - DETDA

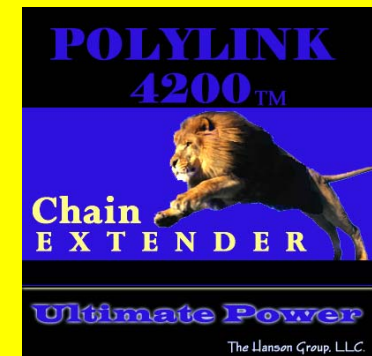
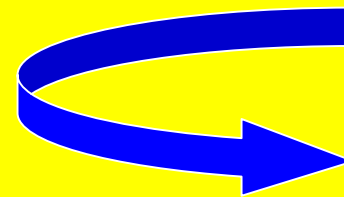


- Both PolyLink 4200 & Ethacure Diamines Promote Improved Physical Properties and Processing of Polyureas
- The Ratio of Ethacure to PolyLink 4200 can Achieve the Desired Gel Times

**PolyLink Improves**  
Spray Pattern  
Substrate Benefits  
Surface Quality  
Equipment Benefits  
Polymer Properties



**A Well-Balanced Formula Should  
Include PolyLink 4200**



# Chain Extenders Used in Polyureas

## ● Fast Spray Coating Systems

- Fast Systems – 5-10 seconds Gel Times
- Waterproofing & Corrosion Protection
- Formulated 1:1 by Volume
- Require Sophisticated Equipment
- High Ethacure, Low PolyLink Levels

## ● Slow Pourable Systems

- Joint Fillers, Caulks & Sealants
- Much less expensive Equipment
- Much Slower systems – 30-60 seconds Gel Times
- High PolyLink, Low Ethacure Levels



# Sample Formulations for the Effect of PolyLink 4200 on Sprayed Polyurea Coatings

		1	2	3	4
<b>A-Side</b>	MDI PrePolymer	100.00	100.00	100.00	100.00
	% NCO	15.4	15.4	15.4	15.4
	Index	105	105	105	105
<b>B-Side</b>	BASF D-2000 (%)	65.68	62.55	57.65	52.02
	BASF T-5000 (%)	5.57	5.06	5.17	5.33
	<b>PolyLink4200 (%)</b>	<b>0.00</b>	<b>8.1</b>	<b>18.6</b>	<b>29.85</b>
	Ethacure 100 (%)	28.76	24.29	18.6	12.79
	Volume Ratio (A:B)	1.000	1.000	1.000	1.000

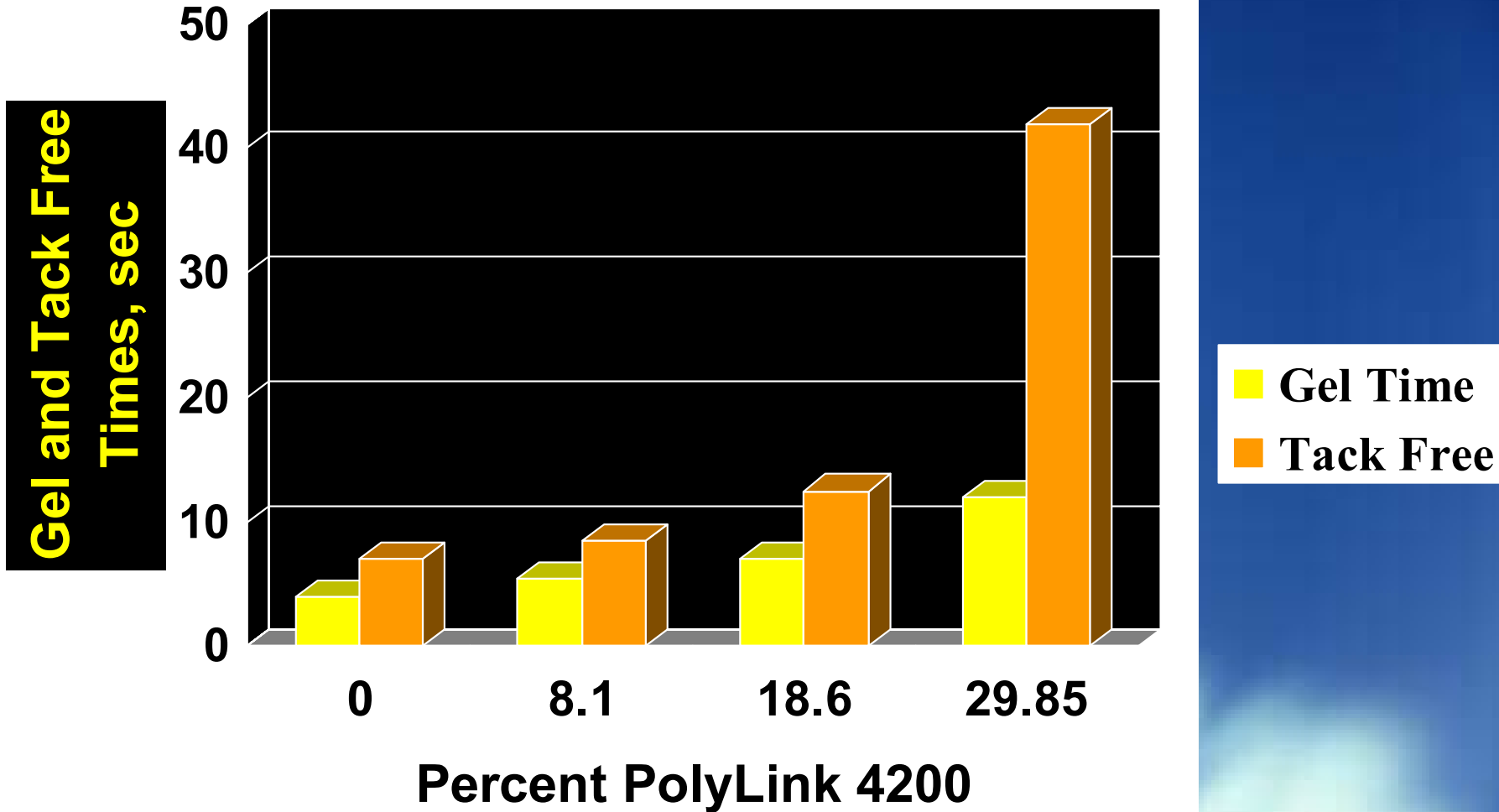
Proportioner: Gusmer H-20/35

Spray gun: Gusmer GX-7 Series 400

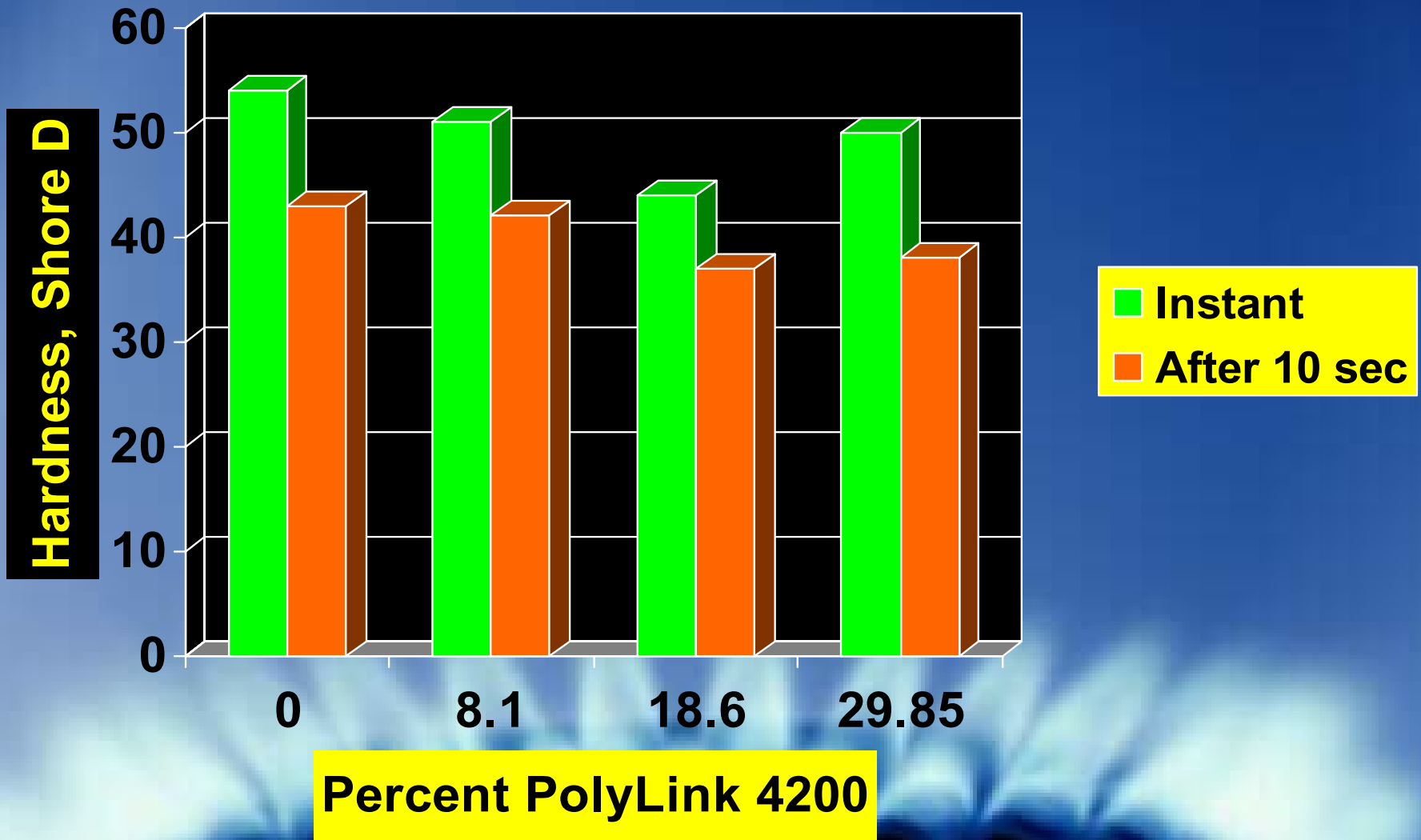
Pressure - 2000psi; Temperature - 160F



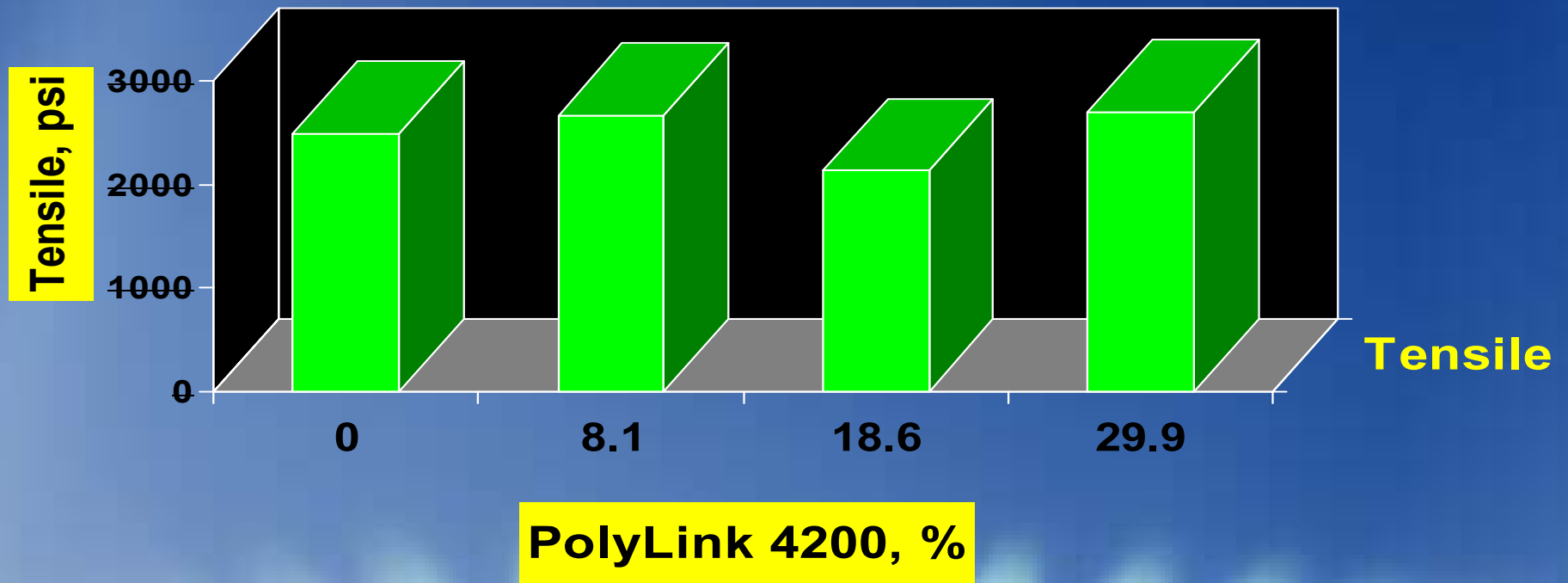
## Effect on Gel and Tack Free Times



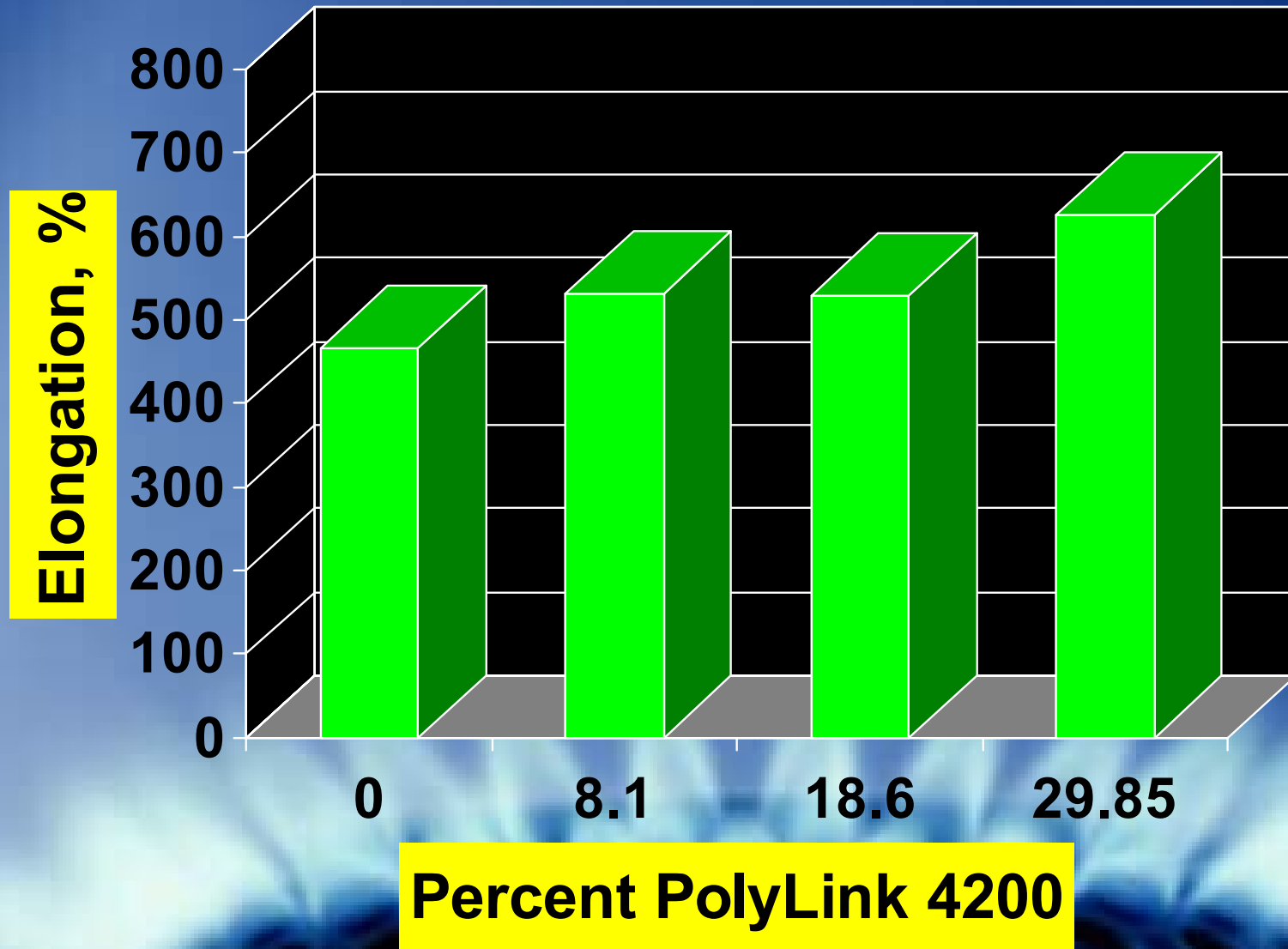
# Effect on Hardness



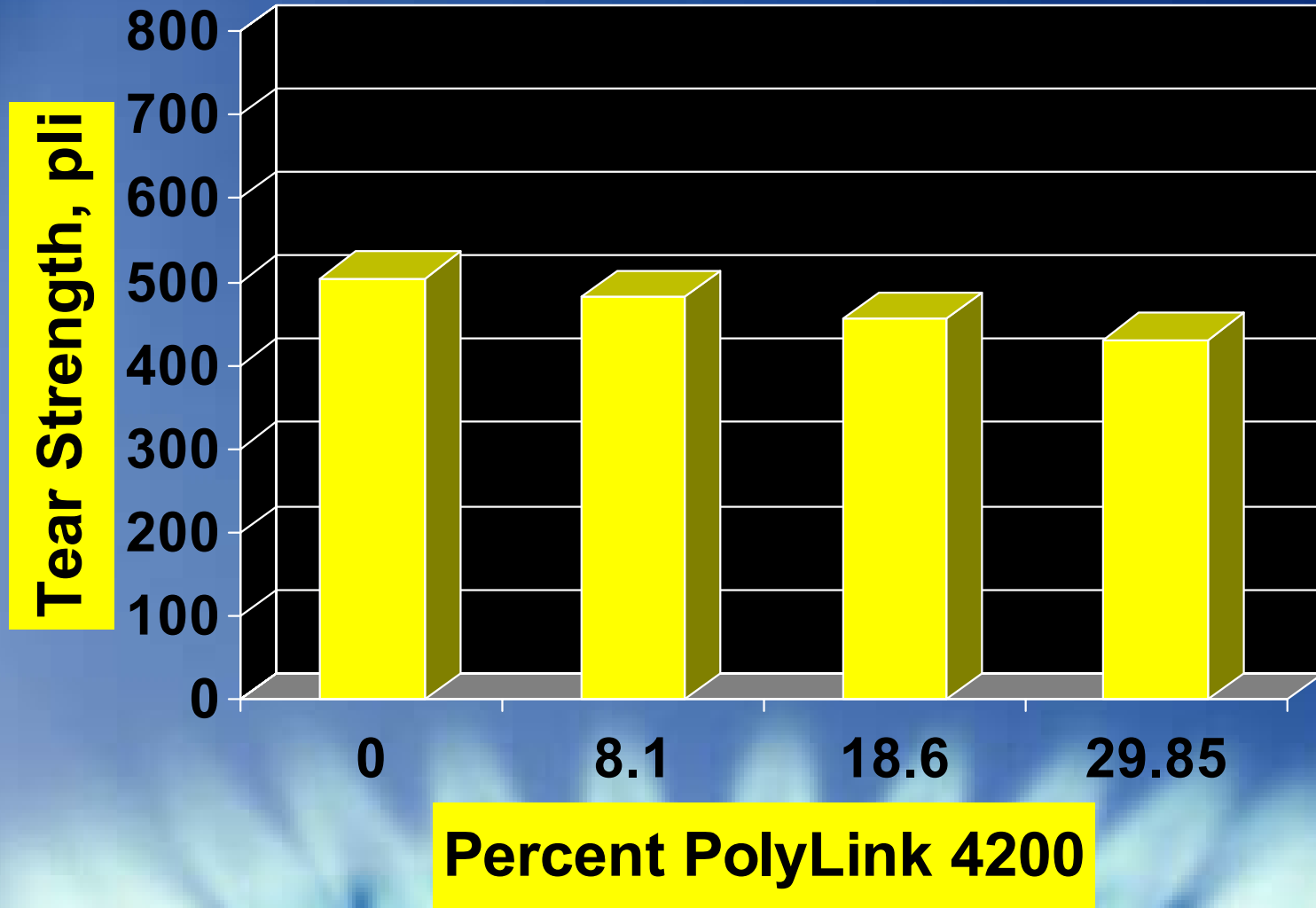
# Effect on Tensile Strength



# Effect on Elongation

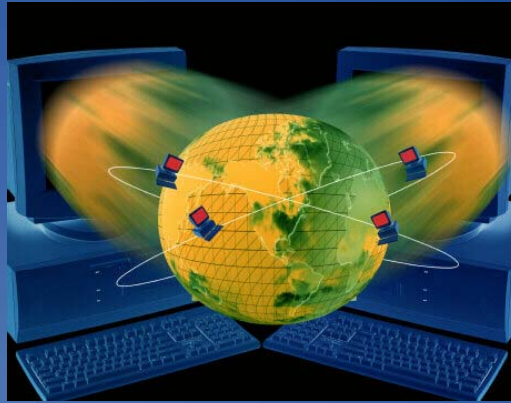


# Effect Tear Strength



# Summary

In general, increasing **PolyLink 4200** retards gel time and increases elongation.



What is the #1 reason for using **PolyLink 4200** in spray polyurea coating systems?

“It Just Sprays Better”

**POLYLINK**  
**4200<sup>TM</sup>**

**Chain**  
**E X T E N D E R**



**Ultimate Power**

The Hanson Group, LLC.



# “It Just Sprays Better”

## Comments From Polyurea Professionals

**“My polyurea system is the highest quality product I know how to make – and this additive is one of the reasons why”**



**“Some systems just spray better than others, and now I know why”**



# “It Just Sprays Better”

**Spray Pattern**

**Substrate Benefits**

**Surface Quality**

**Equipment Benefits**

**Polymer Properties**



# “It Just Sprays Better”

## Spray Pattern

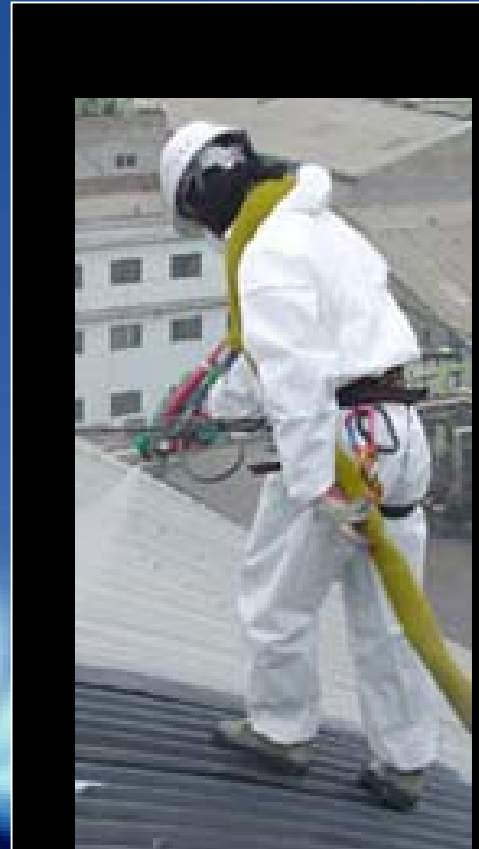
Smaller droplet size

Better spray pattern

Less “fingering” and “roping”

Better coverage

Lower mix viscosity



# “It Just Sprays Better”

## Substrate Benefits

**Better wetting and flow**

**Better substrate adhesion**

**Better inter-coat adhesion**

**Less de-lamination**

**Longer “open” time between multiple coats**



# “It Just Sprays Better”

## Surface Quality



Less orange peel effect

Better flow-out

Better self-leveling

Less shrinkage



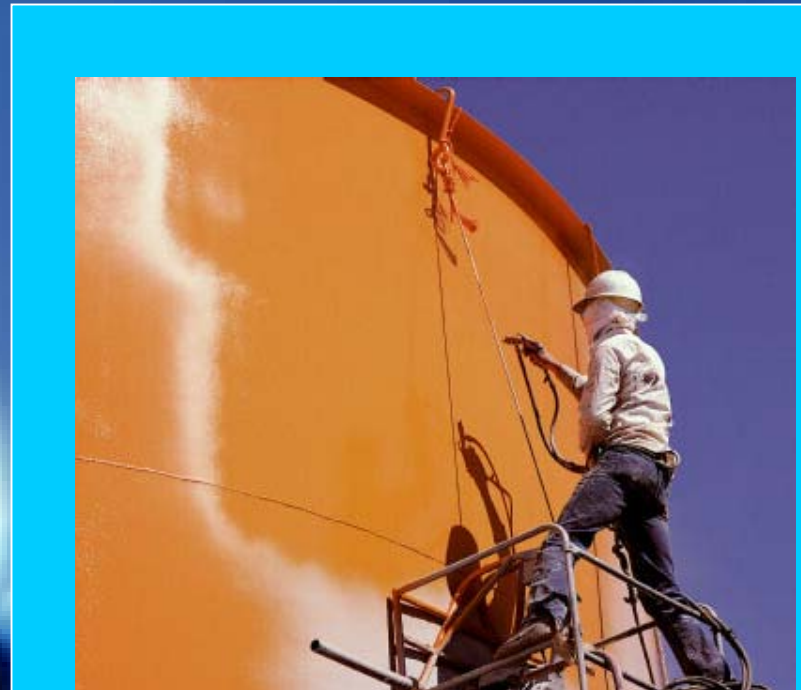
Reduced spray lines especially at the tie-in pass

Better surface quality especially on vertical surfaces

# “It Just Sprays Better”

## Equipment Benefits

- Longer gel times
- Less build-up on gun tip
- Less nozzle plugging
- Improved mechanical mixing



# “It Just Sprays Better”

## Equipment Benefits

- More forgiving at lower temperatures and pressures
- Less change in physical properties with fluctuations in temperature & pressure
- Higher productivity with less down time
- Greater control on thickness



# “It Just Sprays Better”

## Polymer Properties



- **Controlled gel times**
- **More flexibility**
- **Better cold temperature properties**
- **Less shrinkage**
- **Lower water absorption**

# “It Just Sprays Better”

## Polymer Properties

- Higher impact resistance
- Better abrasion resistance
- Better chip resistance
- More forgiving to drifts in index



# Polyurea Costing

**Polyurea spray elastomer system @ 60 mils (\$35/gal)**

**18.6% PolyLink 4200 in B-Side Resin blend**

**Minimum Total Cost (\$2.43 / ft<sup>2</sup>)**

**PolyLink 4200 Costs Just \$0.05 /ft<sup>2</sup>**



# “Your Team”

**Dudley Primeaux**  
**Technology & Technical**  
**Service Support**



**Ray Scott**  
**Technology &**  
**Sales**



**Lee Hanson**  
**Sales & Customer**  
**Support**



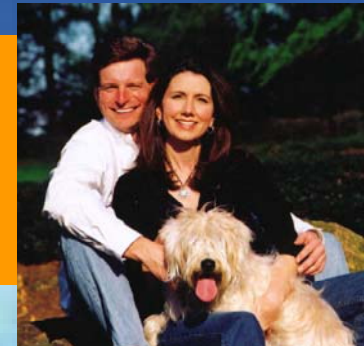
**John Leon**  
**Sales & Technical**  
**Service Support**



**Jim Williams**  
**Sales & Customer**  
**Support**



**Andrea Williams**  
**Marketing &**  
**Customer Service**



# “It Just Sprays Better”

