

Mold Releases and Process Aid Additives



AXEL

Our Products

AXEL

XTEND[®]
Semi-Permanent Mold Releases

 **MoldWiz**[®]
Mold Releases & Process Additives

PASTE WIZ

CleanWiz

Trade Names



MoldWiz[®] Process Aid Additives for Thermoplastics



Process Aid Additives

Proprietary formulations manufactured in the USA

available in:
powder, **pellet**, liquid

100% active – no binders or fillers

Unique Formulations Focused On:

- **Release**
- **Flow**
- **Scratch & Mar Reduction**
- **Dispersion**
- **Coefficient of Friction**

Rheology & Processing

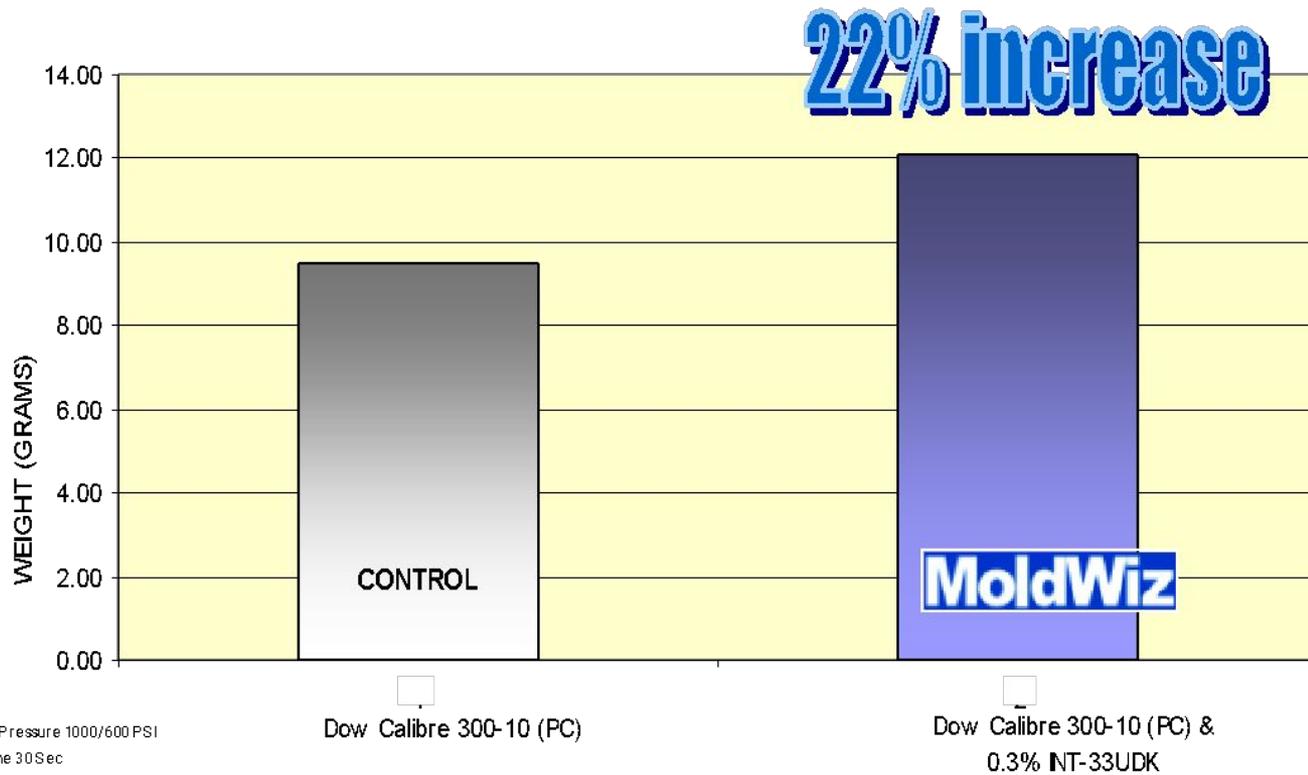
- **Higher MFI**
- **Better Flow / Cavity Fill**
- **Improved Wetting /Dispersion** (filler & color)
- **Greater Through-put**
- **Faster Cycles**



Molding

- **Improved Surface Luster On Molded Part**
- **Elimination of Flow Lines**
- **Elimination of Hair-Line Stress Cracks**
- **Stronger Weld Line**
- **Easy Mold Release**
- **Clean Parts (paintable, bondable)**



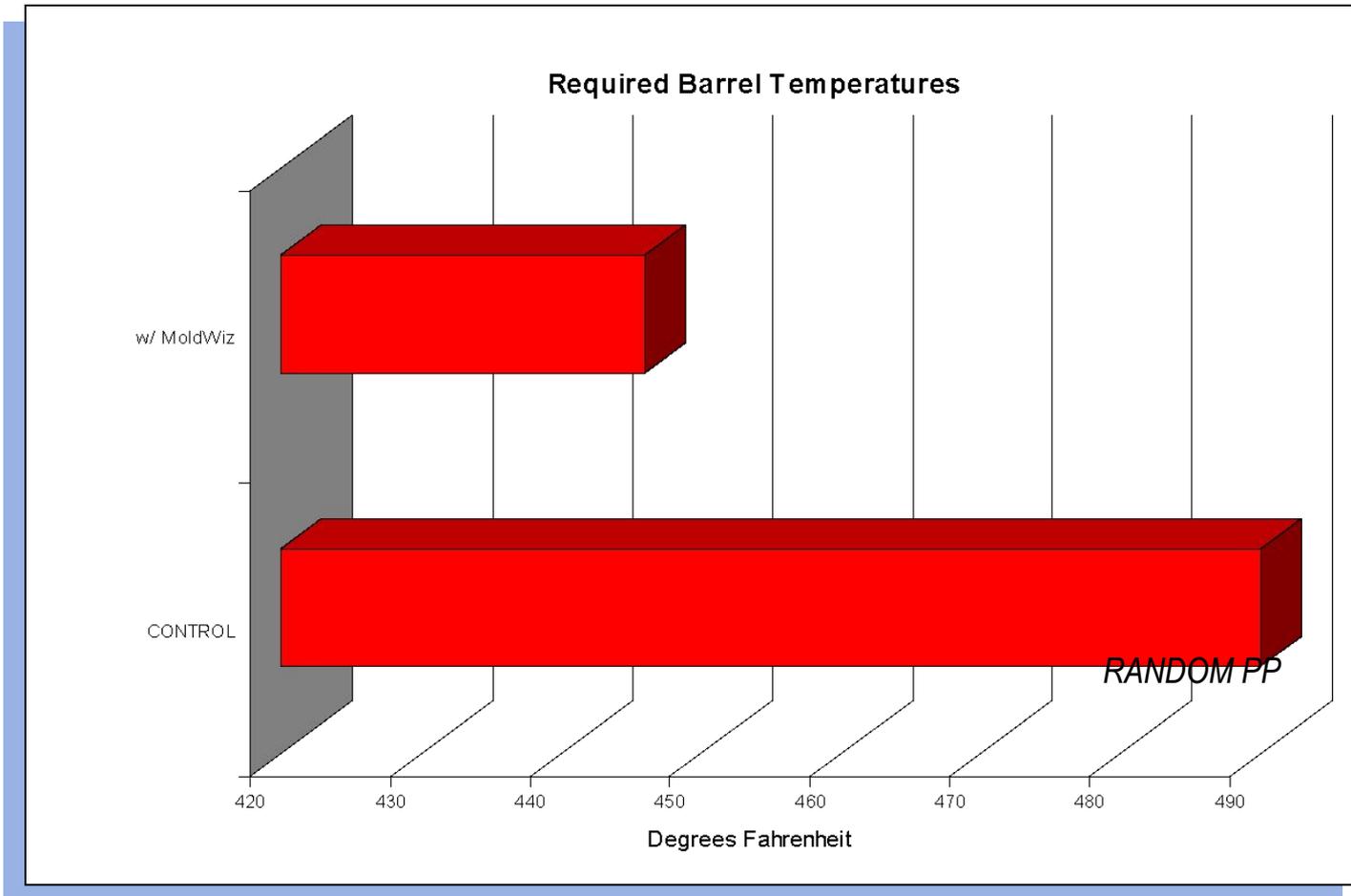


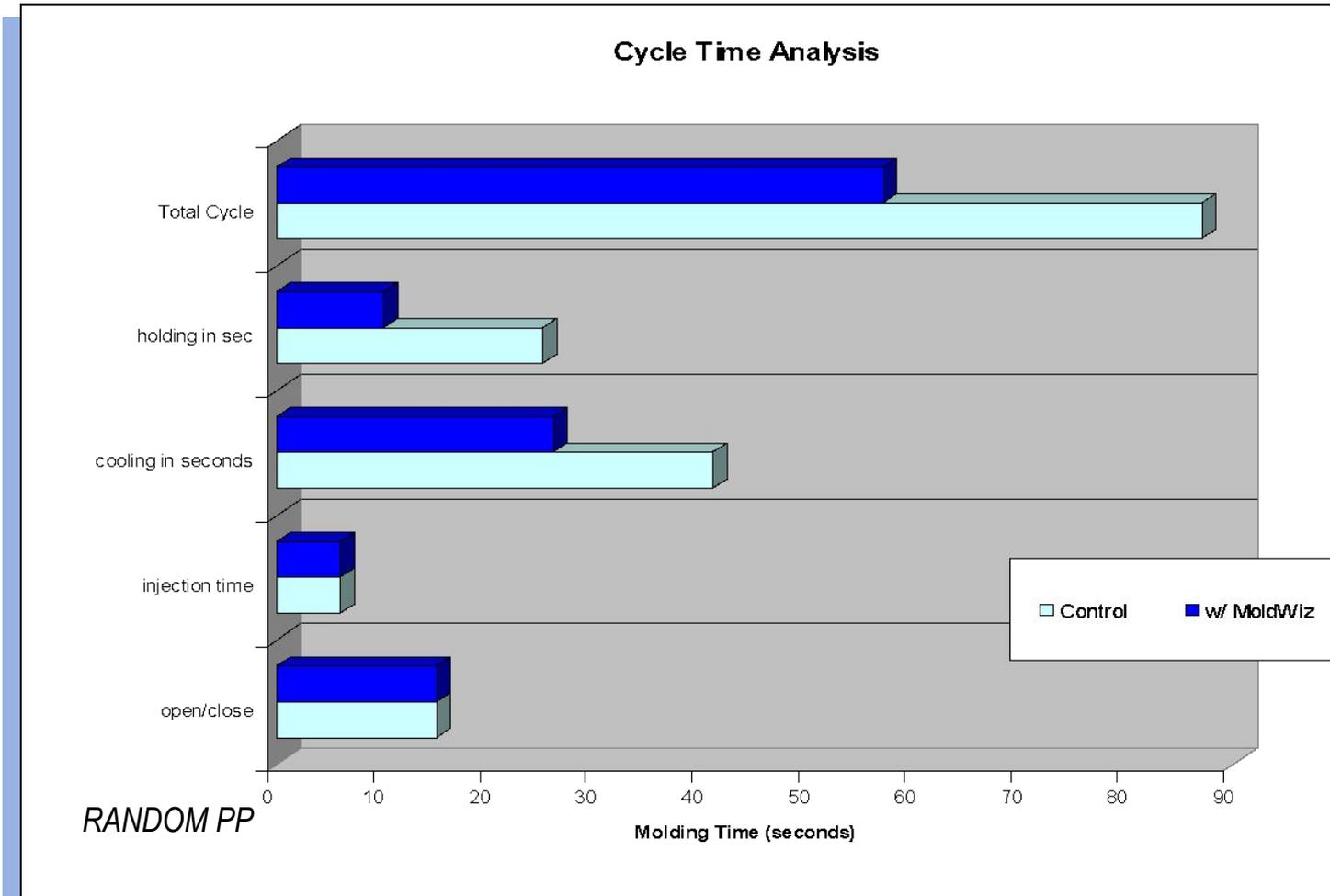
Injection Pressure 1000/600 PSI
Cycle Time 30 Sec
Clamp Pressure 90 Ton
Screw Speed 80 RPM

Dow Calibre 300-10 (PC)

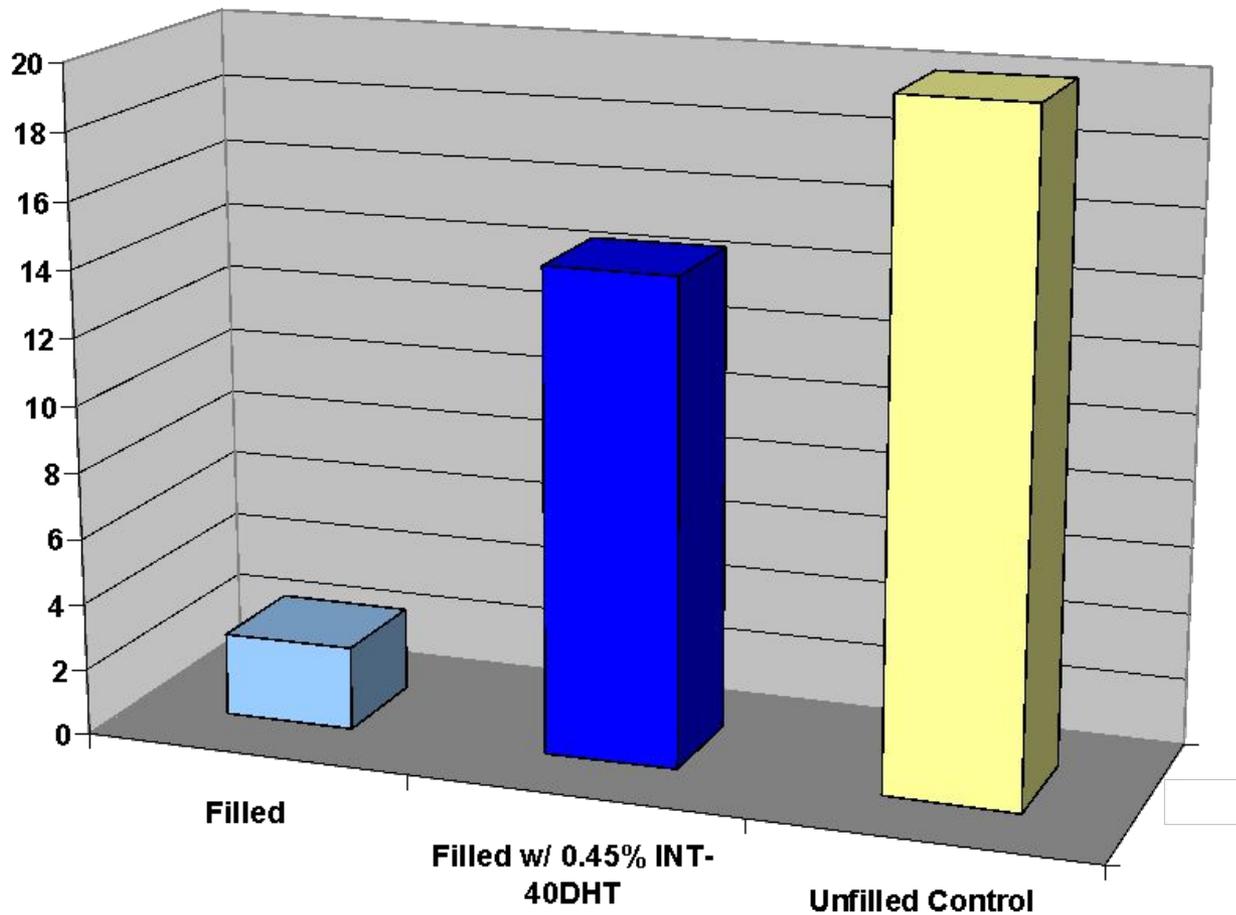
Dow Calibre 300-10 (PC) &
0.3% NT-33UDK

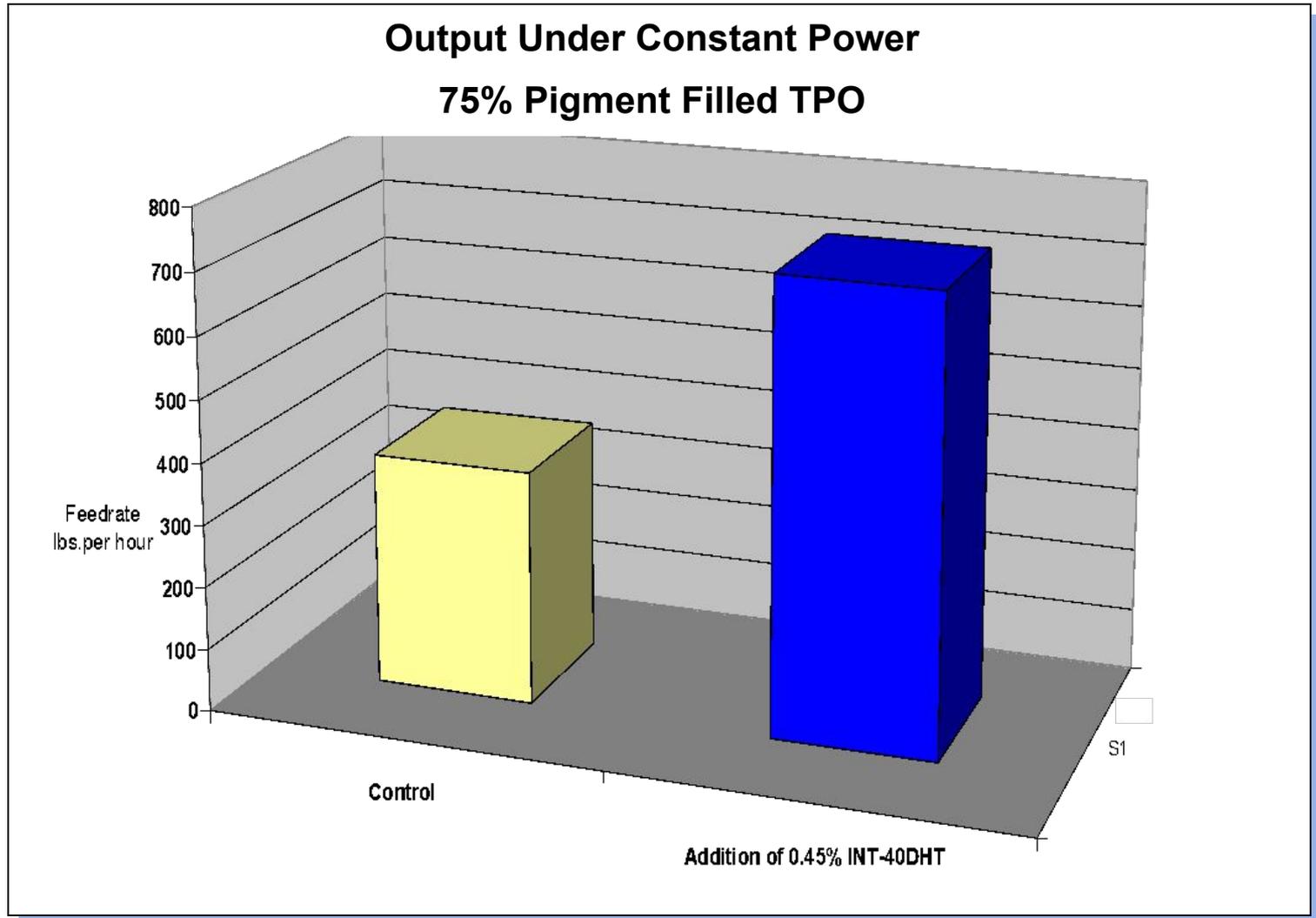
Reduced Heat History





Melt Flow - 75% Talc Filled TPO

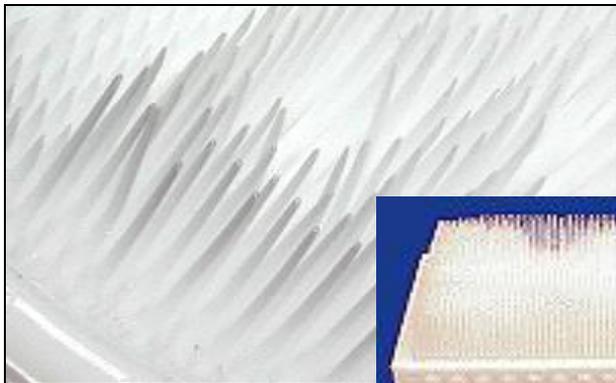






Key Products

 **MoldWiz**® **INT-33LCA**



FLOW & RELEASE

Thin Walled Parts
Large Mold Cavities
Better Flow
Better Release

TPO, PP, PE

 **MoldWiz®** **INT-33LCA**



REDUCED COEFFICIENT OF FRICTION

Safe for Food Contact

TPO, PP, PE





INT-33LCA



DISPERSION OF COLOR

Brighter Color at Lower Loading
No Swirl Marks
No "Plate-Out" on Molds



PP, PE

 **MoldWiz**® **INT-35PRC**

Good Release
No Tackiness On Part



TPE



INT-34DLK



FILL & RELEASE

Clean Release
NO Printing or Bonding Problems
NO Impact On Clarity



TPU
TPE
Crystal PS
TPR



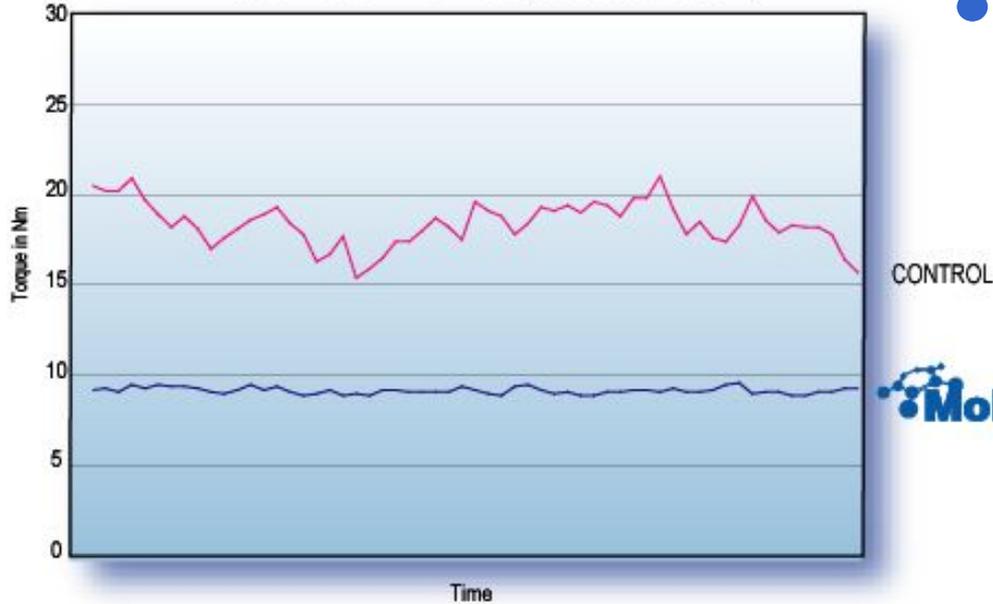
INT-38HM



NYLON
all grades
including glass filled

Improved Flow
Lower Torque
Consistent Torque
Easy Release

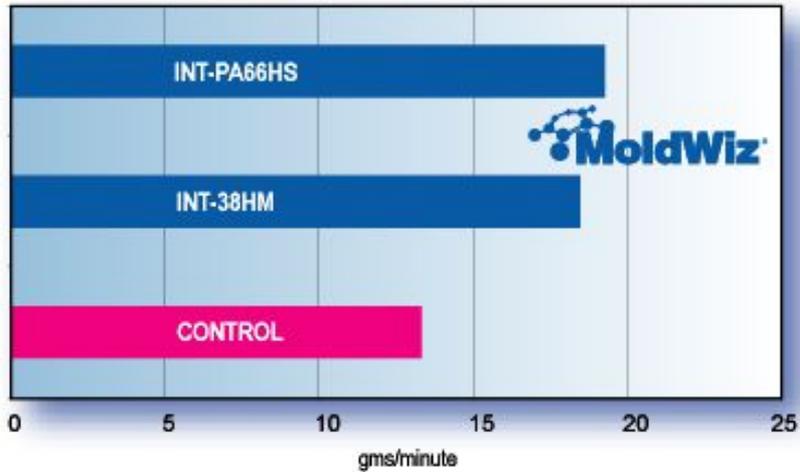
Effect of MoldWiz On Torque at 0.3% Loading



INT-38HM



Effect of MoldWiz On Flow



Effect of MoldWiz On Viscosity (measured in Pa.s)

	500 1/s		2000 1/s		3000 1/s		5000 1/s	
	viscosity	% of change						
CONTROL	256.0	0.0	155.8	0.0	134.8	0.0	112.2	0.0
INT-38HM	213.6	-16.6	125.8	-19.2	107.8	-20.0	88.7	-21.0
INT-PA66HS	211.5	-17.4	111.8	-28.2	92.8	-31.1	73.3	-34.6





INT-PA33FRK

Nylon Cable Ties

BASF 121SPF/Nylon 6/6

Goals

- Improved Flow - hard to fill
- Reduction in heat to eliminate discoloration
- Maintain/Improve whiteness
- Improve physical properties in use

Other Achievements

- Reduced cycle time / Increased production
- Energy savings





INT-PA33FRK

Nylon Cable Ties

Physical Property Gains

Additive @ 3parts/1000	Average Barrel Temperature	Average Cycle Time (sec.)	Average Cooling Time (sec.)	Average Tensile Load (lbs) Conditioned Nylon Ties (humidity exposed)
Competitor	580°F	14.00	540°F	77.9
INT-PA33FRK	570°F	12.80	560°F	84.00

Productivity Gains

Additive @ 3parts/1000	Shot to Shot Variance	Production Increase
Competitor	2.614%	4.208% *
INT-PA33FRK	.778%	7.032%

*based on optimizing equipment at start of trial

 **MoldWiz®** **INT-66PV**



IMPROVED PROCESSING

Use More Regrind, Less Virgin Resin
Better Incorporation of Additives
Less Buildup on Molds
Easier Release, NO Part Deformation

PVC
Foamed
PVC



INT-33UDS

POLYCARBONATE
PC/ABS BLENDS



Better Flow/Lower Heat History
Elimination of External Mold Release

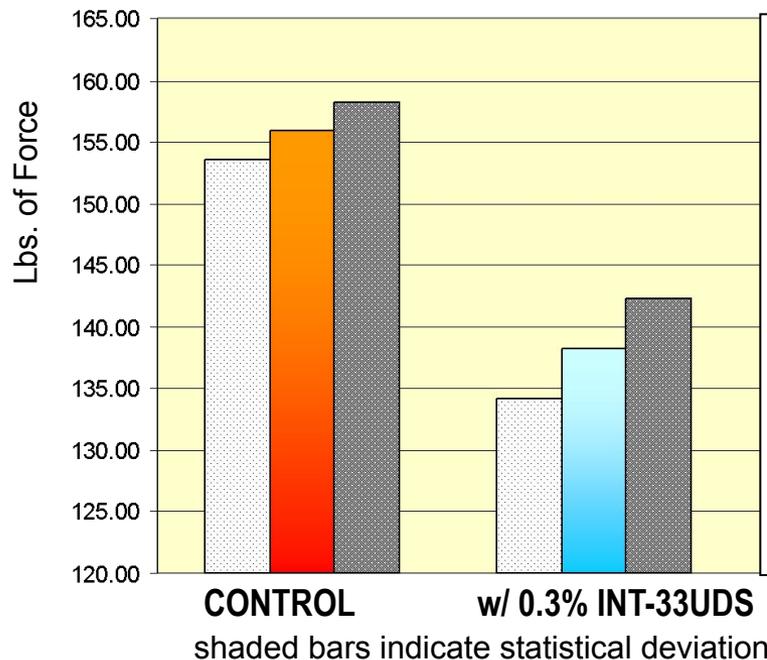


NO Fogging of Clear Resin
NO Contamination from Release Spray
NO Cracking or Deformation from Poor Release

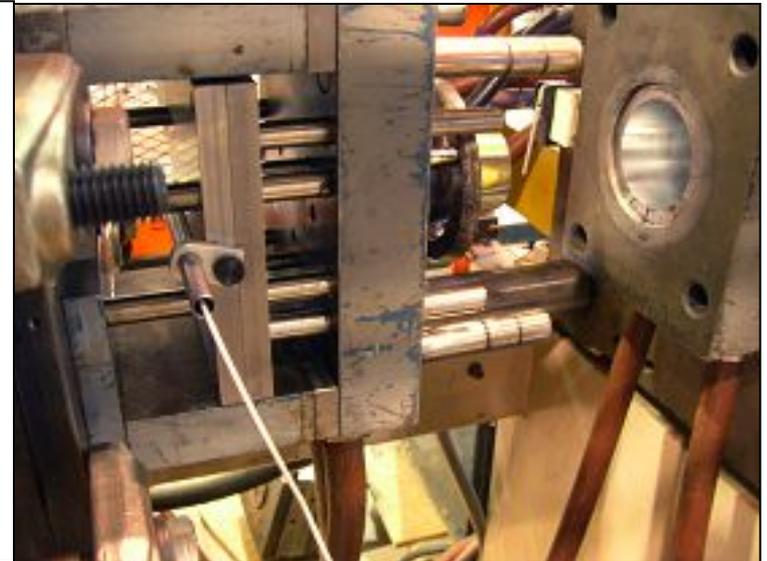


Quantifying Release in Recycled PC/ABS

- A PCB Electrode records the ejection force
- The electrode is attached to an Ejector Plate
- Data captured at 1000 times per second
- Peak Value recorded with DAQ Software
- Each experiment molds 25 parts



11.36%
Less Force
Required





New Developments



INT-701TPD



Automotive TPO

Scratch & Mar Reduction

Also Aids Flow & Release



INT-701TPD

PP Storage Containers

Goals

- Improved Flow - deep draw hard to fill
- Reduction in heat to eliminate resin burning (yellowing)
- Maintain clarity of PP resin
- Maintain physical properties

Other Achievements

- Reduced cycle time / Energy savings
- Scratch and Mar (in stacking and unstacking)
- Release





INT-701TPD

PP Storage Containers

Productivity Gains

Additive	Press	Addition Rate	Starting Melt Temperature	Reduction In Temperature	Total Cycle Time (sec.)	Additional Parts/ Month
INT-701TPD	UBE	0.46%	540°F	40°F	39.5	3,163
INT-701TPD	Cincinnati	0.46%	560°F	25°F	36.7	8,912

Estimated Savings/ Part at Machine Hour Rate of \$100/hr.

Press	Savings / Part
UBE	.056
Cincinnati	.147

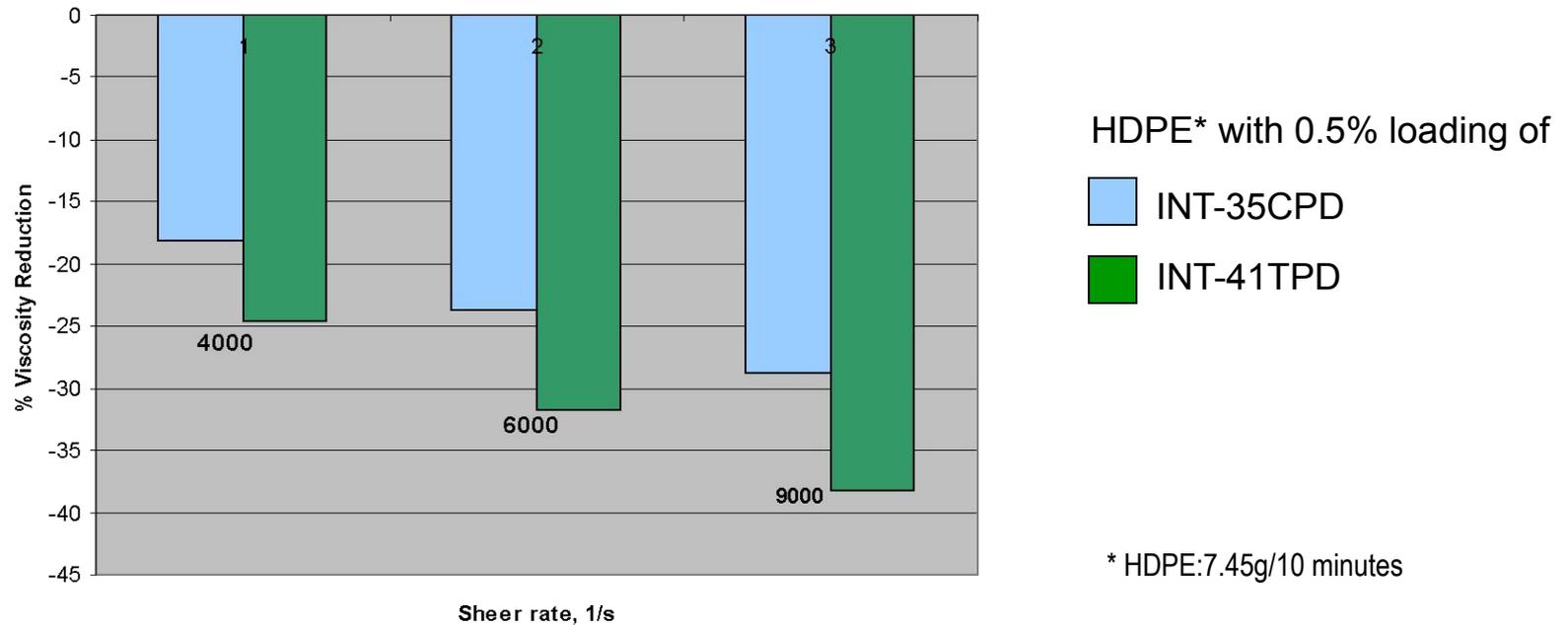
Also...Energy Savings



INT-41TPD

Impact on Viscosity/Flow in HDPE

HDPE* with 0.5% loading of	% of Viscosity Change at Different Shear Rates		
	4000 1/s	6000 1/s	9000 1/s
INT-41TPD	-24.65	-31.80	-38.29



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