

CELANESE COPOLYMERS STAY STRONGER LONGER THAN HOMOPOLYMERS



ADVANTAGES OF COPOLYMER VS. HOMOPOLYMER

Superior Long-Term Performance

- Creep resistance
- Strength retention
- Fatigue endurance
- UV color stability

Thermal Stability And Degredation

- Increase service life
- Inherent to copolymer

Easier To Process

- Lower melt point
- Low melt viscosity
- Fast cycling
- Copolymer: 190°C till 230°C
- Homopolymer: 210°C till 220°C

Chemical Resistance (pH Range)

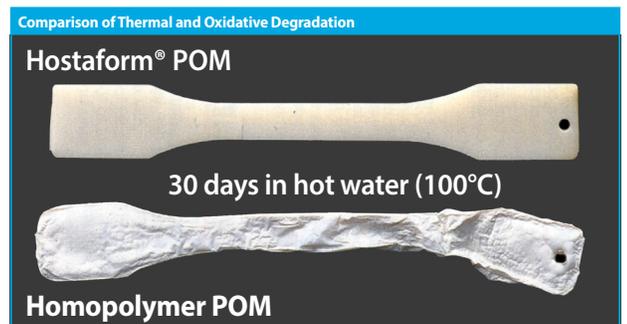
- Broader pH range
- Higher fuel resistance

CELANESE POLYMERS ARE BUILT TO LAST

Comparison of a Homopolymer vs. Copolymer		
Property	Homopolymer	Copolymer
Thermal stability/ Heat aging	0	+ Superior short term
Hot water resistance	(-)	+ Superior short term
Alkaline resistance	(-) pH 4-9	+ Superior pH 4-14
Acid resistance	(-)	(-)
Stiffness	+ Superior short term	+ Superior long term
Impact strength	+ Superior short term	+ Superior long term
UV weatherability	(-)	+ Superior long term
Fuel stability	(-)	+ Superior long term
Weld line strength for IM grades	(-)	+ Superior

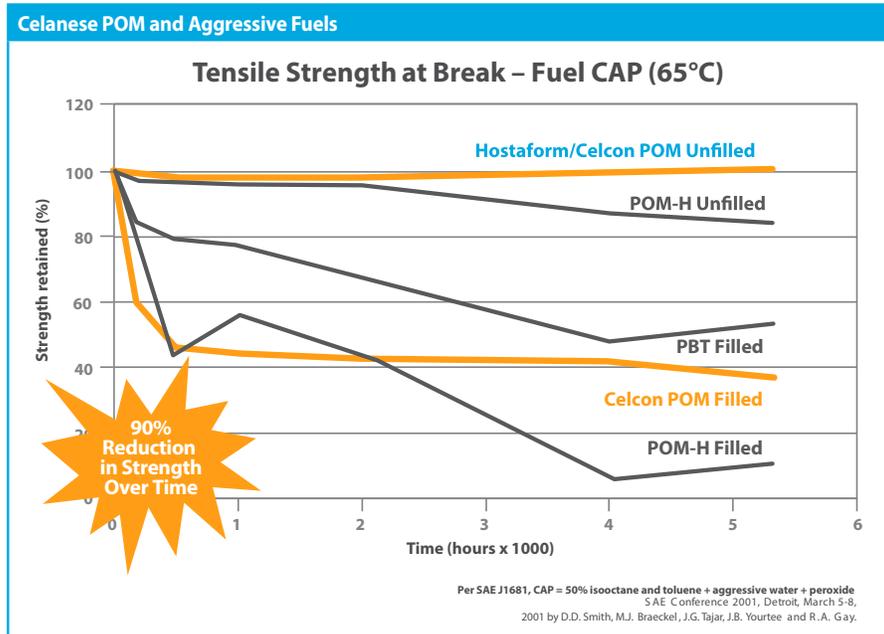
COPOLYMER MATERIAL CHARACTERISTICS

- Tough in cold environments (to -40°C)
- High strength and stiffness
- Easy colorization
- Good heat distortion temperature (to +100°C)
- Very good slip/wear properties
- Good chemical resistance, e.g., to fuels, solvents, strong alkalis
- Excellent resilience
- Low moisture absorption
- Resistant to stress cracking



CELANESE COPOLYMERS STAY STRONGER LONGER THAN HOMOPOLYMERS

Stands Up to Petroleum-Based Lubricants



ENGINEERED MATERIALS

celanese.com/
engineered-materials

CONTACT INFORMATION

Americas

8040 Dixie Highway
Florence, KY 41042 USA

Product Information Service

t: +1-800-833-4882

t: +1-859-372-3244

Customer Service

t: +1-800-526-4960

t: +1-859-372-3214

e: info-engineeredmaterials-am@celanese.com

Europe

Am Unisys-Park 1
65843 Sulzbach, Germany

Europe

Am Unisys-Park 1
65843 Sulzbach, Germany

Asia

4560 Jinke Road, Zhang Jiang Hi Tech Park
Shanghai 201203 PRC

Customer Service

t: +86 21 3861 9266

f: +86 21 3861 9599

e: info-engineeredmaterials-asia@celanese.com

Thermal Stability Test Example Barrel Purge Study

1 hour heat soak @ 205°C



1 Hour Heat Soak
Hostaform® S 9364 Purge



"Normal S 9364" Barrel Purge



1 Hour Heat Soak
Homopolymer Purge

Hostaform® S 9364

- Superior Inherent thermal stability
- Slight yellowing occurred
- 1 barrel purge cleared material

Homopolymer

- Poor thermal instability
- Significant polymer degradation
- Sticky residue – hard to remove

Summary: Hostaform Copolymer Resins have Superior Process Robustness. Allows for:

- Use of regrind
- Hot-runner systems
- Copolymers Offers Broader Processing Window

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