Anti-scratch additives for Automotive Applications

CRODA
Polymer Additives

Introduction

This presentation outlines some of the results observed using Croda's range of anti-scratch additives.

To receive the full presentation containing methodology, recommended addition levels and quantified results, please contact us at:

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Current anti-scratch products

There are currently a number of anti-scratch additives available on the market.

Product Family	Key strength	Potential weakness
Traditional amides	Low dose rate Cost effective	Visible bloom Surface stickiness
Silicones	Long lasting	High dose rates Expensive
PE waxes	Smoothness Gloss	Greasy at the surface
Functionalised polymers	Lowered surface roughness Change mechanical properties	Expensive Difficult to dose Change mechanical properties

Additives for anti-scratch improvement

Our recommended additives are:

Incroslip SL
Excellent anti-scratch, long-term stability, low visible bloom, good organoleptics

Incroslip G
Excellent anti-scratch in hPP, good mold release

IncroMold K
Excellent anti-scratch in cPP, reduced scratch whiteness

The level of scratch resistance given can be dependant on polymer, formulation and application

Incroslip SL

Incroslip SL shows an improvement in scratch resistance properties along with:

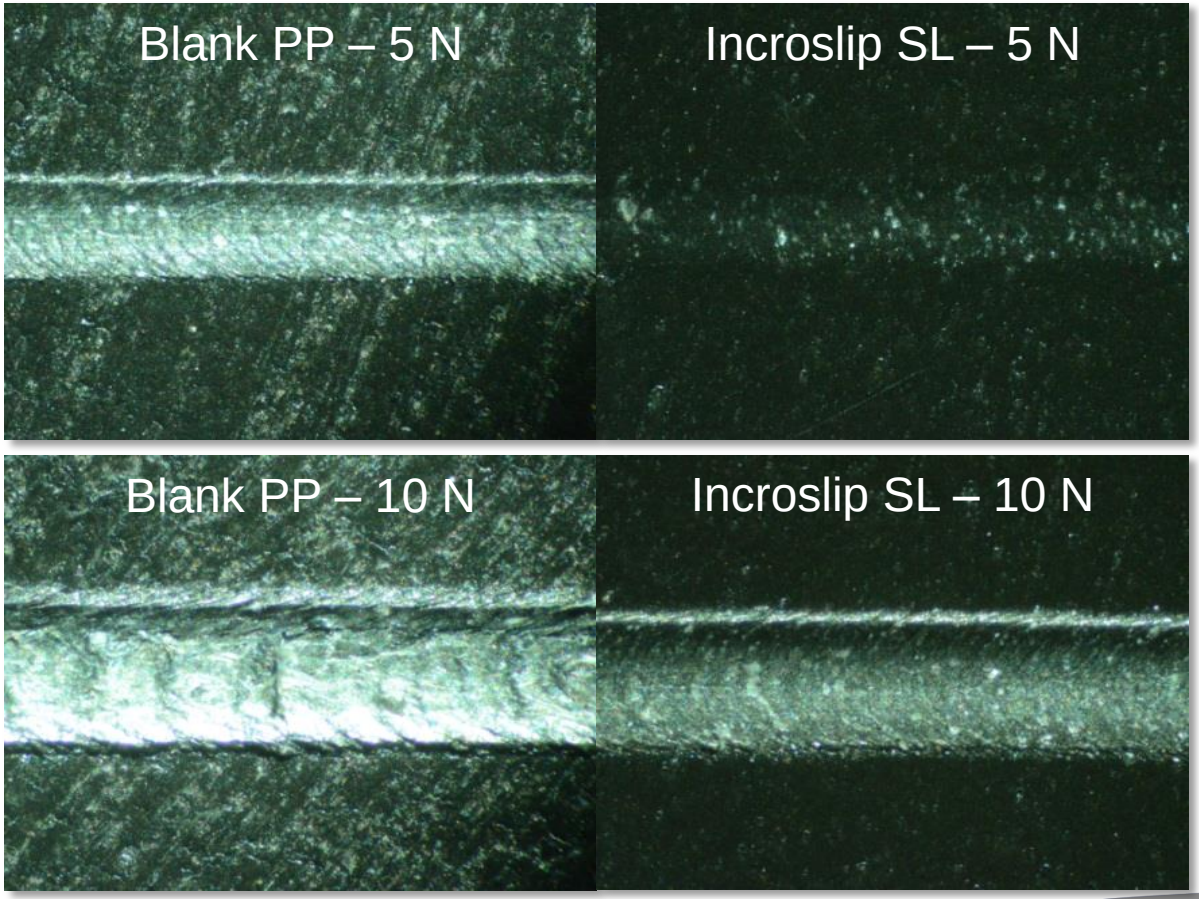
- Excellent oxidative stability
- Low visible bloom
- Long-term slip performance
- Maintains gloss
- Excellent Organoleptic properties

This product is recommended for applications where high stability and long-term performance is required such as parts which have long-term exposure to UV light.

e.g. car interiors, dashboards, etc.

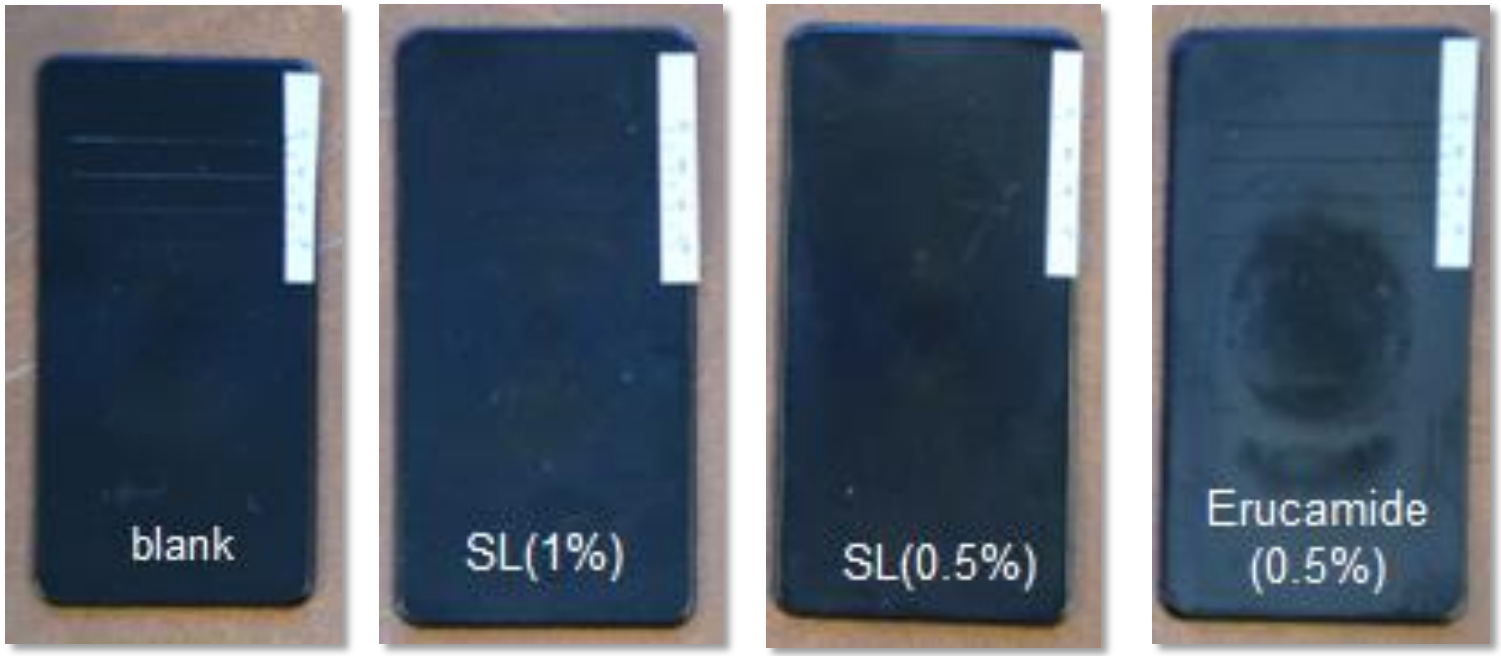
Incroslip SL – Scratch width in cPP

Incroslip SL reduces scratch width in PP impact copolymer.



Incroslip SL – Reduced visible bloom

Incroslip SL reduces visible bloom in PP impact copolymer after exposure to UV light.

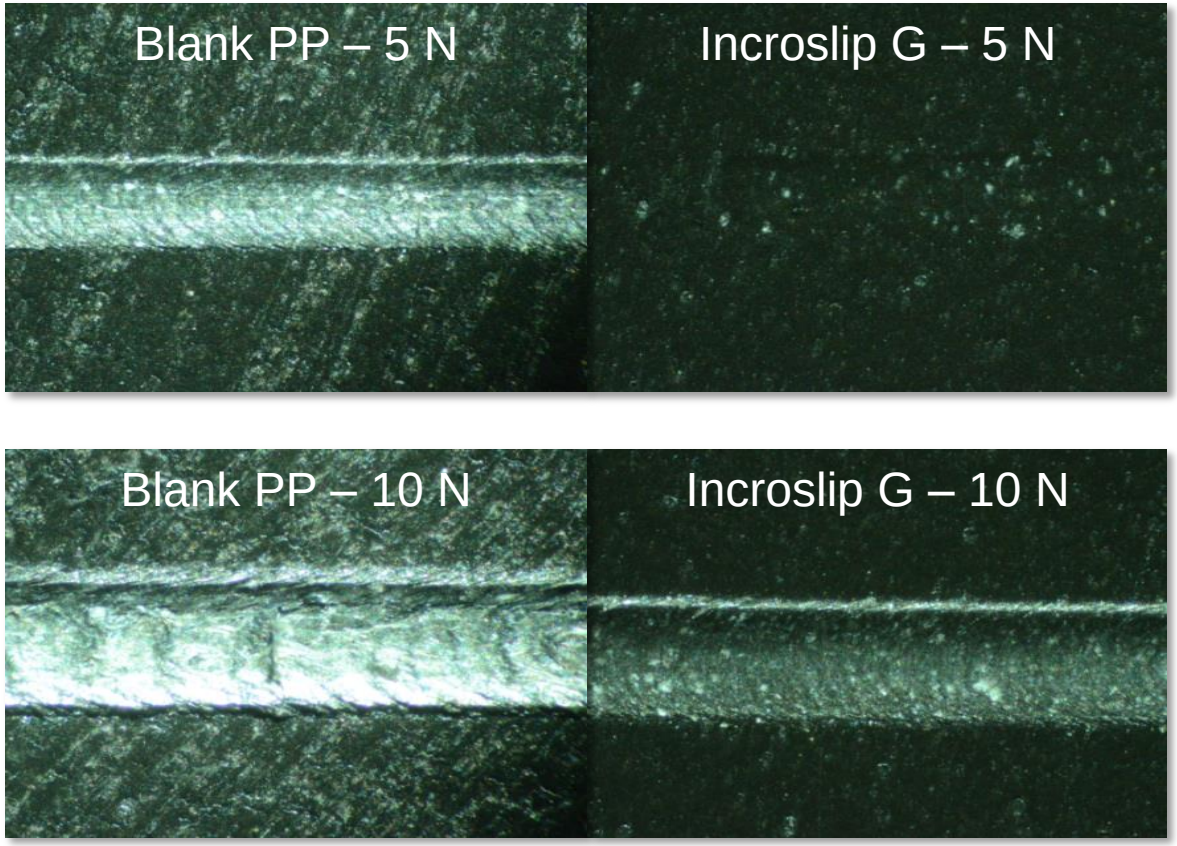


Incroslip G

- Incroslip G demonstrates excellent scratch resistant properties in hPP
- Excellent mold release
- Recommended in applications where scratch resistance and mold release are required – particular in hPP parts

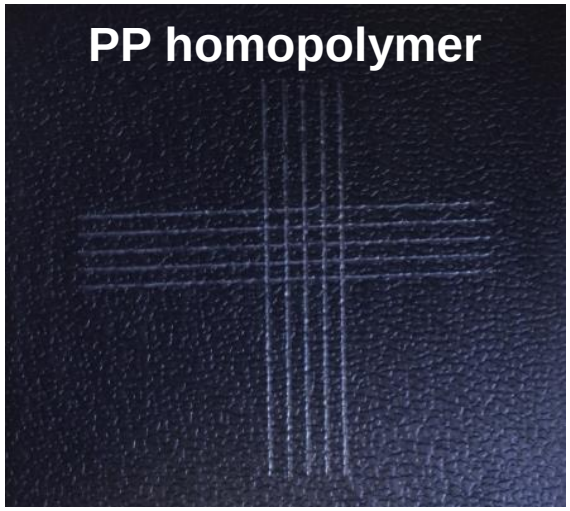
Incroslip G – Scratch width in cPP

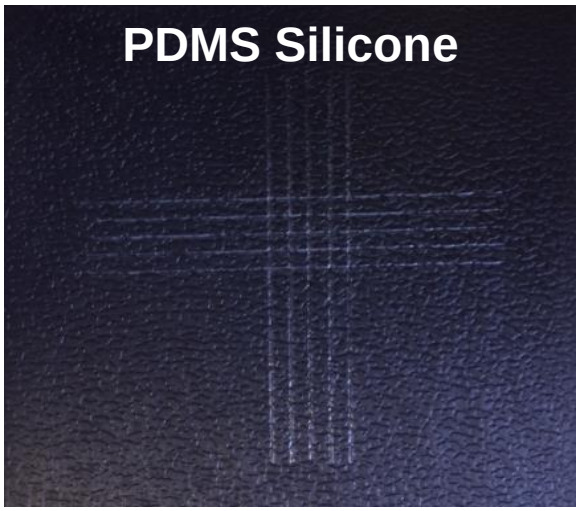
Incroslip G reduces scratch width in PP impact copolymer



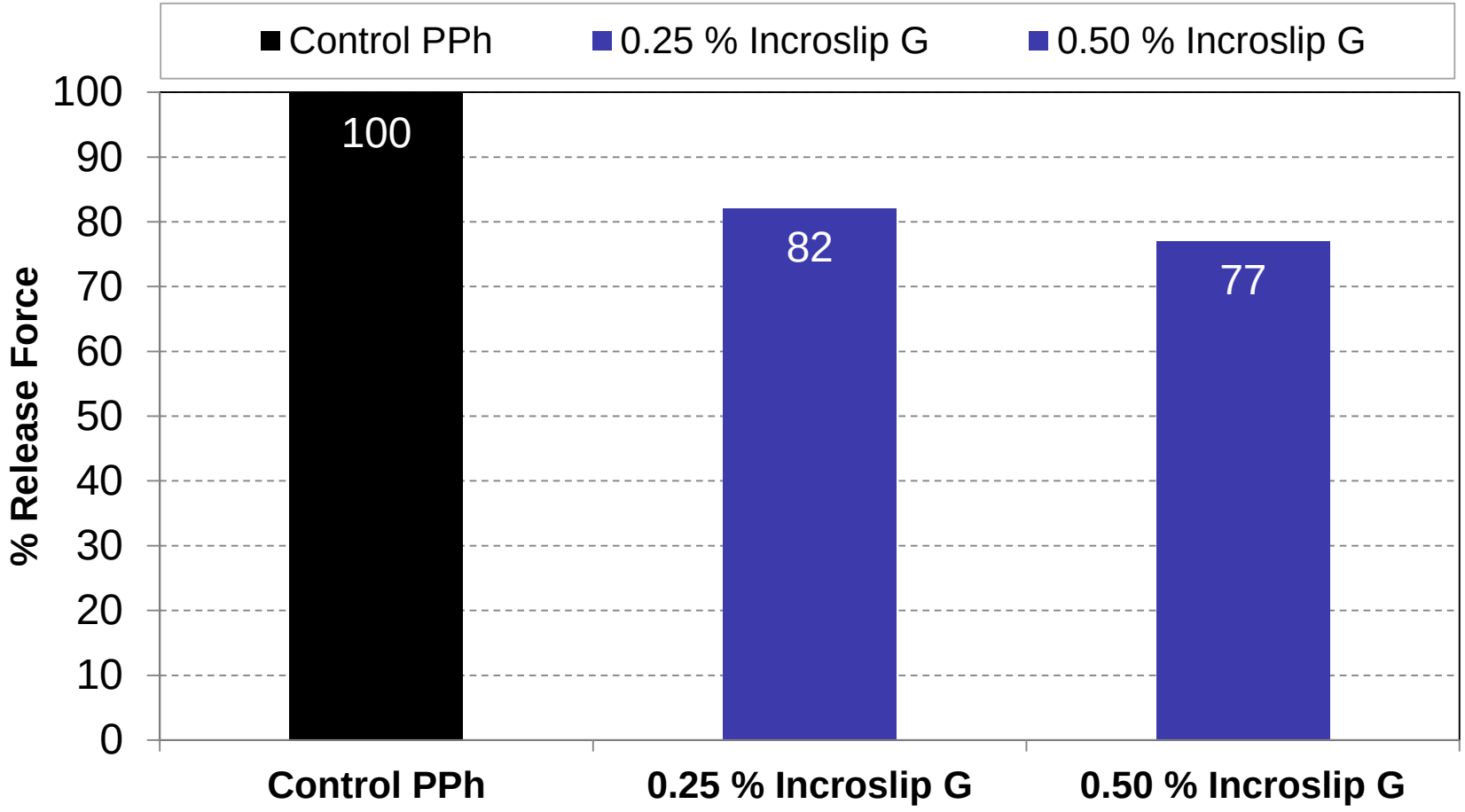
Incroslip G – Scratch whiteness in hPP

Incroslip G reduces scratch whiteness in PP homopolymer compared to PDMS silicone





Incroslip G - Mold release

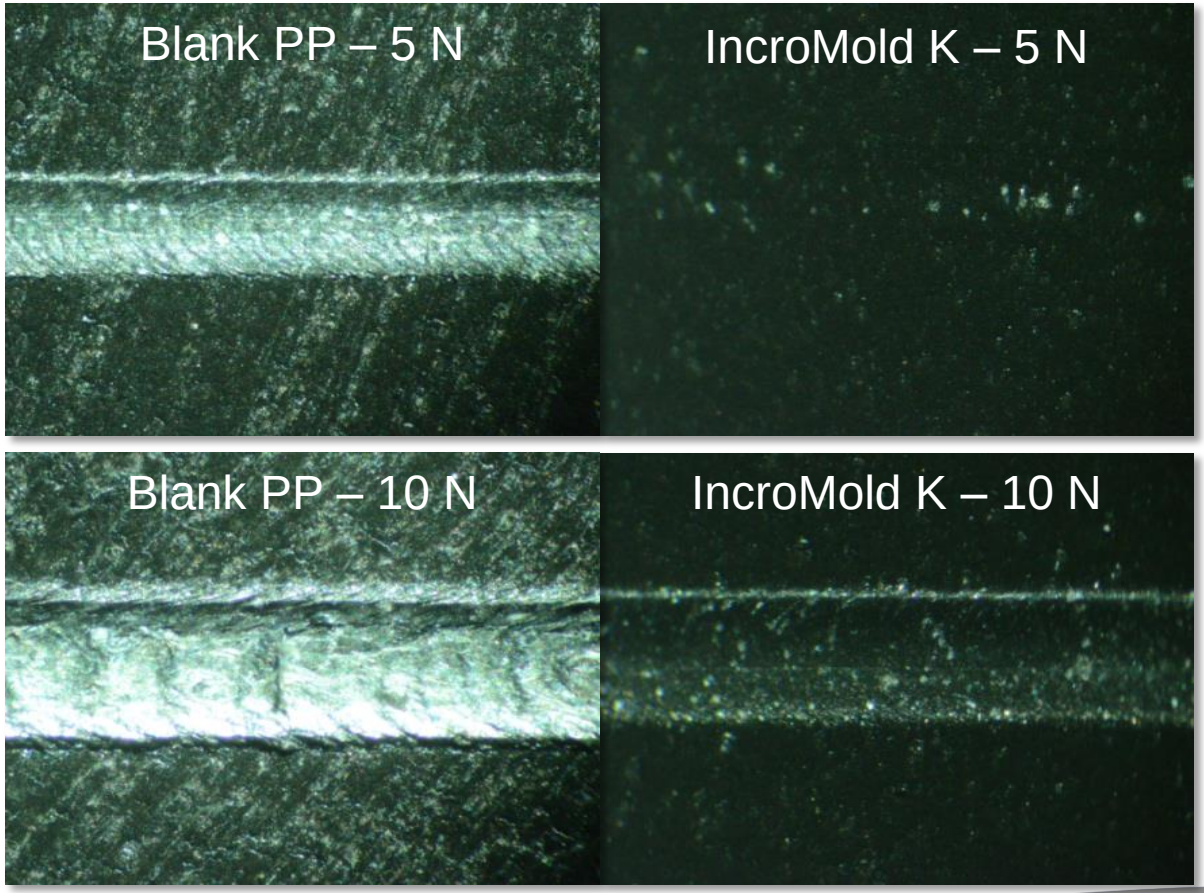


IncroMold K

- IncroMold K is a new addition to the IncroMold range
- Excellent anti-scratch properties, especially in cPP
- Reduced scratch width and scratch whitening

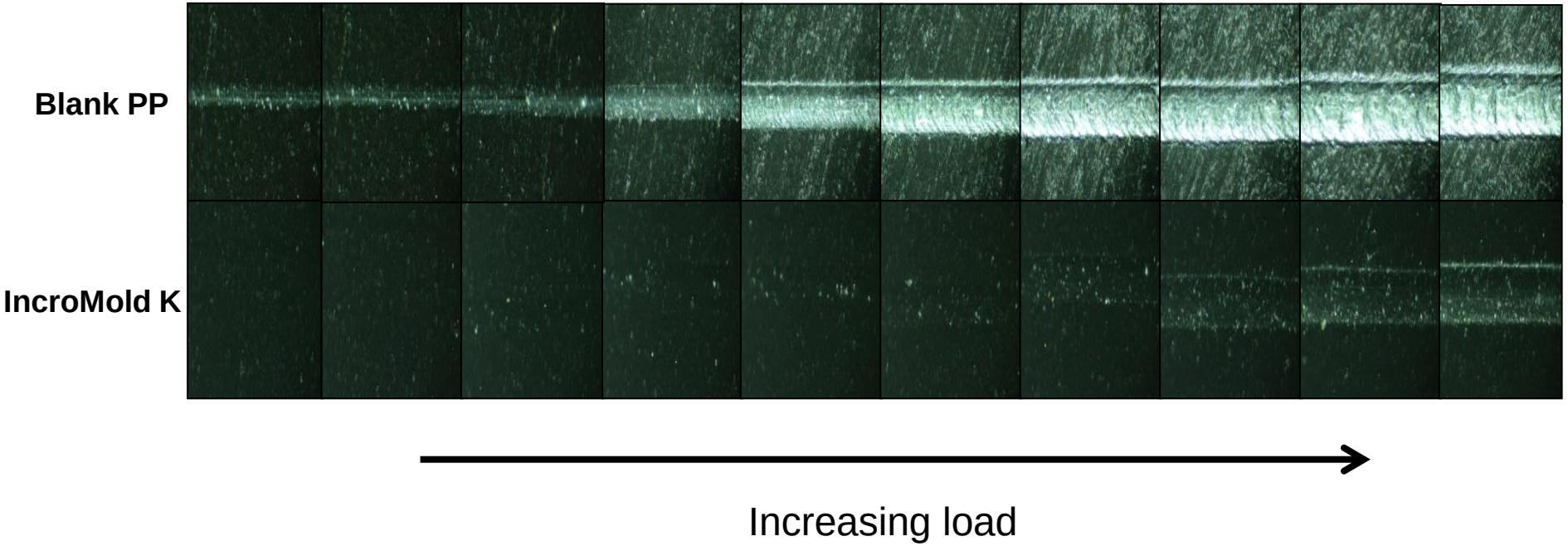
IncroMold K – Scratch width in cPP

IncroMold K reduces scratch width in PP impact copolymer



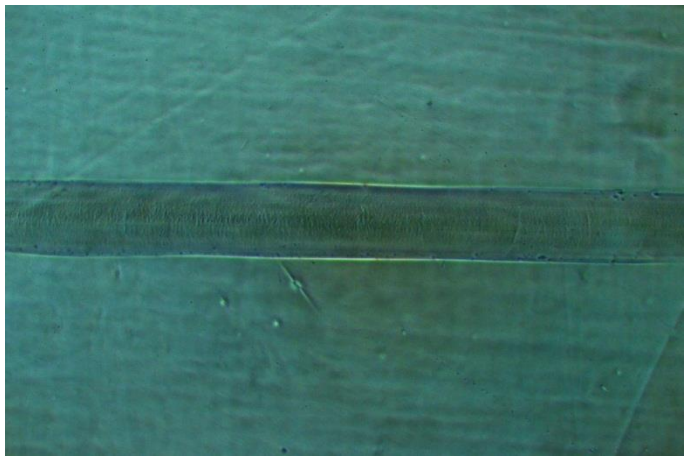
IncroMold K – Scratch whiteness

IncroMold K reduces scratch whiteness in PP impact copolymer



Anti-scratch in PMMA

IncroMax PS demonstrates excellent anti-scratch performance in PMMA and has no negative affect on colour or clarity of the polymer.



Blank PMMA

IncroMax PS
In PMMA

Summary

Product	Polymer
Incroslip SL	Excellent anti-scratch, long-term stability, low visible bloom
Incroslip G	Excellent anti-scratch and mold release in hPP
IncroMold K	Excellent anti-scratch and reduced scratch whiteness in cPP
Atmer 7650	Excellent anti-scratch and mold release in PC
IncroMax PS	Excellent anti-scratch in PMMA and styrenics

However…

- Differences in formulations and overall requirements from the additive may mean other additives are more suitable
- Croda can help improve processing and appearance of plastics used in automotive applications
- We are happy to work on customer projects to find the best additive for you

For more information on this range of additives or for anti-scratch solutions in other polymers, please contact us at:

www.crodapolymeradditives.com

Pa-europe@croda.com

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