Incroslip™ SL

The ultimate in high slip and stability

Reasons to buy

- High slip performance
- Excellent organoleptic properties
- Low visible bloom and scratch resistance

CRODA
Polymer Additives

Innovation you can build on™

Incroslip™ SL

The ultimate in high slip and stability

Slip additives are required to allow easier processing and handling, however, performance needs in complex and sensitive applications increasingly demand more from an additive. Standard slip additives will break down under stressed conditions and degradation products can impact organoleptic properties such as feel, taste and odour.

As Incroslip SL is fully saturated it exhibits excellent oxidative stability and maintains high slip performance.

Key Benefits

- High and long lasting slip performance
- Low application and release torque
- Excellent organoleptics
- High oxidative stability
- Scratch and scuff protection
- Food contact compliant*
- Low visible bloom
- Enhanced mold release properties

Applications

Slip

Polymer surfaces exhibit high friction leading to problems during manufacture, such as difficulty with winding of film rolls, bag production and packaging operations. Incroslip SL can be incorporated directly into the polymer during the extrusion process, where it migrates to the surface of the polymer during cooling to lower the friction between polymer surfaces.

Incroslip SL demonstrates high slip similar to erucamide in polyolefin films at low addition levels.

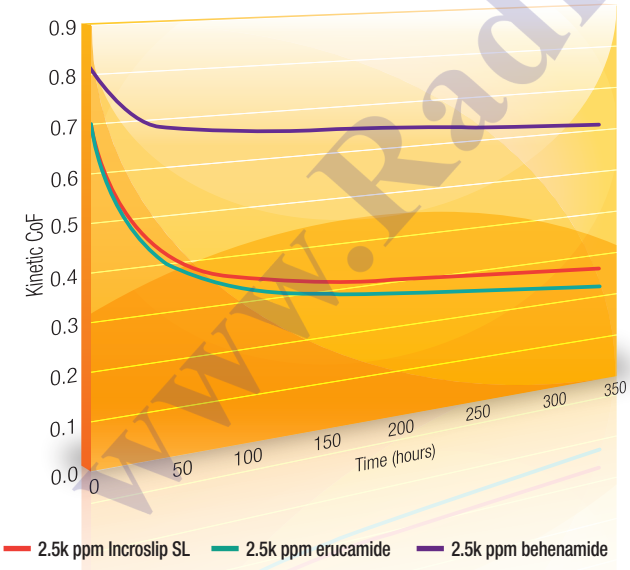

Figure 1: Kinetic CoF of Incroslip SL in PP homopolymer cast film - 50 µm film, all contain 2000 ppm synthetic silica

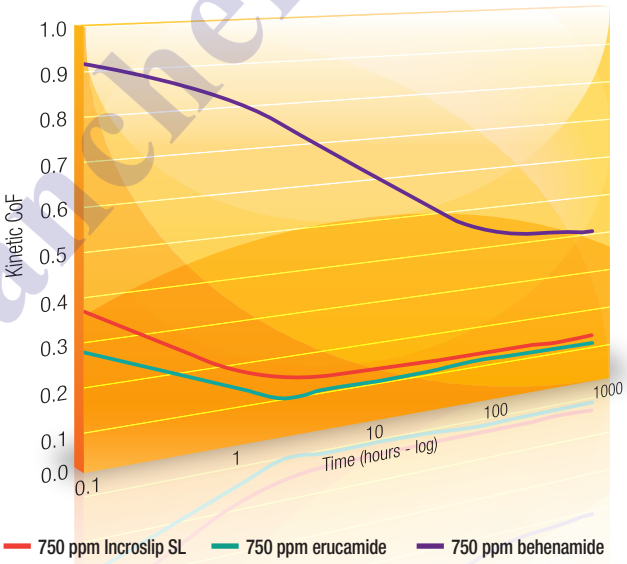

Figure 2: Kinetic CoF of Incroslip SL in LDPE blown film - 35 µm film, all contain 1000 ppm natural silica

* FDA food contact compliant. EU food contact in progress.

Oxidative Stability

Industry standard slip additives can demonstrate poor oxidative stability, leading to odour, taste and taint issues within the polymer. As Incroslip SL is a fully saturated product it is less prone to oxidation. Incroslip SL will not lose slip performance or change colour, even during the ozonation sterilisation process.

Oxidative stability is particularly important for applications where taste and odour is critical such as water bottle caps and food packaging. **In a panel study of 20 volunteers, 70% rated Incroslip SL as the lowest or least offensive odour when compared to other slip additives.**

Incroslip SL can also add value in automotive applications where the environment is particularly challenging due to potentially high interior temperatures and exposure to UV light. Unlike other common slip additives, Incroslip SL will not break down, therefore colour stability is retained and tackiness is reduced.

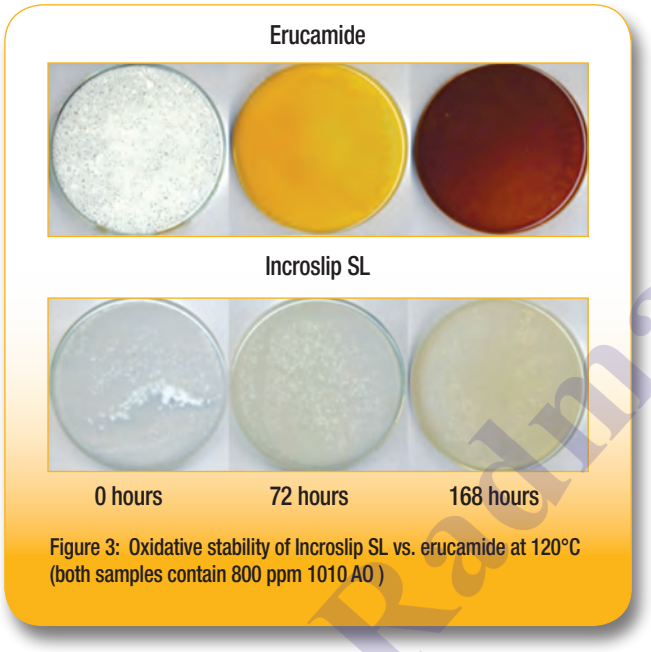

Figure 3: Oxidative stability of Incroslip SL vs. erucamide at 120°C (both samples contain 800 ppm 1010 AO)

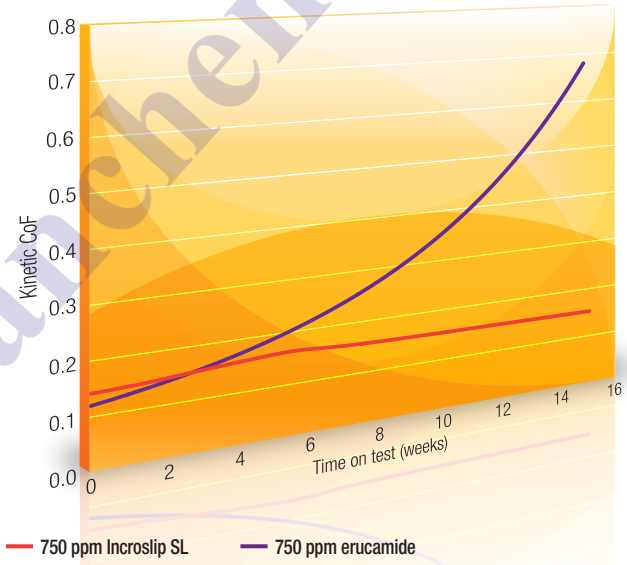

Figure 4: Comparison of kinetic CoF of Incroslip SL and erucamide in LDPE blown film after exposure to natural UV light - 35 µm film.

For reference blank LDPE has a kinetic CoF of approx. 1.5

Application and Release Torque

Slip additives allow screw caps and closures to be tightly applied to bottles while allowing easy removal in end use. Incroslip SL exhibits improved application and release torque in polypropylene closures when compared to erucamide and behenamide.

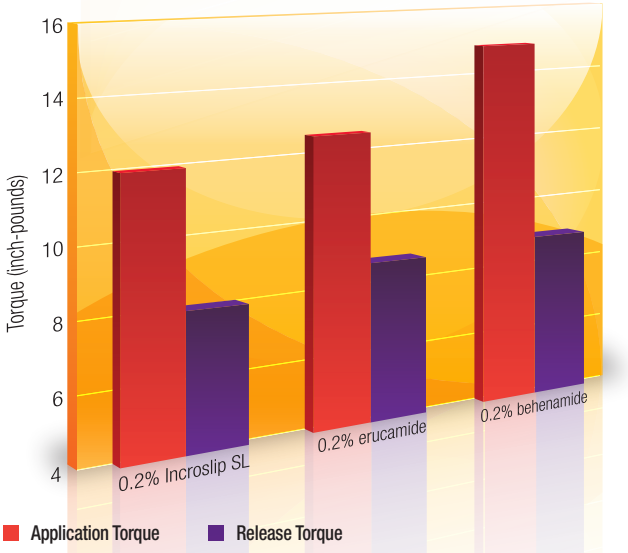

Figure 5: Application and release forces of Incroslip SL in cPP closures on PET preforms (180°application)

Anti-Scratch

Anti-scratch properties are important in automotive applications such as dashboards and door panels to improve the high quality appearance of a part.

Incroslip SL reduces the width, depth and appearance of a scratch in various polymer systems. It protects the surface of the polymer from damage by migrating to the surface and reducing friction.

Incroslip SL can greatly reduce scratching in polypropylene plaques at only 0.5% addition.

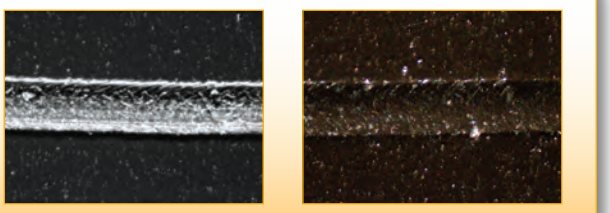

Figure 6: Scratch testing of PP automotive compound using a 10N load on 1mm ball scratch tip.

Mold Release

Incroslip SL also enhances the mold release properties and improves the quality of a molded part. The use of Incroslip SL as an internal mold release agent will eliminate the need for silicone sprays and allow for continuous production.

Visible bloom

Visible "blooming" is caused by the migration of an additive to the surface of a polymer and crystallisation of that additive at the surface. High ambient temperatures and exposure to UV light can accentuate this blooming effect.

Incroslip SL exhibits different crystal morphology to erucamide making it less visible at the surface and its saturated alkyl chains make it more resistant to change caused by exposure to UV light and heat. This combination of structure and stability gives Incroslip SL excellent low bloom properties.

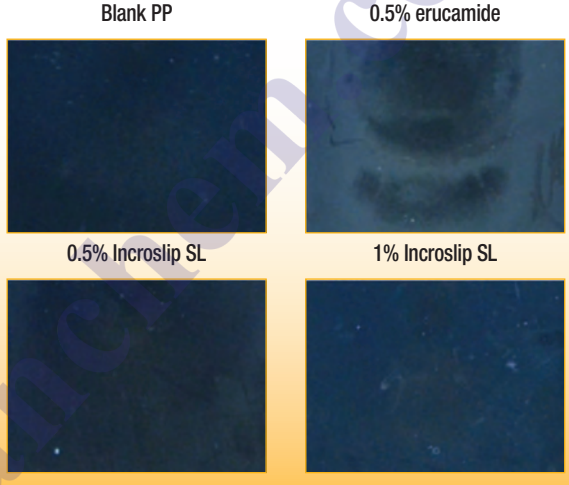

Figure 7: Comparison of visible blooming in PP automotive compound.

Questions?

To find out more about Incroslip SL please contact your nearest regional office or visit **www.crodapolymeradditives.com**

Further information

Croda sales and distribution are coordinated through an extensive worldwide network of associates and agents. For details of your local representative please contact your nearest Croda regional office.

Visit our global website at **www.crodapolymeradditives.com**

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