Additive concentrates for PE and PP film applications

EVONIK
Leading Beyond Chemistry

ADDITIVE CONCENTRATES FOR FLEXIBLE PACKAGING APPLICATIONS

FORMULATE VALUABLE AND SUSTAINABLE FILM & SHEET APPLICATIONS

Our highly loaded additive concentrates are designed to enhance a wide range of film and sheet applications, providing essential functionalities to meet the diverse requirements of various end uses.

These include food, non-food and electronic packaging, greenhouse and agricultural films, bubble films, waste bags made from recycled materials, metallized films, cover films, synthetic paper and more.

CONCENTRATES FOR ENHANCED AND SIMPLIFIED MANUFACTURING

Unlocking Efficiency and Sustainability Across Diverse Film & Sheet Solutions

At Evonik, we specialize in producing concentrates that allow you to increase the efficiency of your processes.
Our concentrates are easy to handle and process, while minimizing logistics and storage challenges.

Unlike masterbatches with comparably low amounts of additives, our concentrates boost the concentration of additives and lower the polymer content, providing manufacturers with a distinct advantage in efficiency and performance.

As a pioneer in concentrate technology, we focus on supplying easy-to-handle versions of well-known chemistries and applications to masterbatchers and converters.
Our products are designed to minimize foreign polymer content, delivering significant benefits including improved efficiency and easier material handling.

Explore our brochure to discover how our concentrates can elevate your manufacturing processes and meet the evolving demands of our industry.

EVONIK CONCENTRATES TO ENHANCE PROCESSING AND PERFORMANCE NEEDS IN FLEXIBLE PACKAGING APPLICATIONS

ANTISTATIC PERFORMANCE
during processing and for applications

ANTIFOG PERFORMANCE
cold and hot fog application needs

SLIP ENHANCEMENT / COF REDUCTION

ANTIBLOCK PERFORMANCE

POLYMER PROCESSING AIDS (PPA)
for increased throughput, shark skin and die drool prevention

FOAM CELL STABILISATION

MALODOR ABSORBER
for high use levels of PIR and PCR

COMPATIBILIZER
for high PIR and PCR percentages

Please find further information about this solution from Evonik in this brochure.
Evonik is also supplier of this solution. Please visit our customer portal intoPERFORMANCE for more information: https://intoperformance.evonik.com/


Aderendhülsen, isoliert
Cable end sleeves, insulated
Embouts, isolés
Drasdeindhulzen, geisoleerd
Stück : 100
Artikelnr./Art.No

ANTISTATIC CONCENTRATES

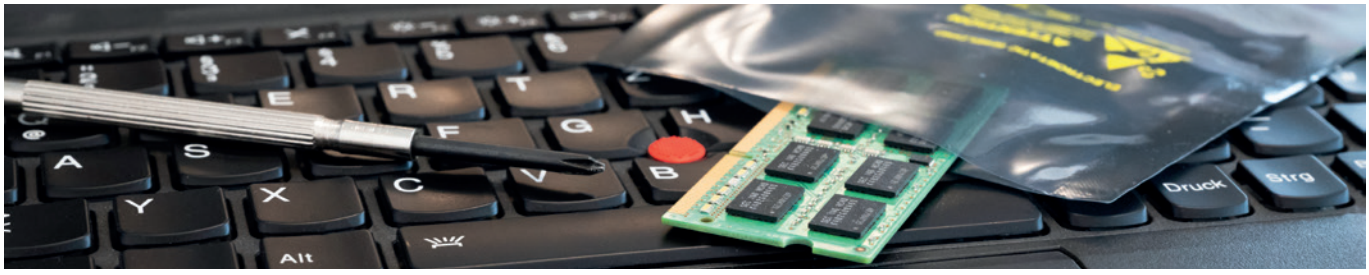
For various film applications based on LDPE/LLDPE and PP (including homopolymers, random copolymers and impact copolymers), antistatic agents are essential. These agents ensure that the production and conversion processes result in dust-free, clean and visually appealing packaging materials.

Our ACCUREL® GA and ACCUREL® SF products are available in a wide range of additive classes, tailored to meet diverse needs.

Key features include:

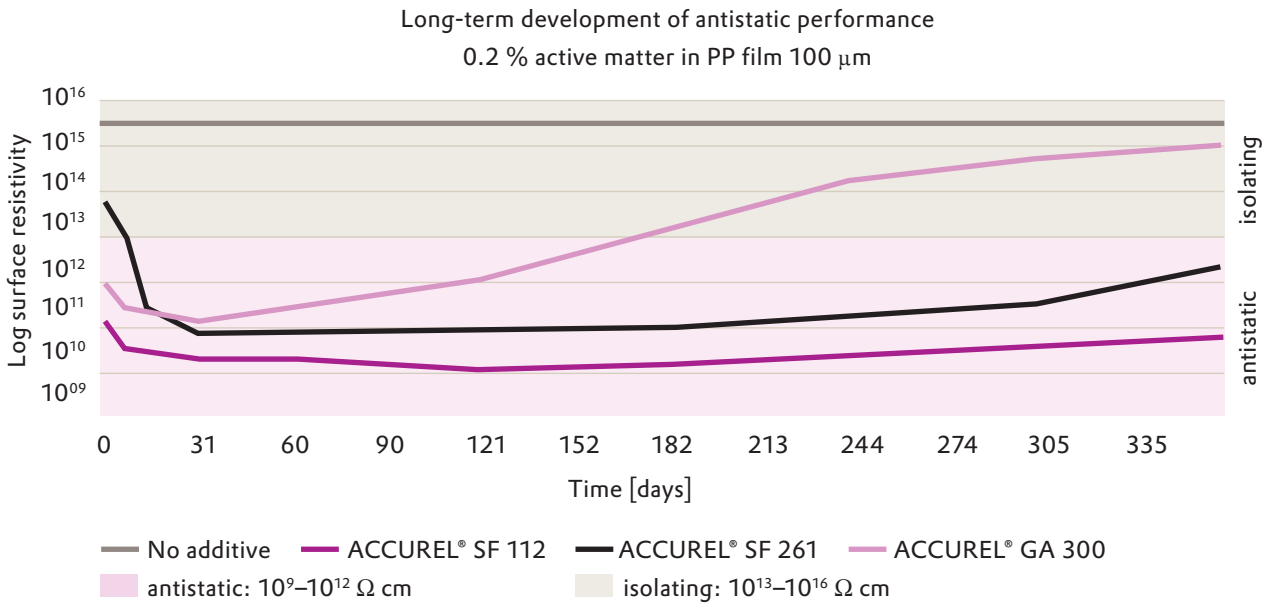
- **Versatility:** Suitable for food contact compliant applications globally, ensuring safety and compliance.
- **Specialized Formulations:** Amine and amide-free products available for sensitive electronic applications.
- **Performance Range:** Products offer short, mid, and long-term antistatic performance, though they are typically not intended for permanent antistatic or conductive applications.

Evonik's antistatic concentrates are designed to meet the highest standards of quality and performance, ensuring your packaging materials maintain their pristine appearance and functionality.



Antistatic performance of ACCUREL® grades

Case: ACCUREL® SF 112, SF 261 and GA 300 in a PP film



ACCUREL® GA 300 can be used for short term applications like single use packaging whereas ACCUREL® SF 112 and SF 261 show a great long-term effect even after one year.

PRODUCT	CARRIER POLYMER	DOSAGE RECOMMENDATION	DESCRIPTION
ACCUREL® GA 300	PP-H	0.5–1.5 %	• 60 % vegetable-based glycerol monostearate concentrate for antistatic properties in various food contact applications or anywhere else where ethoxylated amine technology should be avoided, e.g. electronic packaging • Dosages of 1.5–2.5 % result in increased hydrophilicity if required
ACCUREL® GA 309	PP-H	1.0–1.5 %	• 50 % of glycerol monobehenate concentrate recommended for PP films with antistatic performance • Higher temperature resistance than GMS based masterbatches allow higher processing temperature for BOPP or CPP processing with less degradation
ACCUREL® GA 338	PP-H	0.5–1.5 %	• 60 % monoglyceride concentrate for antistatic performance in PP films • Higher temperature resistance than GMS based masterbatches
ACCUREL® SF 266	PP-H	0.2–0.5 %	• 75 % vegetable based amine ethoxylate concentrate • Long-term antistatic performance while also providing slip • High thermal stability during processing
ACCUREL® SF 268	PP-H	0.2–0.5 %	• 75 % concentrate of an amine ethoxylate • Long-term antistatic performance of up to 1 year achievable • Antistatic performance with high thermal stability, no yellowing, even suitable for transparent films
ACCUREL® SF 273	PP-H	0.5–1.5 %	• 65 % concentrate containing a combination of additives for extended antistatic performance using vegetable-based actives • Provides short and long term antistatic performance while also providing slip
ACCUREL® SF 284	PP-H	0.2–1.0 %	• 68 % concentrate based on a combination of a tertiary amine and glycerol monostearate • Short and long-term antistatic performance • Suitable for transparent films, slip improvement at higher dosage levels can be observed
ACCUREL® GA 372	LLDPE	0.2–1.5 %	• 60 % vegetable-based polyglycerol ester concentrate for long-term antistatic performance and high thermal stability of PE films • For high relative humidity >50 %, use 0.2–0.8 %. For lower relative humidity <50 %, use 0.8–1.4 % • 1.0–3.0 % result in improved antifog behavior
ACCUREL® SF 261	LLDPE	0.2–0.3 %	• 70 % concentrate of an ethoxylated amine • Antistatic performance with high thermal stability, no yellowing, suitable for transparent films • Long-term antistatic technology considered as semi-permanent performance
ACCUREL® SF 112	LDPE	0.2–0.5 %	• 60 % concentrate of long-term and short-term antistatic agent (combination of glycerol monostearate + ethoxylated amine)
ACCUREL® GA 301	LDPE	0.5–1.5 %	• 50 % vegetable-based glycerol monostearate concentrate for PE films with antistatic requirements • May be used as a foam cell stabilizer at higher dosage levels of 1.5–2.5 %
ACCUREL® GA 322	LDPE	1.0–1.5 %	• 50 % concentrate of glycerol monobehenate recommended for PE films with antistatic performance • Higher temperature resistance than GMS based masterbatches allow higher processing temperatures in PE film manufacturing

ANTIFOG CONCENTRATES

Our highly loaded antifog concentrates are designed to prevent the formation of water droplets on the surface of transparent films, which can occur due to temperature differences.

This feature is crucial for maintaining clarity and transparency of food packaging. The antifog effect is created by spreading of water droplets into a thin uniform water layer.

In food packaging applications, antifog additives ensure that the packaging remains visually appealing and functional. Depending on the specific use case, these additives can provide both hot and cold fog performance, catering to various food storage conditions.

ACCUREL® AF and ACCUREL® GA grades offer reliable antifog performance while complying with broad food contact regulations globally. Additionally, we provide products without animal derived ingredients to meet specific market demands and regulatory requirements.
Evonik's antifog concentrates enhance the overall consumer experience by ensuring that packaging remains clear and attractive, even under varying temperature conditions.

Cold fog prevention by Evonik Additives

Case Study: ACCUREL® AF 401 and GA 320 in LLDPE

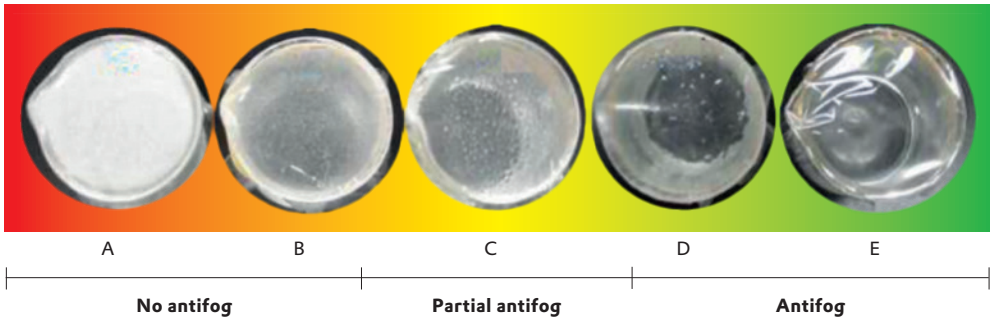
	Minutes		Hours			Days				
Additive concentration	**5**	**30**	**1**	**3**	**5**	**1**	**2**	**3**	**4**	**7**
Without additive	A	A	A	A	A	A	A	A	B	C
2.0 % ACCUREL® AF 401	A	B	B	B	C	C	D	D	D	E
5.0 % ACCUREL® AF 401	A	B	B	B	C	C	D	D	D	E
0.5 % ACCUREL® GA 320	E	C	C	C	C	D	D	D	D	E
1.0 % ACCUREL® GA 320	E	D	D	D	D	D	E	E	E	E
2.0 % Reference AF	E	D	D	D	D	D	E	E	E	E

ACCUREL® GA 320 shows outstanding performance in the cold fog test, even at lowest dosages. ACCUREL® AF 401 is more beneficial for hot fog applications.

Antifog performance is rated based on the appearance of water droplets on the film with ratings ranging from A (no antifog effect) to E (very good antifog effect).

Antifog performance is rated in dependence on the appearance of water droplets on the film

(A=no antifog; E= strong antifog performance)



PRODUCT	CARRIER POLYMER	DOSAGE RECOMMENDATION	DESCRIPTION
ACCUREL® AF 701	PP-H	0.8–2.0 %	• 75 % vegetable-based partially esterified amine and glycerol monostearate • Combination of long-lasting antistatic and antifog additive • Effective as both hot and cold antifog
ACCUREL® AF 730	PP-H	1.0–2.0 %	• 60 % ethoxylated alkylamine ester used as a low-smoking antifog agent in cast and blown film PP applications • Effective as both hot and cold antifog
ACCUREL® GA 314	PP-C	1.5–3.0 %	• 40 % vegetable-based glycerol monooleate concentrate • Cold antifog agent for food packaging films
ACCUREL® AF 401	LDPE	2.0–5.0 %	• 40 % vegetable-based sorbitan monostearate concentrate • Improved film transparency and reduced water dripping • Suitable in food packaging applications and for agricultural films
ACCUREL® AF 430	LDPE	1.0–2.0 %	• 60 % ethoxylated alkylamine ester for manufacturing of cast films or paper lamination • High thermal stability with exceptionally low smoke formation at the die
ACCUREL® GA 320	LLDPE	0.3–0.8 %	• 70 % concentrate of vegetable-based glycerol monooleate • Provides hot and cold fog properties in PE film application

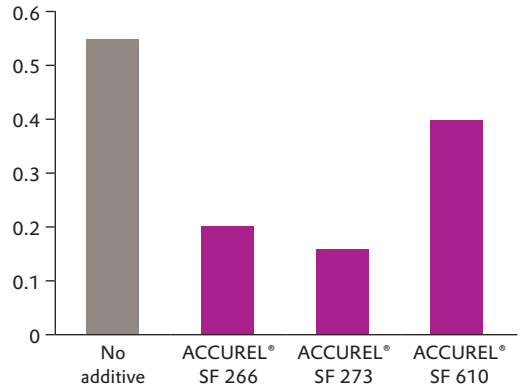
SLIP ADDITIVE CONCENTRATES

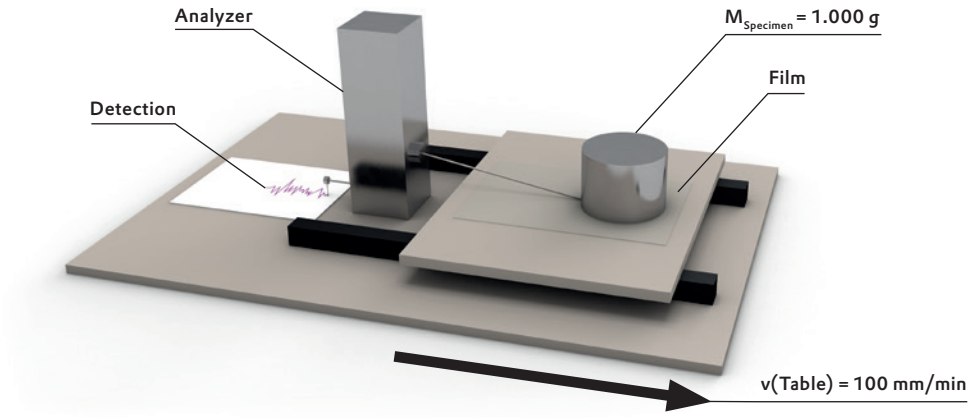
The reduction of slip, or a reduced coefficient of friction (COF), is crucial in the manufacturing of films, especially when running production at high speeds. A lower COF is often also important in end applications to ensure smooth handling and performance.

Evonik's ACCUREL® SI and ACCUREL® SF concentrates are based on various additives classes to meet diverse needs. Erucamide and silicone oil are used for rapid slip reduction, providing immediate benefits during production. For formulators seeking to preserve printing and sealing properties silicone rubber and organomodified siloxanes are excellent choices, ensuring the functionality of film materials remain intact.
Our slip additive concentrates ensure optimal performance both during manufacturing and in the final application, enhancing the efficiency and quality of your film products.

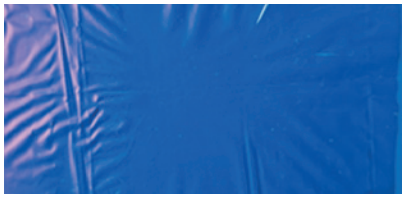
COF [μk] after 8 weeks for PP film
Treated side to metal (T/M)

PRODUCT	DOSAGE	T/M
Without additive	–	0.55 μk
ACCUREL® SF 266	0.5 %	0.20 μk
ACCUREL® SF 273	0.7 %	0.16 μk
ACCUREL® SF 610	0.5 %	0.40 μk

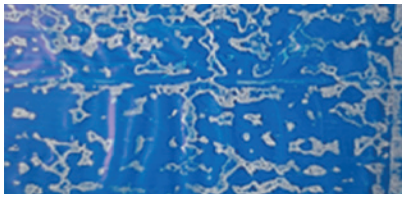




Excellent printability of BOPP film when silicone rubber or OMS technology is used vs printing failures using silicone oil as slip agent

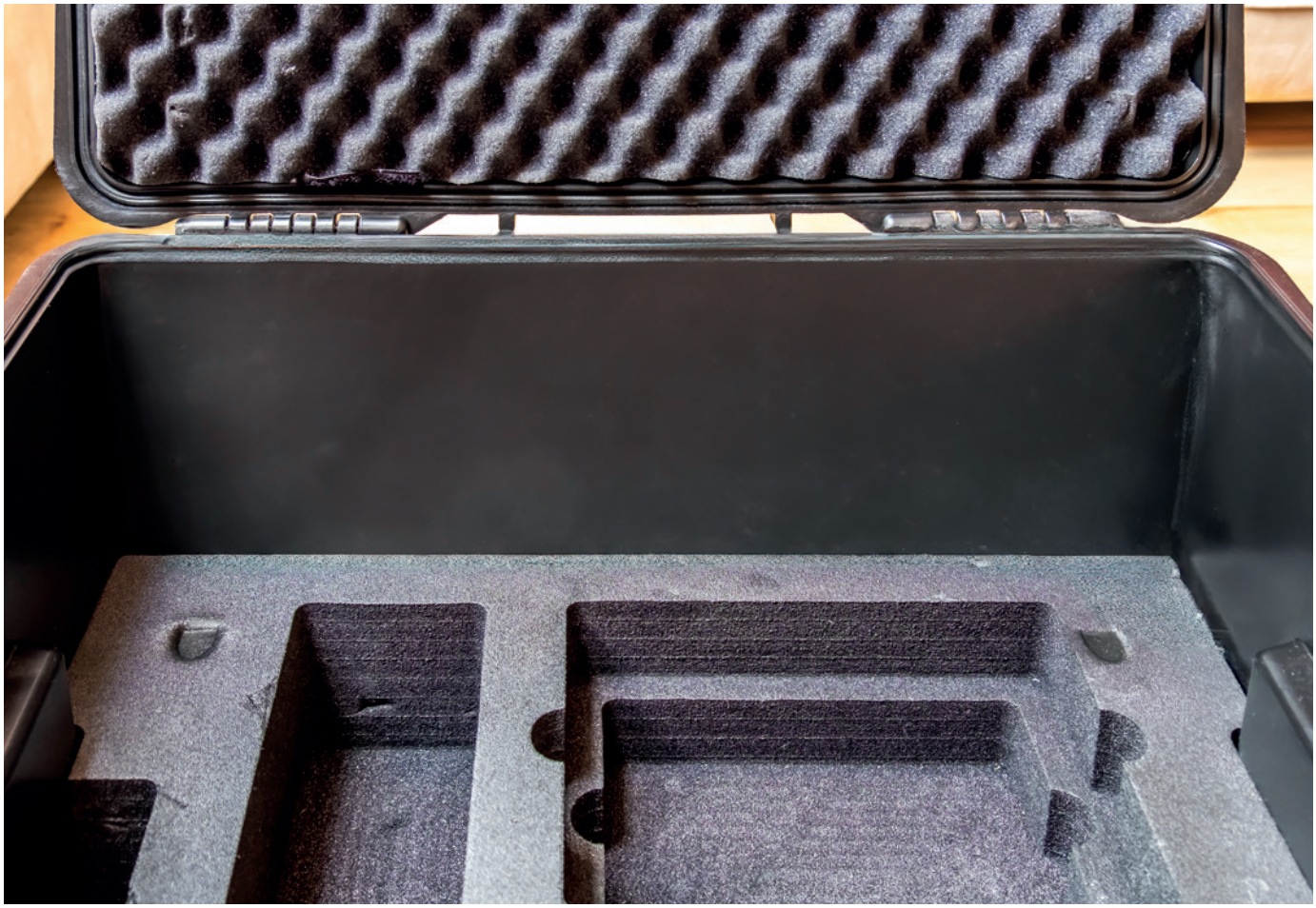


1.0 % ACCUREL® SI 802
or ACCUREL® SI 761



1.5 % Silicon oil masterbatch

PRODUCT	CARRIER POLYMER	DOSAGE RECOMMENDATION	DESCRIPTION
ACCUREL® SI 761	PP-H	0.4–1.5 %	• 50 % silicone concentrate for improved slip performance in PP based films • Typically used in skin layers
ACCUREL® SI 707	PP-C	0.6–2.0 %	• 30 % silicone concentrate for enhanced slip properties in PP films • Especially suitable for transparent tobacco films with high gloss requirements and strong lowering of COF, not recommended for printed films
ACCUREL® SF 610	PP-H	0.2–0.5 %	• 40 % high purity erucamide concentrate for fast slip improvement in PP films using < 0.5 % whereas increased use levels of 0.7–1.5 % allow haptic surface modifications
ACCUREL® SI 802	PP-C	1.0–2.0 %	• 50 % ultra-high molecular silicone concentrate with no migration • Long-term COF reduction, printability, improved surface gloss and abrasion resistance
ACCUREL® SI 703	LDPE	0.5–1.5 %	• 20 % silicone masterbatch for improved slip performance in PE based films • Long lasting reduced COF achievable
ACCUREL® SI 726	LLDPE	0.2–0.5 %	• 70 % silicone concentrate for enhanced slip performance in PE films • Recommended for transparent applications but not for printed films
ACCUREL® SI 735	LLDPE	0.2–1.0 %	• 70 % silicone concentrate for enhancing slip in PE film applications • Fast and long-lasting reduction of COF
ACCUREL® SF 640	LDPE	0.2–0.5 %	• 40 % high purity erucamide concentrate for enhancement of slip properties in PE based film applications
ACCUREL® SI 803	HDPE	1.0–2.0 %	• 50 % ultra-high molecular silicone concentrate with no migration • Low-term COF reduction, printability, improved surface gloss and abrasion resistance



ANTIBLOCK AGENTS AND FOAM CELL STABILIZERS

In film and sheet applications, the use of antiblock additives is essential to prevent layers from sticking to each other, especially during handling by the converters. While Evonik does not offer standard masterbatches of dispersed particles, we do provide ACCUREL® SF 1760, which is suitable for use in PE and PP films.

Foamed film and sheet applications are significant in various industries. In food packaging they help to retain heat and reduce weight. They are also utilized in flooring applications to reduce noise, protect goods during transportation and for insulation purposes.

Therefore, our specific ACCUREL® GA products as detailed in the table support the development of a wide range of foamed applications.

PRODUCT	CARRIER POLYMER	DOSAGE RECOMMENDATION	DESCRIPTION
ANTIBLOCK			
ACCUREL® SF 1760	EVA	0.5–1.0 %	• 50 % concentrate of refined primary stearamide • Antiblock performance achievable in PE and PP since EVA is compatible in both resins
FOAM CELL STABILIZER			
ACCUREL® GA 301	LDPE	1.5–2.0 %	• 50 % vegetable-based glycerol monostearate concentrate used in foamed PE to reduce weight in food packaging applications or in sheets for flooring, based on a high MFR LDPE resin
ACCUREL® GA 354	LDPE	1.5–2.0 %	• 50 % vegetable-based glycerol monostearate concentrate used in foamed PE to reduce weight in food packaging applications or in sheets for flooring, based on a low MFR LDPE resin
ACCUREL® GA 303	EVA	1.0–2.0 %	• 70 % vegetable-based glycerol monostearate concentrate especially for foamed EVA at lower dosage levels • Provides antistatic performance in all kinds of polyolefin films and sheets

Europe | Middle East | Africa

Evonik Operations GmbH
Goldschmidtstraße 100
45127 Essen
Germany
Phone +49 201 173-2665
Fax +49 201 173-1990
www.evonik.com

Asia | Pacific

Evonik Specialty Chemicals Co., Ltd.
55, Chundong Road
Xinzhuang Industry Park
Shanghai, 201108
PR China
Phone +86 21 6119-1125
Fax +86 21 6119-1406

The Americas

Evonik Corporation
7801 Whitepine Road
Richmond, VA 23237
USA
Phone +1 804 727-0700
Fax +1 804 727-0855

Website

Customer portal

intoperformance.
evonik.com

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