VOELPKER

Small adds, great effects!

CEVO® wax additives for high quality engineering plastics

Plastic series | Plastic recycling series

VOELPKER – powerful, innovative, family owned

- 120 years of expertise
- manufacturer of special wax additives CEVO® / WARADUR®
- onsite R&D and production lines
- around 100 employees
- independend, family run, part of the German »Mittelstand«
- conveniently situated in central Germany
- customers in more than 50 countries worldwide

PREMIUM QUALITY

MADE IN GERMANY

| plastic series

| plastic recycling series

polish series

| coating series

| biobased series

| cosmetic + pharma series

CEVO®
Wax additives series

VOELPKER

Optimize your plastic processing!

VOELPKER | plastic series

CEVO® additives in the »plastic« series are multi-functional high performance additives with excellent dispersion properties. They can be used for:

- optimizing surface quality
- improving flow properties
- reducing friction peaks

Tailor-made waxes for the processing of recyclates

VOELPKER | plastic recycling series

These additives are specially tailored to the processing conditions of recyclates and their base polymer.

Multifunctional montan wax additives systemically interact with other additives, such as stabilizers and lubricants. The resulting additive formulation can be used to create compounds with properties almost equivalent to new plastics.

Why CEVO®?

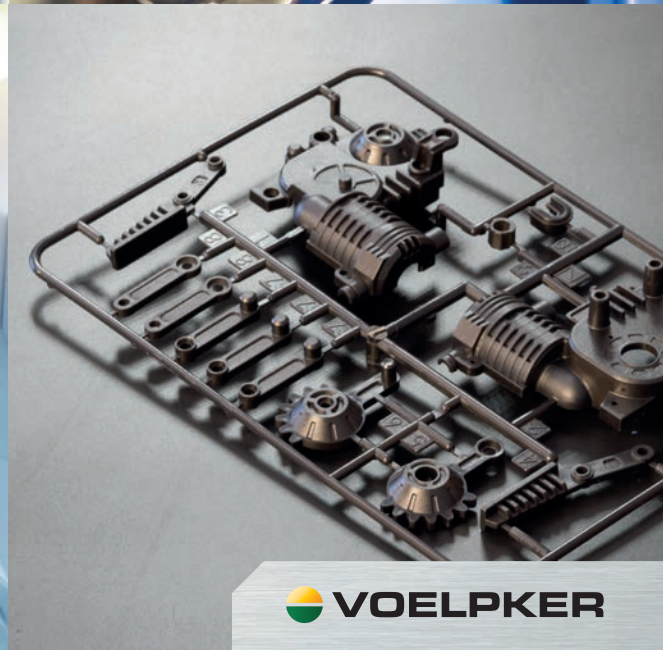
CEVO® is a range of wax additives, developed by VOELPKER to create synergies between different components.

Designed by VOELPKER for better materials and improved processes.

Application ranges

Tailor made for plastic processors with a focus on engineering plastics.

→ master batching
compounding
injection moulding
extruding

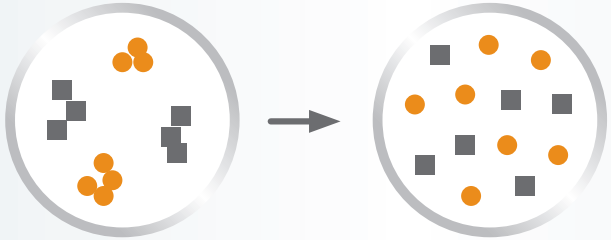


VOELPKER

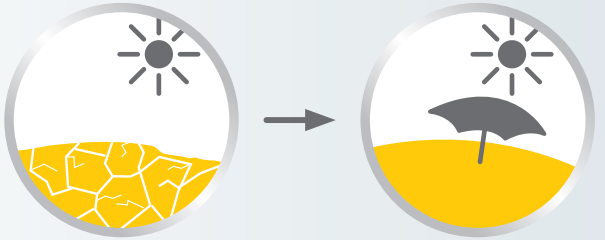
CEVO® effects

„Ready to use“ additives.
Field tested.

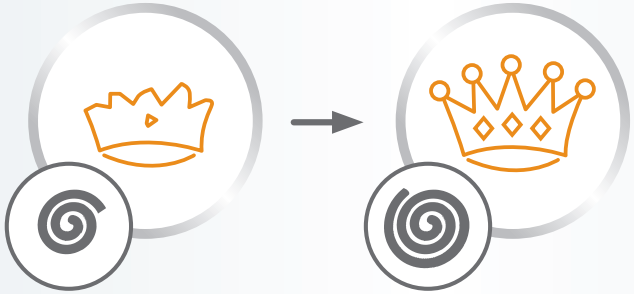
→ optimized dispersion



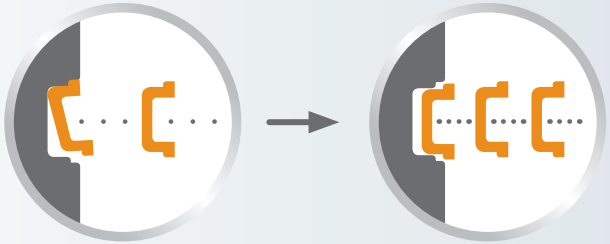
→ enhanced process stability



→ controlled flowability

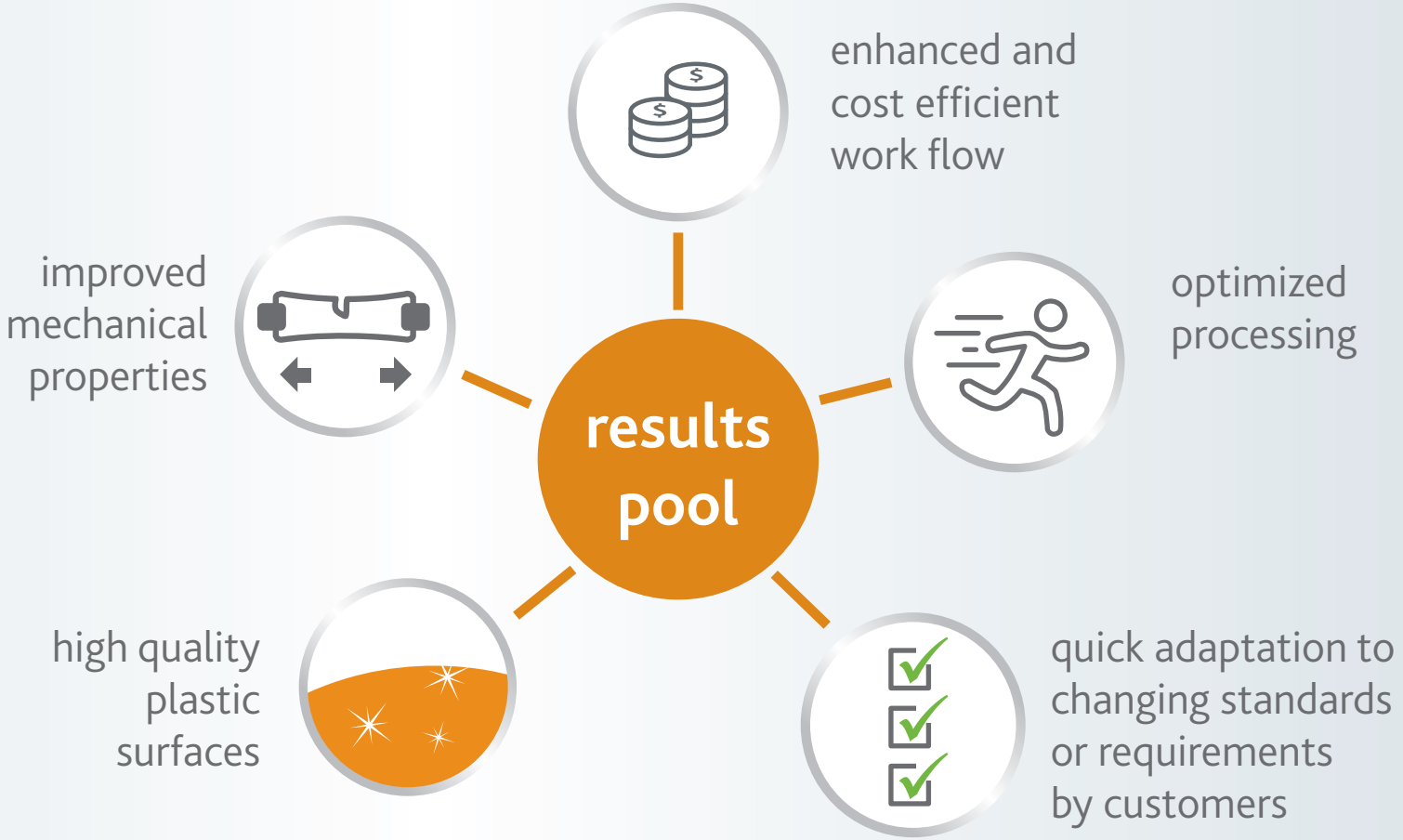


→ lubricant and release agent



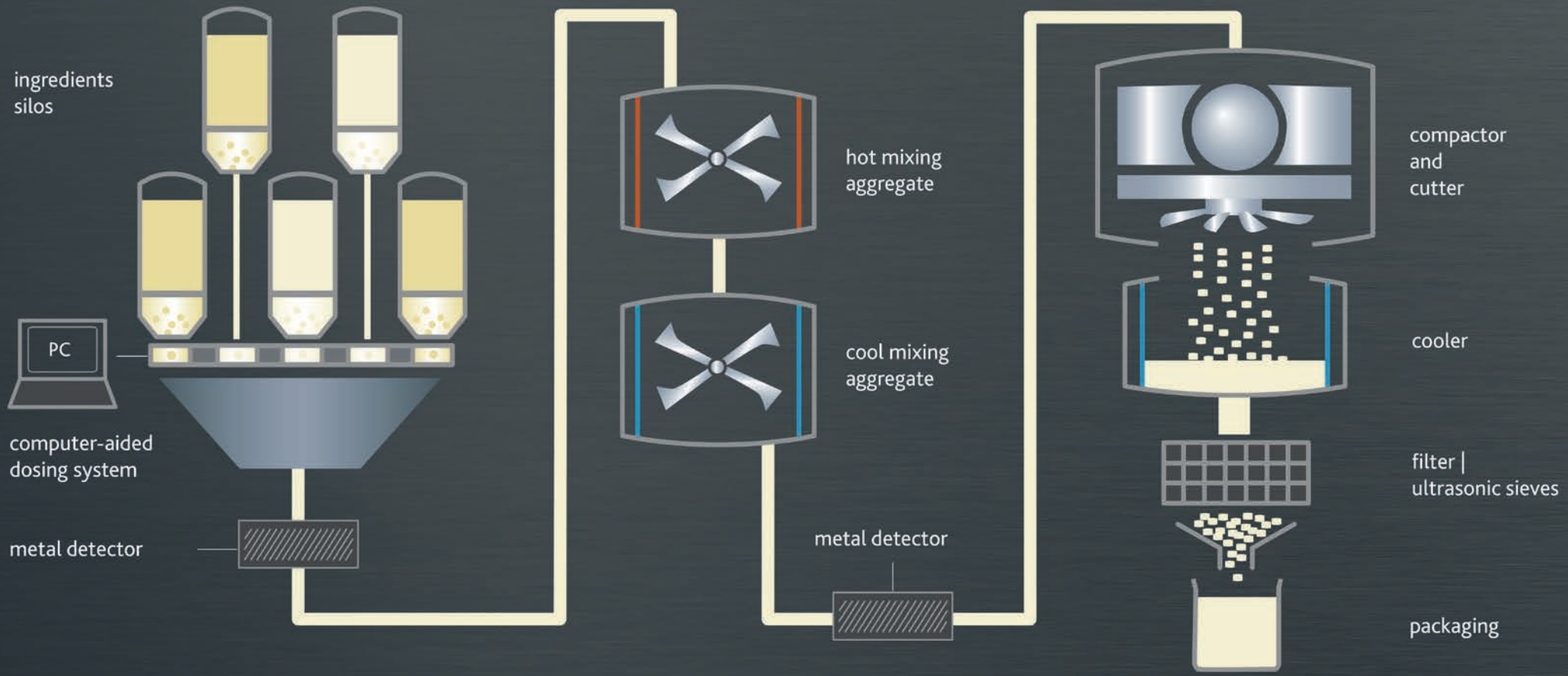
VOELPKER

CEVO® results



VOELPKER

Production scheme CEVO® | plastic series | plastic recycling series

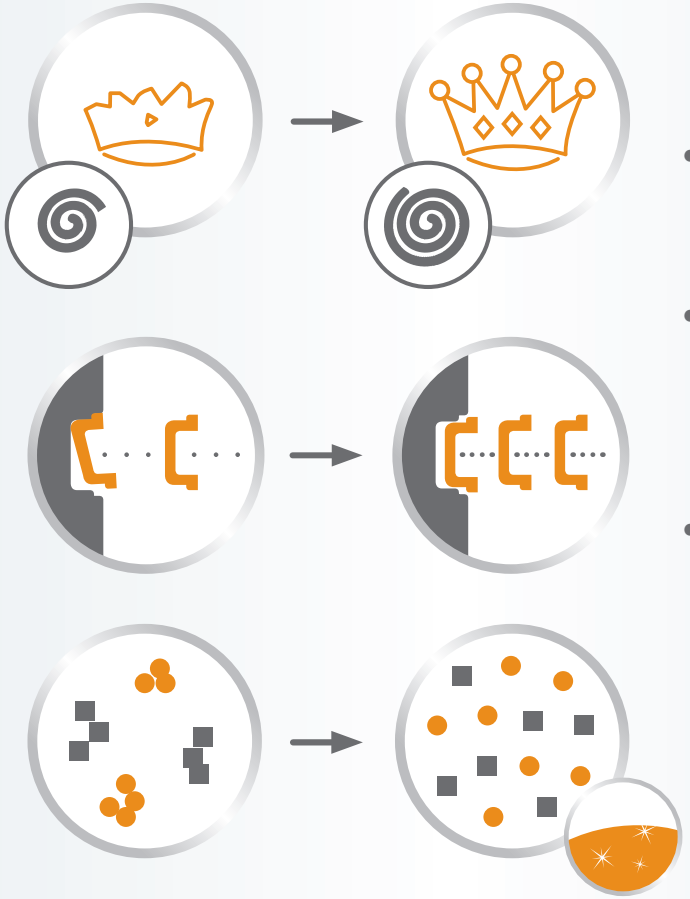


CEVO®-process A-3100

Wax additive for Polyamide

Flow and surface improvement.

Synergistic combination of different lubricating, release- and dispersing agents.



Main advantages:

- **Flow Improvement**
  long flow paths can be realized
- **Optimized release**
  injected parts can be ejected more easily and quickly
- **Better homogeneity and quality**
  in filled or reinforced compounds
  > improves the distribution of pigments, glass fibres, flame retardants, etc.
  > leads to an improved surface quality

VOELPKER

CEVO®-process A-3100

Delivery Specifications

Characteristics	Unit	Target value	Method
Drop point	°C	> 140	ASTM 3954
Colour	–	pale yellow	AA 3.2.1.505
Density	g/cm³	1.00 – 1.02	Ph. Eur. 2.2.5

Food contact legislation:
Product for technical and food contact applications, detailed information upon request

Physical form: Compactate, powder
Packaging: Paper bag

Facts:

Polymers: PA6, PA6/66, PA66/6 and copolymers; also blends with other polymers (e.g. PC)
Recommended dosage: 0.3 - 0.7 %

Case study

CEVO®-process A-3100
Cost reduction / Improved performance

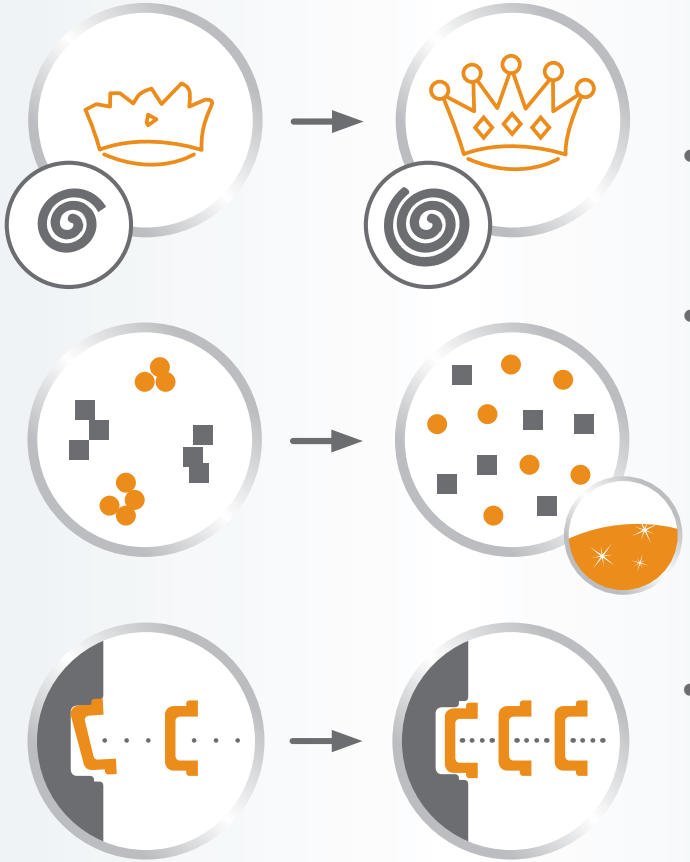
A compounder of glass fibre reinforced and impact modified polyamide compounds was able to improve mould filling of his product by 45 % (spiral flow test) using 0.5 % of CEVO®-process A-3100 instead of zinc stearate. The additive further improved the surface quality of the injection moulded parts produced.

CEVO®-process A-3105

Wax additive for Polyamide

Reaching automotive standards.

By improved dispersion and flow properties.



Main advantages:

- **Flow Improvement**
  long flow paths can be realized
- **Better homogeneity and quality**
  in filled or reinforced compounds
  > improves the distribution of pigments, glass fibres, flame retardants, etc.
  > leads to an improved surface quality
- **Optimized release**
  injected parts can be ejected more easily and quickly

VOELPKER

CEVO®-process A-3105

Delivery Specifications

Characteristics	Unit	Target value	Method
Drop point	°C	> 140	ASTM 3954
Colour	–	pale yellow	AA 3.2.1.505
Density	g/cm³	1.00 – 1.02	Ph. Eur. 2.2.5

Food contact legislation:
Product for technical applications, detailed information upon request

Physical form: Compactate, powder
Packaging: Paper bag

Facts:

Polymers: PA6, PA66, PA6/66, PA66/6 and PA12; also PP, PC and other engineering plastics and their blends
Recommended dosage: 0.3 - 0.8 %

Case study

CEVO®-process A-3105
Compliance with the flammability standard in PA GF

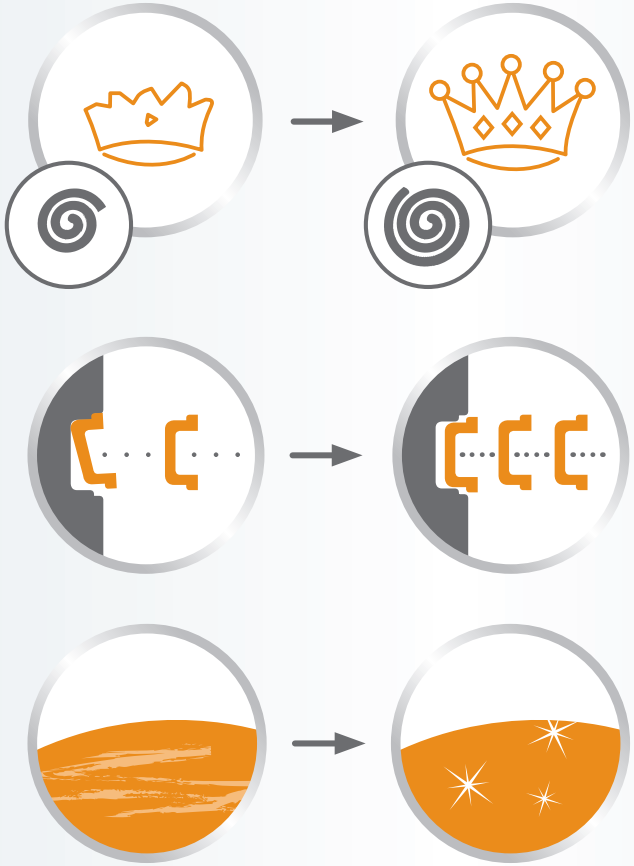
Compared to the use of conventional lubricants, the use of 0.4% CEVO®-process A-3105 enables trouble-free production (no foaming of the strands) of glass fibre-reinforced polyamide compounds equipped with halogen-free flame retardants while ensuring classification V0 according to UL-94.

CEVO®-process A-3110

Wax additive for Polyamide

Special one pack for lubrication and stabilisation

Includes a synergistic combination of different lubricating agents as well as a balanced mixture of stabilisers.



Main advantages:

- **Flow Improvement**
  long flow paths can be realized
- **Optimized release**
  injected parts can be ejected more easily and quickly
- **Quality improvement**
  avoidance of streaks on surfaces

VOELPKER

CEVO®-process A-3110

Delivery Specifications

Characteristics	Unit	Target value	Method
Melting point	°C	> 180	ASTM 3954
Colour	–	white	AA 3.2.1.505
Density	g/cm³	1.00 – 1.02	Ph. Eur. 2.2.5

Food contact legislation:
Product for technical and food contact applications, detailed information upon request

Physical form: Compactate, powder
Packaging: Paper bag

Facts:

Polymers: PA6, PA66, PA6/66, PA66/6 und PA12, blends

Recommended dosage: 0.5 - 0.8 %

Case study

CEVO®-process A-3110
Stable quality of recyclates

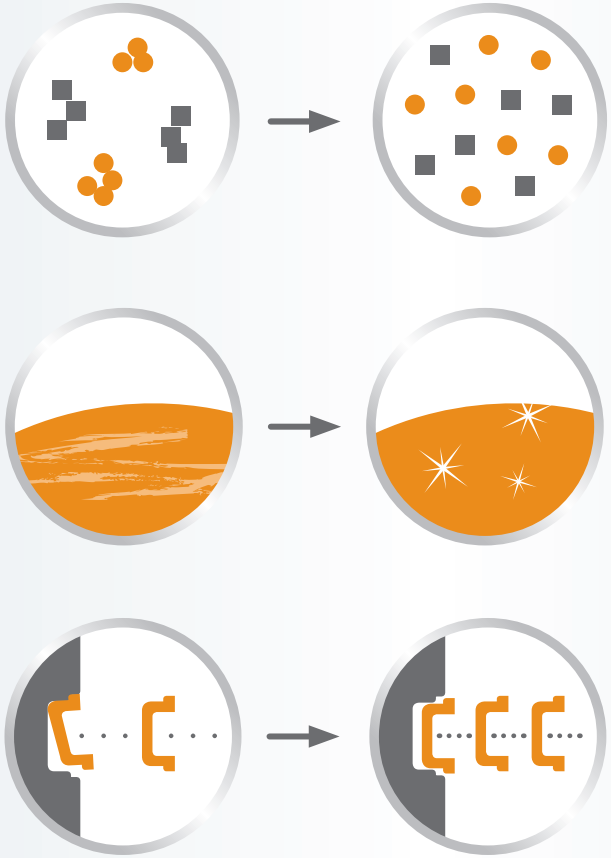
A compounder using agglomerate-based and re-milled polyamide was not able to improve and stabilise the volatile quality of his compounds. The raw material was thermally pre-stressed, subject to partial degradation and contained processing-related inhomogeneities. The use of CEVO®-process A-3110 enabled the production of compounds with low variation in mechanical characteristics and consistent processing properties.

CEVO®-process J-3400

Wax additive for engineering plastics

Dispersing and processing improvement

Processing auxiliary – includes a synergistic combination of different lubricating, release- and dispersing agents.



Main advantages:

- **Better homogeneity and quality** in filled or reinforced compounds
  > improves the distribution of pigments, glass fibres, flame retardants. etc.
  > leads to an improved surface quality.

- **Optimized release** injected parts can be ejected more easily and quickly

VOELPKER

CEVO®-process J-3400

Delivery Specifications

Characteristics	Unit	Target value	Method
Acid value	mg KOH/g	5 – 10	ISO 2114
Drop point	°C	75 – 85	ASTM 3954
Colour	–	pale yellow	AA 3.2.1.505
Density	g/cm³	1.00 – 1.02	Ph. Eur. 2.2.5

Food contact legislation:
Product for technical and food contact applications, detailed information upon request

Physical form: Compactate, powder, pastilles
Packaging: Paper bag

Facts:

Polymers: Polymers or polymer blends with high melt viscosities:
(PS, ABS, PLA, PC, POM, …)

Recommended dosage: 0.3 - 0.5 %

Case study

CEVO®-process J-3400
Improved carbon fiber distribution

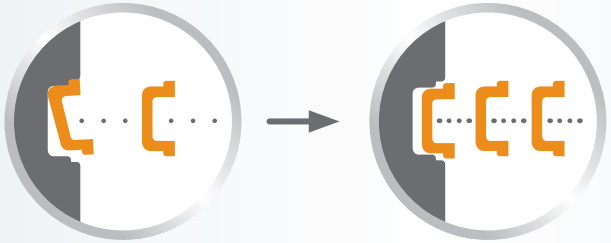
A customer demonstrated that using CEVO®-process J-3400 can significantly improve the mechanical properties (tensile modulus and tensile strength) when used in carbon fibre reinforced Polycarbonate (PC). A significant correlation between the dispersing effect of this additive on filler materials and the improvement in these mechanical properties has been shown. The improved carbon fibre distribution allowed a reduction in carbon fibre content, thus leading to lower raw material costs.

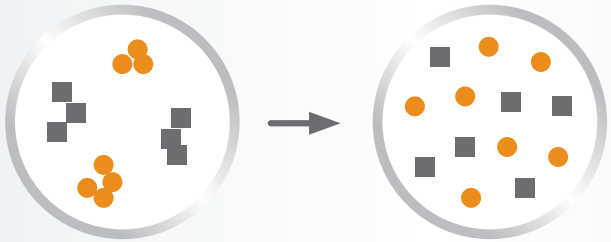
CEVO®-process J-3405

Wax additive for TPU and other engineering plastics

Processing auxiliary for better mold release

Includes a synergistic combination of different waxes. The mixture works as lubricating as well as release - and dispersing agent.





Main advantages:

- **Optimized release**
  injected parts can be ejected more easily and quickly

- **Better homogeneity**
  in filled or reinforced compounds
  > improves the distribution of pigments, glass fibres, flame retardants, etc.

VOELPKER

CEVO®-process J-3405

Delivery Specifications

Characteristics	Unit	Target value	Method
Drop point	°C	130 – 145	ASTM 3954
Acid value	mg KOH/g	6 –16	ISO 2114
Colour	–	pale yellow	AA 3.2.1.505
Viscosity @140 °C	mPas	approx. 10	AA 3.2.1.520

Food contact legislation:
Product for technical and food contact applications, detailed information upon request

Physical form: Compactate or powder
Packaging: Paper bag or big bag

Facts:

Polymers: TPU, other engineering plastics

Recommended dosage: TPU: 0.4 - 0.6%
Other: 0.3 - 0.6%

Case study

CEVO®-process J-3405
Improved blooming and plate out behaviour

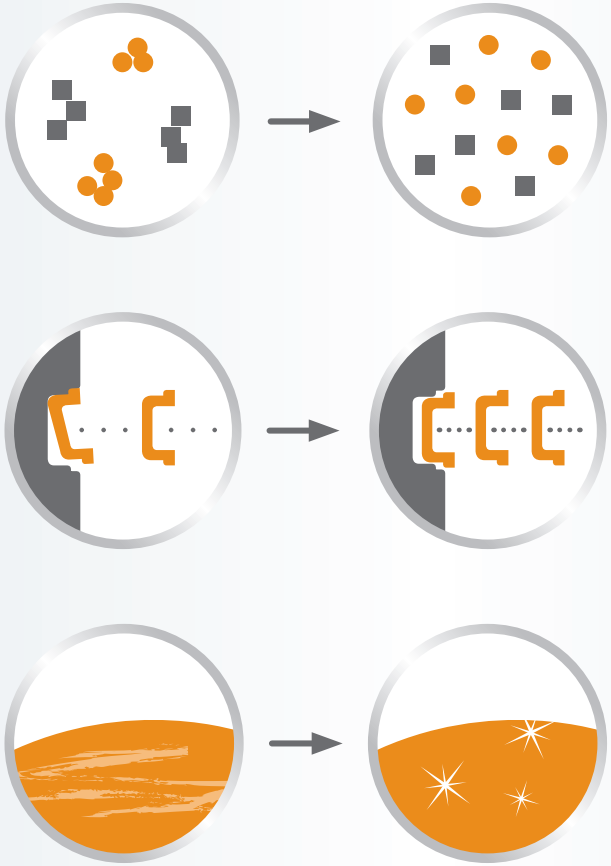
A producer of TPU automotive parts needed to suppress blooming out on the surface of the produced parts and plate out of unwanted deposits in his machinery. With CEVO®-process J-3405 (0,5 %) instead of EBS wax both targets were achieved. At the same time, the distribution of the pigments used has been improved.

CEVO®-process B-3200

Wax additive for polypropylene

Three in one for PO

Processing auxiliary – includes a synergistic combination of different lubricating, release- and dispersing agents.



Main advantages:

- **Better homogeneity and quality**
  in filled or reinforced PO compounds
  > improves the distribution of pigments, glass fibres, flame retardants, etc.
- **Optimized release**
  injected parts can be ejected more easily and quickly
- **Quality improvement**
  avoidance of streaks on surfaces

VOELPKER

CEVO®-process B-3200

Delivery Specifications

Characteristics	Unit	Target value	Method
Melting point	°C	> 140	ASTM 3954
Colour	–	pale yellow	AA 3.2.1.505
Density	g/cm³	1.00 – 1.02	Ph. Eur. 2.2.5

Food contact legislation:
Product for technical and food contact applications, detailed information upon request

Physical form: Compactate or powder
Packaging: Paper bag

Facts:
Polymers: PO (PP)
Recommended dosage: 0.3 - 0.5 %

Case study

CEVO®-process B-3200

Better surface quality, better demolding

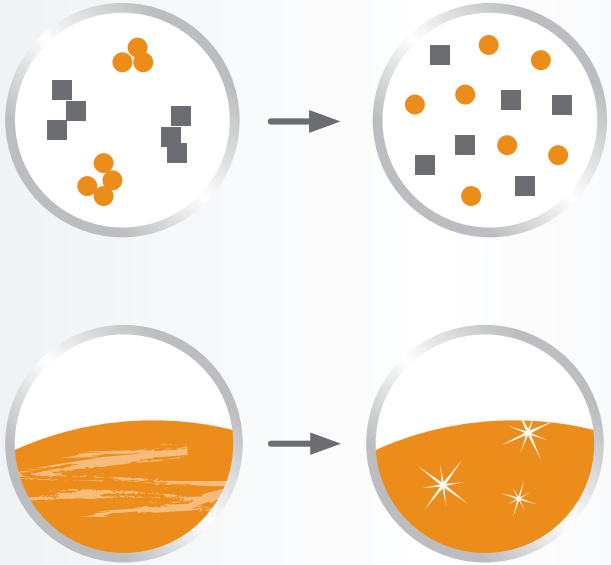
When processing a polypropylene compound filled with 45% glass fibre, a customer faced problems with demoulding and the surface quality of the injection moulded parts.
The addition of 0.5% CEVO®-process B-3200 instead of Ca stearate and/or PE waxes resulted in a very good distribution of the glass fibres. The fibers were oriented in the direction of flow of the melt during processing and led to a significant improvement of the component surfaces. In addition, the mold release properties of the compound were significantly improved.

CEVO®-process B-3680

Wax additive for Polyolefins

Perfect processing aid

Consists of a synergistic combination of different waxes. The fine-tuned mixture acts as a lubricant as well as a release- and dispersing agent.



Main advantages:

- **Better homogeneity and quality** in filled or reinforced PO compounds
  > improves the distribution of pigments, glass fibres, flame retardants, etc.
  > leads to an improved surface quality.

VOELPKER

CEVO®-process B-3680

Delivery Specifications

Characteristics	Unit	Target value	Method
Drop point	°C	115-135	ASTM 3954
Colour	–	light yellow	AA 3.2.1.505
Viscosity @ 140 °C	mPas	ca. 25-50	AA 3.2.1.520

Food contact legislation:
Product for technicalnapplications,
detailed information upon request

Physical form: Compactate, pastilles or powder
Packaging: Paper bag or big bag

Facts:

Polymers: PO
Recommended dosage:

- PP GF30: 0.4 – 0.6 %
- Regranulation of LDPE/HDPE-mixture: 0.5 – 0.8 %
- Dispersing agent for colour masterbatches: 1.0 – 1.5 %

Case study

CEVO®-process B-3680

Excellent dispersion in (post-consumer) HDPE

A producer of recycled HDPE was able to achieve good dispersion of unwanted polymer particles and mineral (and other) contaminations. At the same time also the dispersion of carbon black (2 % loading) was improved and the number of agglomerates significantly reduced. The customer thus raised the material to a higher quality level and was able to produce adequate recycling qualities for injection moulding.

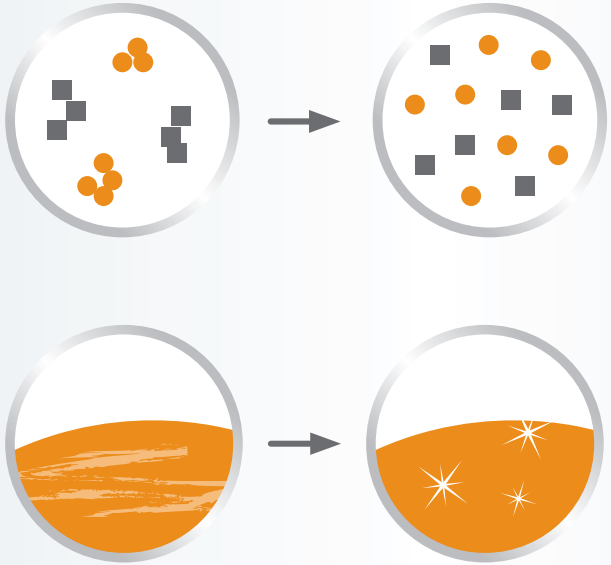
VOELPKER

CEVO®-process J-4055

Wax additive for engineering plastics

Excellent surface quality

Special wax blend, based chiefly on multifunctional fatty acid esters. Effective lubricant and dispersing agent in engineering plastics



Main advantages:

- **Better homogeneity and quality** in filled or reinforced compounds
  > improves the distribution of pigments, glass fibres, flame retardants, etc.
  > leads to an improved surface quality.

VOELPKER

CEVO®-process J-4055

Delivery Specifications

Characteristics	Unit	Target value	Method
Acid value	mg	0 – 5	ISO 2114
Drop point	°C	75 – 85	ASTM 3954
Colour	–	white – off-white	AA 3.2.1.505
Viscosity @ 140 °C	mPas	approx. 5 – 20	AA 3.2.1.520

Food contact legislation:
Product for technical and food contact applications, detailed information upon request

Physical form: Compactate, pastilles or flakes
Packaging: Paper bag or big bag

Facts:

Polymers: Engineering plastics: PET/PBT, PP, PS, POM, PA (PA6, PA66), release agent, slip agent and anti-fog agent in thermoplastic polyurethane (TPU).
Recommended dosage: 0.2 – 1 %

Case study

CEVO®-process J-4055
Improved pigment dispersion

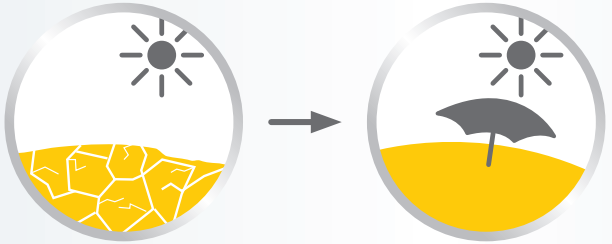
A compounder's high melt viscosity PC/ABS compound could not be evenly coloured. The pigment mixture itself was not allowed to be changed. 0.5% CEVO®-process J-4055 eliminated this problem.

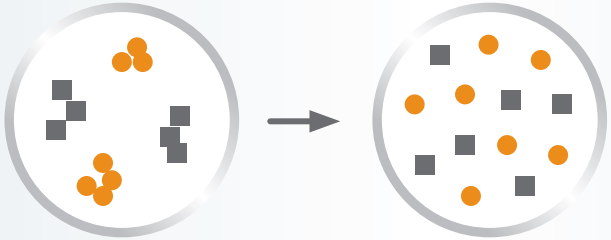
CEVO®-stab B-5200

Wax additive for polyolefins

Improved stabilisation

One pack – includes a synergistic combination of different lubricating and dispersing agents as well as a balanced mixture of diverse stabilisers and co-stabilisers.





Main advantages:

- **Process- and basic stabilization**
  Reduction of polymer degradation by friction peaks and improvement of the thermo-oxidative stability of the produced compounds
- **Better homogeneity**
  Improved homogeneity of the filler distribution and surface quality

VOELPKER

CEVO®-stab B-5200

Delivery Specifications

Characteristics	Unit	Target value	Method
Melting point	°C	> 120	ASTM 3954
Colour	–	white	AA 3.2.1.505
Density	g/cm³	1.00 – 1.02	Ph. Eur. 2.2.5

Food contact legislation:
Product for technical applications, detailed information upon request

Physical form: Compactate
Packaging: Paper bag

Facts:
Polymers: PO
Recommended dosage: 0.5 %

Case study

CEVO®-stab B-5200
Improved quality of recycled PP

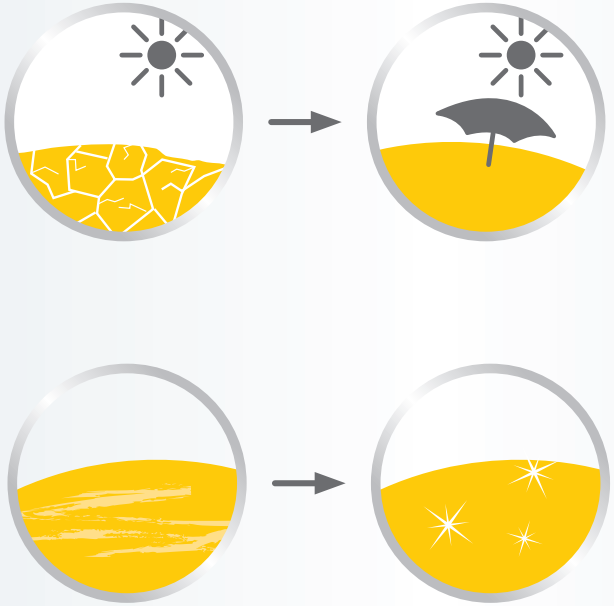
PP compounds resulting from the recycling of industrial waste are thermally pre-stressed and are therefore prone to degradation. Also processing-related inhomogeneities lead to fluctuating property profiles.
A compounder stabilised his compound with 0.5 % CEVO®-stab B-5200. An effective distribution of fillers and reinforcing agents has been effected. Surface defects caused by the regrinds used were eliminated and the lifetime of the components significantly increased.

CEVO®-stab F-5510

Wax additive for POM

Perfect mix for stabilisation and lubrication

Scavenger for unintentionally released formaldehyde – includes a synergistic combination of different lubricating and dispersing agents as well as a balanced mixture of diverse stabilisers.



Main advantages:

- **Process- and basic stabilization**
  Minimization of the thermo-oxidative stress to which the polymer is exposed during the extrusion
- **Improved surface quality**
  Avoidance of streaks on surfaces

VOELPKER

CEVO®-stab F-5510

Delivery Specifications

Characteristics	Unit	Target value	Method
Melting point	°C	> 120	ASTM 3954
Colour	–	white	AA 3.2.1.505
Density	g/cm³	1.00 – 1.02	Ph. Eur. 2.2.5

Legislation:
Product for technical applications, detailed information upon request

Physical form: Compactate or powder
Packaging: Paper bag

Facts:
Polymers: POM
Recommended dosage: 0.4 - 0.6%

Case study

CEVO®-stab F-5510
Elimination of free formaldehyde from POM-Copo recyclate

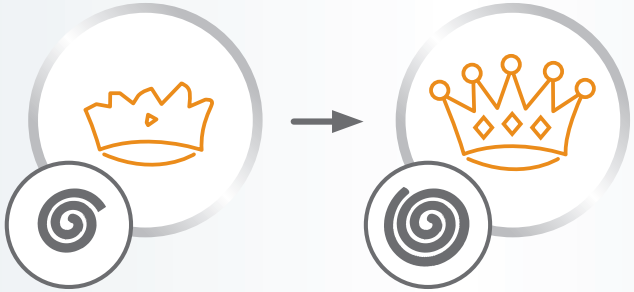
In the processing of polyacetal waste based on copolymers (POM Copolymer) a customer determined the undesired formation of free formaldehyde. The material had already been thermally pre-stressed in its processing history. This also resulted in blistering during injection moulding and other processing issues. Compounding with 0.4% CEVO®-stab F-5510 eliminated the processing problems and reduced the typical formaldehyde odour by acting as a formaldehyde scavenger.

CEVO®-master D-2050

Wax additive for Polycarbonate

Increase of the flow behavior

Reactive modifier for the production of low-viscosity polycarbonates from high-viscosity material



Main advantage:

- **Flow Improvement**
  long flow paths can be realized

VOELPKER

CEVO®-master D-2050

Delivery Specifications

Characteristics	Unit	Target value	Method
Melting point	°C	200 – 240	ASTM 3954
Density	g/cm³	1.12	ISO 1183

Legislation:
Product for technical applications, detailed information upon request

Physical form: Compactate or granules
Packaging: Paper bag or PE-bag

Facts:

Polymers: PC
Recommended dosage: 1.5 - 2.5 %
Dosage examples available upon request

Case study

CEVO®-master D-2050
Adjusting the required flowability of PC

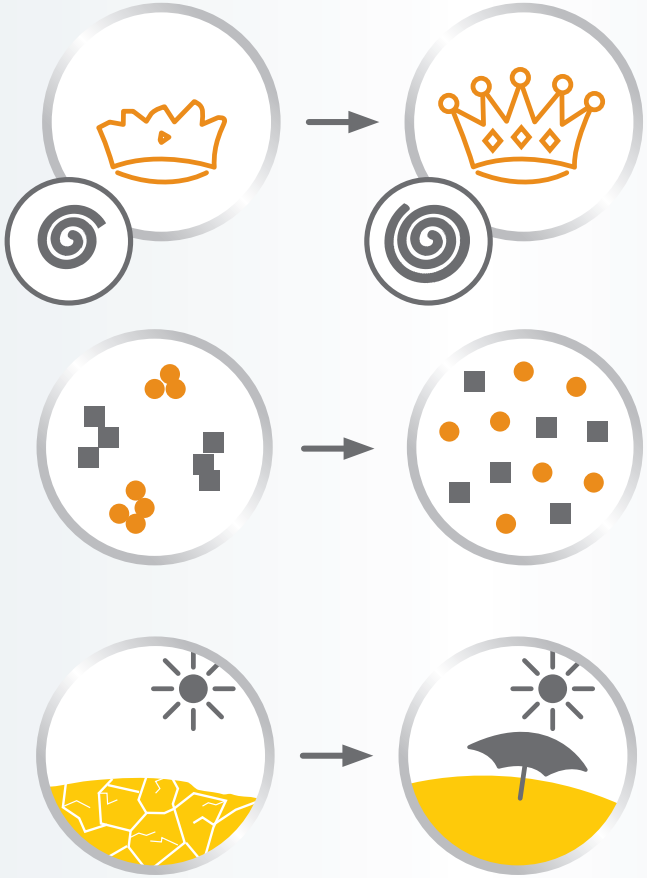
A manufacturer of PC compounds based on PC regrinds only had raw materials with an MFI value of ~ 7 g/10 min available to produce easy-flowing grades (MFI300° C/2.16 kg ≥ 20 g/10 min). The use of 1,5% CEVO®-master D-2050 resulted in the required flowability of 20 g/10 min. The other characteristic values of the compound were comparable to those of a virgin material with an analogous melt flow index.

CEVO®-master B-6000

Wax additive for polyolefins

Multifunctional masterbatch

For use in polyolefins.



Main advantages:

- **Flow Improvement**
  Longer flow paths can be realized
- **Better homogeneity**
  Optimises filler dispersion
- **Process- and basic stabilization**
  Minimization of the thermo-oxidative stress to which the polymer is exposed during the extrusion

VOELPKER

CEVO®-master B-6000

Delivery Specifications

Characteristics	Unit	Target value	Method
Melt index	g/10 min	10	ISO 1133
Density	g/cm³	0.86	ISO 1183

Legislation:
Product for technical applications, detailed information upon request

Physical form: Compactate
Packaging: Paper bag or PE bag

Facts:
Polymers: PO
Recommended dosage: 3 - 5 %

Case study

CEVO®-master B-6000
Talc-filled PP compounds: Flow improvement and better mechanical properties

A manufacturer of talc-filled PP compounds (PP T20) for use in the automotive sector was unable to achieve the required flow properties and the required notched impact strength values with the available post-industrial raw materials. The addition of 5% CEVO®-master B-6000 significantly improved the MFI and raised the notched impact value. In addition, the injection-moulded components had significantly improved surfaces.

CEVO®-clean J-1819

Cleaning granulate for all common thermoplastics

More power for less money!

Faster colour change and less material waste: multi-talent for cleaning plastic processing machines.

With other cleaning concentrate	With CEVO®-clean J-1819
Cleaning duration: 33 Min.	*Cleaning duration: 5 Min.*
Material consumption: 1.5 kg cleaning concentrate 3.4 kg polymer	*Material consumption: 0.3 kg CEVO®-clean 1.6 kg polymer*

Cost-saving

VOELPKER

CEVO®-clean J-1819

Delivery Specifications and Key Facts

- One for all – easy mixing:
  one granulate for all polymers
- Cost-effective concentrate 1:4
- Gentle cleaning and removal of even the most stubborn deposits
- Highly effective combined chemical and physical action mechanism
- Processing temperature range of up to 360 °C (depending on the carrier polymer used)
- Can also be used in hotrunner tools
- Cleaning extrudate can be granulated – so the product can be reused

Facts:

Polymers: all common thermoplastics

Delivery form: Granules

Packaging: Paper bag or PE bag

CEVO®-clean J-1819

Perfect extruder cleaning after processing of dark colored PMMA

VOELPKER's cleaning concentrate CEVO®-clean J-1819 was particularly good for effective purging prior to a demanding, transparent PMMA application. A customer processed a PMMA compound including an intense blue masterbatch (2% loading). The extruder and injection moulding machine were then cleaned by diluted CEVO®-clean J-1819 and the strongly coloured material was completely removed. In the subsequent production with colourless, transparent PMMA no contaminations of any kind could be detected.

VOELPKER

Our product portfolio at a glance

- Broad CEVO® additives portfolio
- Montan Waxes WARADUR®
- Cleaning granulate CEVO®-clean J-1819
- Chemically modified FT waxes
- Process additives on request
- Tailor-made mixing + blending services

VOELPKER

Thank you for your attention

VOELPKER