Plastic Additives

Your key components for reliable performance in the textile & fiber industry

BASF
We create chemistry

Adding value to plastics

The choice of the best plastic additives is a crucial factor for success in plastic applications. It calls for a reliable partner who not only offers a wide product portfolio but can also provide innovative solutions that can fulfill today's and tomorrow's requirements.

Long-standing expertise and a toolbox approach make BASF the best partner for innovative and customized solutions. New developments and continuous improvement of its portfolio as well as close cooperation with its customers enables BASF Plastic Additives to drive sustainability and reliability in all kinds of plastic applications.

Plastics are valuable materials that offer safe, durable, and cost-efficient solutions. In many cases the use of plastics can be more sustainable than the use of other materials. BASF Plastic Additives offers products that can help to mitigate negative impacts on the environment and also by extending and closing the loop in the circular economy of plastics.

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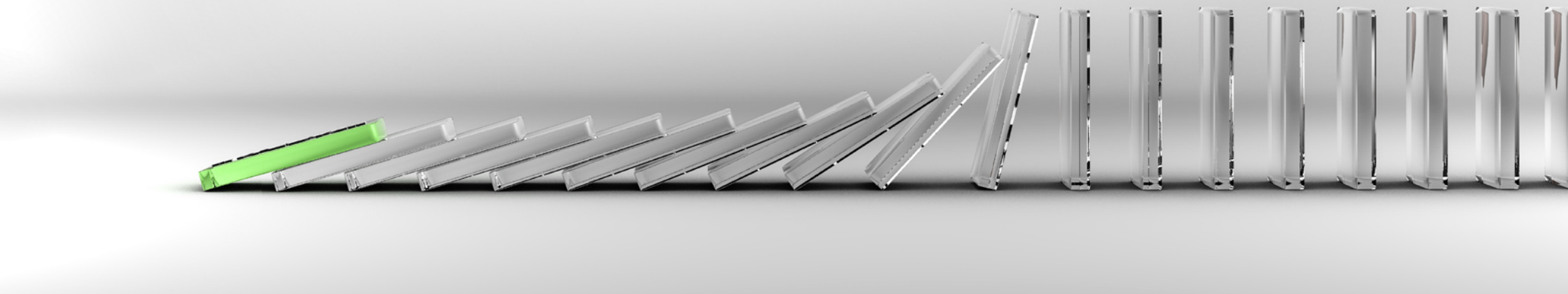


Additives, the enablers for plastic

Plastics are an essential resource in a multitude of applications where they provide outstanding performance in light weighting, ease of use, and functionality. Offering high durability where needed, reliable quality, and safety, they play a vital role in raising living and hygiene standards as well as improving the resource and energy balance.

Public opinion usually associates plastic with single-use products, which might be a reason why plastics have a rather poor image, but plastics are used in many essential applications in various industries. Plastic additives are enablers that can actually contribute to more sustainability when incorporated in the value chain of present and future industries.

Plastics offer features and benefits that other materials do not, and in many cases the alternatives do not have a better sustainability profile. Therefore, the main challenges facing the plastics industry today are to improve sustainability along the entire value chain and to reduce or even eliminate plastic waste in the process.

BASF Plastic Additives supports that process by supplying solutions that contribute to longer product lifetimes, safe and reliable use, as well as resource and energy efficiency. Those properties allow to integrate plastics in a more sustainable way in modern value chains.

Adequately stabilized plastics enable a **very efficient** use of resources, especially during the use phase. At the end of their life, plastics are still very valuable **resources that can be transformed** into new feedstock or into energy.

BASF Plastic Additives help to:

Improve the sustainability profile of plastic products by …

… extending product lifetimes with solutions that increase durability, and improve resistance to thermal, UV and chemical exposure.

… enabling better processing and performance of recycled plastics with the IrgaCycle® toolbox.

Provide cost-efficient solutions on a global scale by …

… enabling applications where plastics last longer and require less maintenance than other materials.

… reducing the volume of raw materials and energy needed.

Ensure the safety and reliability of plastics by …

… reducing exposure to undesirable by-products and residues with high-quality and extensively tested products.

… enhancing the safety of applications which require fail-safe stability and flame retardancy.

… ensuring that BASF's customers can fulfill and meet regional requirements.

VALERAS®
creating new **VAL**ue for plastics in an **ERA** of **S**ustainability

Join us on this journey. Take a look at our customer stories, featured products, and exceptional services to make sustainable plastics a reality.

Plastics fulfill essential tasks in modern industries, which is why they play a substantial role in the shift towards a more sustainable future. With society and customers becoming increasingly aware of the importance of a holistic view of the value chain and cradle-to-grave approaches, plastics can be seen for what they really are: valuable materials that, with the help of additives, become enablers of more sustainability for many industries.

BASF Plastic Additives aims to promote this sustainability and support its customers with high value plastic additives and solutions to meet market needs. Together we can make plastics lighter, stronger, more durable and safer. It is why BASF Plastic Additives has brought its most sustainable products, innovative solutions, regulatory support, and longtime experience under one brand: VALERAS®. The VALERAS® portfolio includes BASF plastics additives that offer significant sustainability benefits for the plastics industry in many categories including improved durability, energy savings, or by reducing emissions.

Beyond that, BASF promotes the acceleration to a circular economy by developing new and innovative solutions to extend and close the loop. Ensuring that the required properties of plastics are maintained over a longer product lifecycle helps to keep them in the loop and thereby save valuable resources. Innovative products such as IrgaCycle® enable recycling of plastics and by enhancing the quality of the resulting material to help close the loop.

BASF also provides support when it comes to compliance with regulatory requirements. RegXcellence® for plastic additives is part of the VALERAS® portfolio and offers targeted access to comprehensive global regulatory support for BASF customers.

VALERAS® by BASF Plastic Additives enables customers to achieve their sustainability goals.

Plastic additives for the **textile & fiber industry**

Synthetic fibers are a valuable part of people's everyday lives – they are used in the clothes we wear, sheets we sleep in, carpets we walk on and hygiene articles we use every day. The textile and fiber market is competitive and faces numerous challenges and increasing performance requirements, such as carrying out demanding fiber treatment processes or reducing the thickness of materials. Additionally, sustainability targets from authorities, such as including a higher percentage of recycled plastics in the end product, are gaining more and more importance.

The spectrum to which the textile and fiber industry can contribute is large – from functional clothing and home textiles or nonwoven fabrics that are essential for personal hygiene and medical products to artificial turf and construction materials. This product variety goes hand in hand with the properties that they require. BASF Plastic Additives enables manufacturers in the respective industries to equip their plastics with specific features that are crucial for the respective application. One important benefit BASF Plastic Additives offers its customers is to ensure that polymer fibers possess the necessary features and quality to “do their job” in the most reliable way. BASF Plastic Additives supports its customers not only with innovative additives and solutions that contribute to sustainability but also with long-standing expertise and technical know-how to master the challenges of today’s and tomorrow’s markets.

VALERAS®

Creating value for the textile & fiber industry

Synthetic fibers have an exceptional role to play in countless applications and materials. They are essential in hygiene products, incontinence supplies and medical products that keep us safe and healthy. Reliable quality is crucial and depends a great deal on additives. Not least because the needs of an increasingly aging society will bring further challenges for product performance in textiles, BASF Plastic Additives will be on hand to overcome those future challenges.

Plastic additives by BASF support the reduction of product impact on the environment. While in other applications additives can enhance the quality of plastics that are used as insulation in construction and help to lower energy consumption in the private sector, additives can also contribute on a more holistic level by enabling a reduction of raw materials consumed and allowing fibers and non-woven materials to become thinner – without affecting quality or performance. Furthermore, BASF Plastic Additives offers solutions that enhance the quality of recycled materials and thereby allows the inclusion of more used plastics in the formulation.

How BASF Plastic Additives **add value to your products**

Reliable properties

Additives help synthetic fibers to maintain their properties and sustain their quality for a longer time. This saves raw materials and other resources like energy and water that are used during sourcing and production. All of which adds up to cost savings.

Durability

BASF Plastic Additives supports the durability and quality of synthetic fibers and non-woven plastic materials by extending both thermal and light stability. These properties are relevant for the wide array of end applications and the great variety of polymers used in plastic applications.

Safety

The demands placed on synthetic fibers and non-woven plastic materials are becoming increasingly stringent. Features such as flame retardancy, low smoke density and low volatility are major criteria when it comes to the safety of construction materials, furnishing, as well as filters, hygiene products and workwear. These are qualities supported by BASF Plastic Additives.

Regulatory demands

Reliable functions and performance under varying climate conditions are crucial for many applications that are a part of daily life and essential infrastructure. Plastic additives by BASF provide thermal and light stability as well as flame retardancy and antistatic performance that meet the latest regulations for different applications – from synthetic roofing and technical textiles to geotextiles and insulation materials or car seat belts.

Safe and reliable performance are a must-have

In ensuring today's industry quality as well as providing solutions for more ambitious future requirements, BASF Plastic Additives offers a broad portfolio that includes process, thermal, and light stabilizers as well as flame retardants and polymer modifiers to enhance safety, support prolongation of the product's lifetime, secure quality and enable an increased share of recycled material in the end product.

Supporting sustainability in textile, fiber and non-woven materials

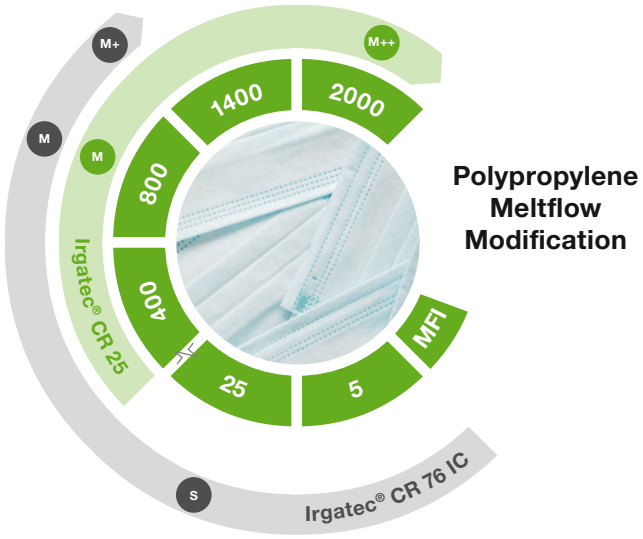
Circularity is one aspect of sustainability that plays an important role in many industries nowadays – especially in those industries that produce disposable products such as hygiene products, incontinence underwear and masks. Recyclability and incorporation of steadily increasing amounts of recycled material in order to preserve resources are features that will help to enhance the overall sustainability of products that although they are disposable, are essential for the health, safety, and well-being of people. As such, they are indispensable. BASF Plastic Additives' solutions help its customers to achieve their goals without forfeiting product quality or performance.

Innovative additives and solutions that **contribute to sustainability** combined with long-standing expertise and technical know-how.

Case Study

Use of Irgatec® CR technology for nonwoven production and optimization

Sustainability is a topic on the agenda of most industries nowadays. One key to achieving sustainability in the textile and fiber industry is to make plastics production processes more efficient and enabling materials to be recycled.



Polypropylene Meltflow Modification

M = Meltblown PP S = Spunbond PP + = increase vs standard solution

The production of nonwovens from polypropylene is achieved using well-defined rheology grades of well-defined viscosity and polydispersity. This is done either through direct production using adapted catalysts solutions or via vis-breaking using either peroxides or Irgatec® CR (Controlled Rheology) technology as a sustainable alternative. Irgatec® CR products offer a versatile solution for the production and modification of nonwoven PP fabrics.

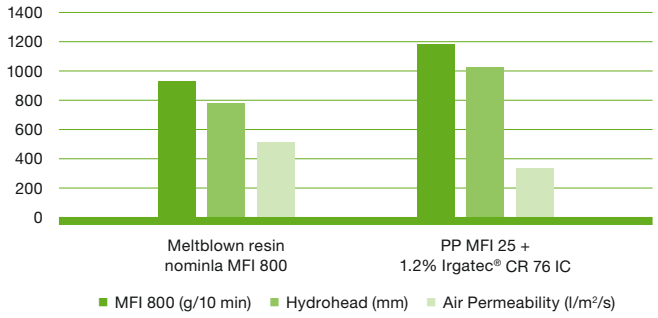
Irgatec® CR products offer a unique chemical mechanism for vis-breaking to the desired melt flow rate which also makes it possible to create nonwoven structures/fabrics with superior barrier and enhanced mechanical properties. They are safer to handle compared to peroxide-containing alternatives, exhibit excellent storage stability, and allow a broad variety of feedstock to be converted according to the expressed demands.

Two products are currently available:

Irgatec® CR 76 IC and Irgatec® CR 25.

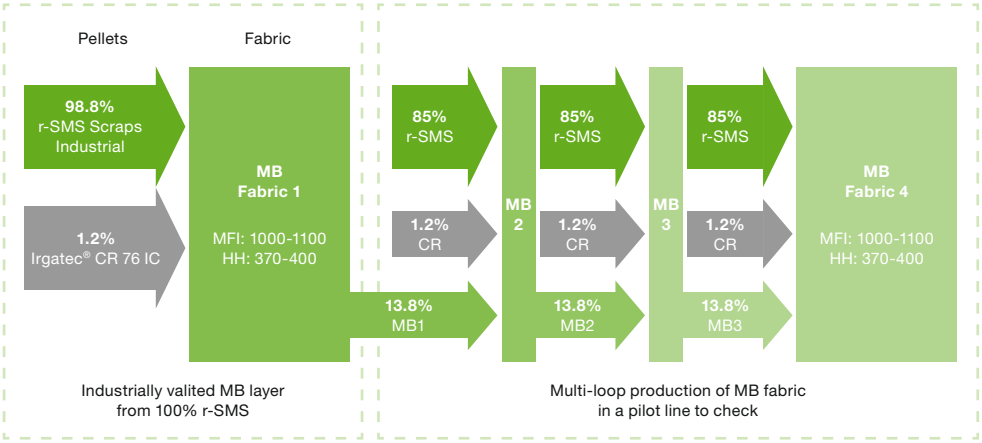
Irgatec® CR 76 IC is the product of choice when targeting a conversion of a spunbond PP grade to a meltblown fabric directly on a commercial meltblown line. Outstanding barrier properties such as hydrohead and air permeability are achieved in accordance with market requirements and often surpass the performance of a commercial meltblown grade.

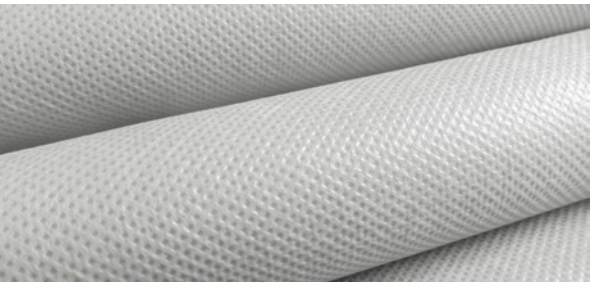
Meltblown by vis-breaking spunbond PP



Irgatec® CR 76 IC can be the product of choice when aiming for a recycling of in-house nonwoven scraps arising from cut-offs or deficient production. The following example illustrates a cascade applied in the recycling of SMS scraps, where Irgatec® CR 76 IC could successfully contribute to the production of a high-quality meltblown product used either in a SMS structure or as a single nonwoven.

This meltblown fabric was re-fed multiple times with complementary SMS material combined with Irgatec® CR 76 IC and yielded a high-quality MB fabric after 4 cycles with barrier properties comparable to the first recycling step.

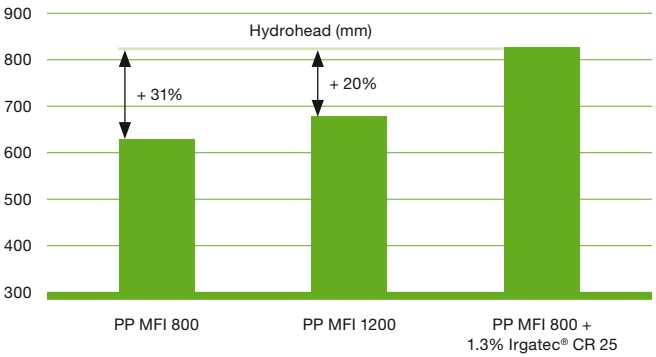




Increase in filter efficiency when applying Irgatec® CR 25. **Excellent filter efficiency** after charging.

To complement the vis-breaking technology offering, Irgatec® CR 25 has been introduced to respond to the industry need to further modify an existing meltblown grade to meet even more stringent requirements regarding barrier and filter properties.

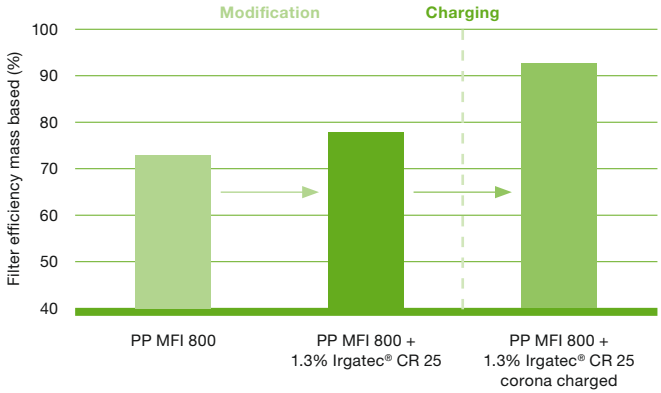
As an example for hygiene product applications, Irgatec® CR 25 allows to modify a standard meltblown grade to a meltblown fabric with significantly improved hydrohead – up to 20 % improved compared to a “high performance” MFR 1200 MB grade.



PP meltblown production: on a Reicofil meltblown line 20 gms,
Processing done with optimized temperature parameters adapted to each polymer
DCD = 220 mm, 40kg/h/m

Hydrohead compared to the usual PP resins
For filter applications, higher MFR PP grades are more common than in hygiene applications.

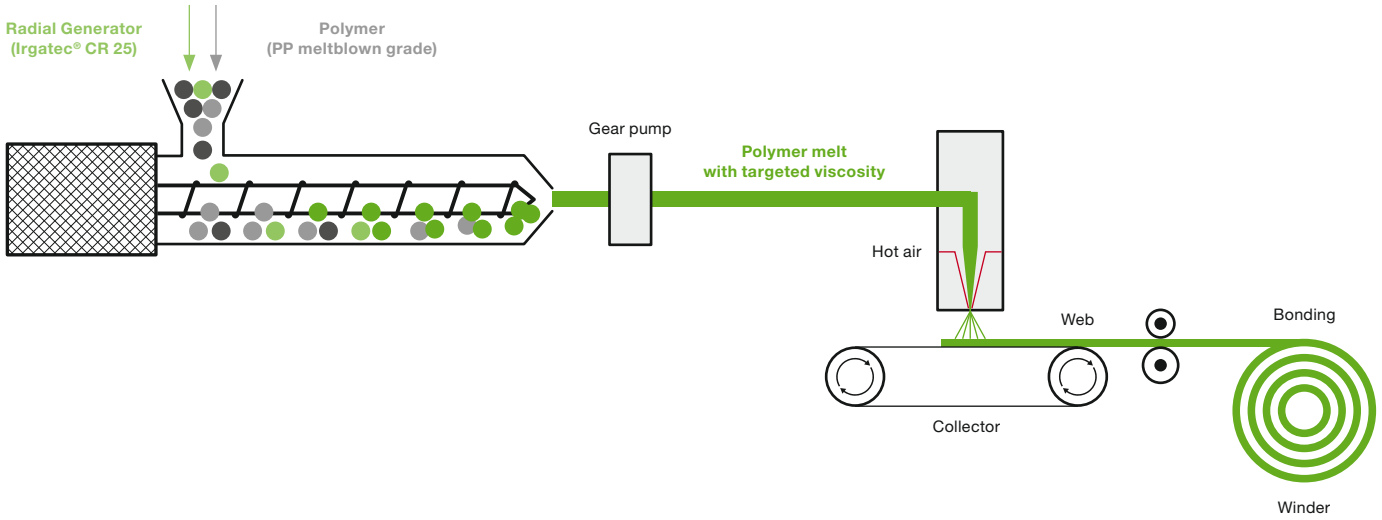
Irgatec® CR 25 makes it possible to create even fabrics with finer fibers suitable for filter applications.



PP meltblown production: on a Reicofil meltblown line 2x20 gms,
Processing done with optimized temperature parameters adapted to each polymer,
All the samples contain additionally an electrocharging additive

Reliable quality and a broad portfolio of thermal and light stabilizers, flame retardants and polymer modifiers to **enhance safety, durability and sustainability**.

Modification of PP with Irgatec® CR
Meltflow process: simplified scheme



Recommended additives for the textile & fiber industry

	PP nonwoven applications				Artificial turf			Carpet & upholstery applications		
BENEFIT	**Air filtration**	**Construction fabrics**	**Geotextiles/ agriculture**	**Hygiene**	**Indoor/outdoor PE monofilament/ tapes for sports or landscaping**	**PP monofilament/ tapes for sports or landscaping**	**Sports indoor/ outdoor PA monofilament/ tapes**	**Polypropylene fiber**	**Polyamide fiber**	**Polyester fiber**
Base stabilization	Irgastab® FS 210 Irgastab® FS 301 Irgastab® FS 410 Irgastab® FS 533				Irganox® B 215 Irganox® B 225		Irganox® B 1171	Irgastab® FS 301 Irgastab® FS 410 Irgastab® FS 533 Irganox® 3114 Irgafos® 168	Irganox® 1098 Irganox® B 1171	Irganox® B 561 Irganox® 1010 Irgafos® 126
Light stabilizers	Chimassorb® 944	Chimassorb® 2020	Chimassorb® 2020 Tinuvin® XT 200		Chimassorb® 2020 Tinuvin® XT 55	Chimassorb® 2020 Tinuvin® 770 Tinuvin® XT 55 Uvinul® 4050	Chimassorb® 2020 Uvinul® 4050	Chimassorb® 2020 Tinuvin® 234	Chimassorb® 2020 Tinuvin® 234 Uvinul® 4050	Tinuvin® 234 Tinuvin® 1577 Tinuvin® 1600
Flame retardants		Flamestab® NOR® 116			Flamestab® NOR® 116			Flamestab® NOR® 116		
Specialties	Irgatec® CR 76 IC Irgatec® CR 25 Irgaclear® XT 386			Irgatec® CR 76 IC Irgatec® CR 25	Irgastat® P			Irgastat® P		

	Automotive fibers			Building & construction applications					Packaging
BENEFIT	**Polypropylene fiber**	**Polyamide fiber**	**Polyester fiber**	**Polypropylene fiber**	**Polyamide fiber**	**Polyester fiber**	**PE monofilaments/ PE tapes**	**PP tapes**	**FIBC – PP/ PP tapes**
Base stabilization	Irgastab® FS 301 Irgastab® FS 533 Irganox® 3114 Irgafos® 168	Irganox® 1098 Irganox® B 1171	Irgafos® 126 Irganox® B 561 Irganox® 1010	Irgastab® FS 301 Irgastab® FS 533 Irganox® 3114 Irgafos® 168	Irganox® 1098 Irganox® B 1171	Irganox® B 561 Irgafos® 168 Irgafos® 126 Irganox® 1010	Irganox® B 215 Irganox® B 225		
Light stabilizers	Chimassorb® 2020 Tinuvin® 234	Chimassorb® 2020 Tinuvin® 234 Uvinul® 4050	Tinuvin® 1600 Tinuvin® 234 Tinuvin® 1577	Chimassorb® 2020 Tinuvin® 234	Chimassorb® 2020 Tinuvin® 234 Uvinul® 4050	Tinuvin® 1600 Tinuvin® 234 Tinuvin® 1577	Chimassorb® 2020 Tinuvin® 783 Tinuvin® XT 55 Uvinul® 5050		
Flame retardants	Flamestab® NOR® 116			Flamestab® NOR® 116					
Specialties	Irgastat® P			Irgatec® CR 76 IC Irgatec® CR 25			Irgastat® P		

Terminology

ABS	Acrylonitrile Butadienestyrene
EBA	Ethylene Butyl Acrylate
EVA	Ethylene-Vinyl Acetate
HDPE	High-Density Polyethylene
HIPS	High-Impact Polystyrene
LDPE	Low-Density Polyethylene
LLDPE	Linear Low-Density Polyethylene
LS	Light Stabilizer
LTTS	Long-Term Thermal Stabilizer
PA	Polyamide
PBT	Polybutylene Terephtalate
PC	Polycarbonate
PE	Polyethylene
PES	Polyester
PET	Polyethylene Terephthalate
PMMA	Polymethylmethacrylate
PO	Polyolefin
POM	Polyoxymethylene
PP	Polypropylene
PS	Polystyrene
PS	Process Stabilizer
PU	Polyurethane
PVB	Polyvinylbutyral
PVC	Polyvinyl Chloride
TPO	Thermoplastic Polyolefin
TPU	Thermoplastic Polyurethane
UVA	UV Absorber

Notes

Open space for your thoughts and notes

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