Polymer Additives

Lohtragon®

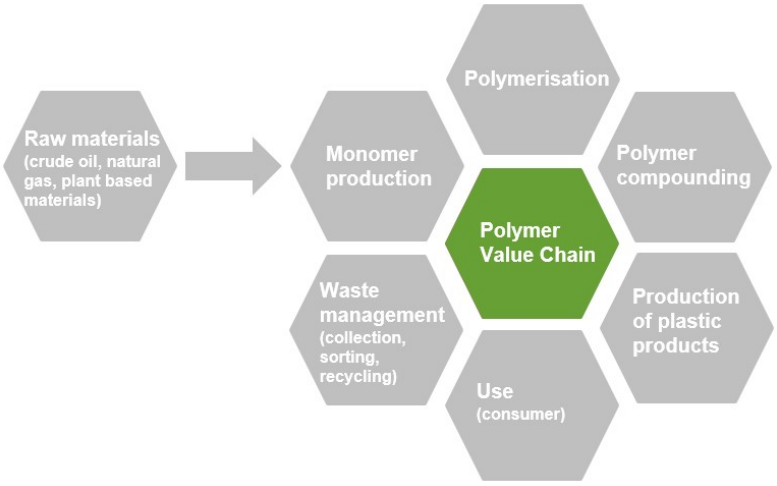
Crystallizing Solutions

Info Sheet Lohtragon®

Polymer Additives

Plastic materials are omnipresent in our life. Their manufacturing along the Polymer Value Chain is facing steadily increasing technical requirements while fulfilling health, safety & environment (HSE) standards as well as the challenges around the circular plastics economy.

We are offering Lohtragon® products along the Polymer Value Chain.



This Info Sheet is predominantly focusing on the polymer compounding step. Plastics – typically organic polymers – have their individual characteristics, which can be stabilized, enhanced and modified by the use of polymer additives. In addition, such additives are used to optimize the manufacturing processes.

Selected fields of application for the Lohtragon® metal salts are:

Resistance to external influences and stabilizers
- Flame retardants
- Acid scavengers
- Antistatic additives
- Antioxidants / light stabilizers

Enhancement of appearance and mechanical properties
- Nucleating and clarifying agents
- Crosslinking agents

Special Features
- Blowing agents
- Moisture control
- Odor inhibition / antimicrobials

In addition to the vested product properties, Dr. Paul Lohmann® offers tailor-made solutions by variation of the chemical and physical properties.

To meet the requirements of the intended use of the plastic the choice of the polymer additive can be as important as the selection of the polymer itself. Regulatory demands like food contact need to be considered, too.

- Optimum resistance against outside influences (light, heat, fire, …)
- Optimum durability against mechanical stress
- Appearance enhancement (color, clarity)
- Process aids for molding and extrusion (mold release, slip, anti-block, …)
- Specific other properties like light-weight, sterilization resistance, anti-scratch, odor modifying, …
- HSE requirements

Polymer Additives

Lohtragon® Product Selector for Polymer Additives

	Acid Scavengers	Antioxidants / Light Stabilizer	Antistatic Additives	Blowing Agents	Crosslinking Agents	Moisture Control	Nucleation and Clarifying Agents
Aluminium Salts							
Lohtragon® L87					✓		
Lohtragon® K87					✓		
Calcium Salts							
Lohtragon® O01	✓			✓			
Lohtragon® B42	✓	✓	✓	✓			✓
Copper Salts							
Lohtragon® K02		✓					
Magnesium Salts							
Lohtragon® K19			✓	✓			
Lohtragon® C36	✓						
Lohtragon® C35	✓	✓					
Lohtragon® C46	✓	✓				✓	
Lohtragon® V15						✓	
Potassium Salts							
Lohtragon® O02						✓	
Lohtragon® B71			✓				
Lohtragon® O16				✓			
Lohtragon® B60				✓			✓
Sodium Salts							
Lohtragon® B44							✓
Lohtragon® B15				✓			
Lohtragon® B45							✓
Zinc Salts							
Lohtragon® O56				✓			
Lohtragon® O74					✓		

Polymer Additives

Flame Retardants

The burning behavior of polymers and related plastic parts is more and more a crucial factor within the extensive profile of requirements of plastics.
Common flame retardants are inorganic substances (e.g. Aluminium Hydroxide ATH, Magnesium Hydroxide MDH, Antimony Oxide, Zinc Borate), halogenated organic products (e.g. organochlorines, bromines) and organophosphorus compounds amongst others.

Most of these flame retardants are already used in conjunction with synergistic additives in order to enhance their efficiency and/or to improve HSE profiles. Selected products and formulations of the Lohtragon® range improve the tendency of plastics not to burn while bringing regulatory advantages and act as synergists in flame retardant compositions.

The Lohtragon® team is ready to be your synergist in developing your next outstanding flame retardant system.

Acid Scavenger

Lohtragon® metal salts support to maintain the initial properties of plastics by acting as acid scavengers in order to limit or eliminate the polymer chain degradation by acids, which destroy the polymer properties (polyolefines, POM, rubber, etc.). Neutralization of acidic traces also reduces the risk of corrosion of the process equipment.

During the polymerization step, process catalysts and other auxiliaries can potentially cause acidic impurities within the compound. In addition, other aging or polymer additives can create acids as a side reaction during their life cycle.
Acid scavengers lead to enhanced long-term stability of the plastic part, which is accompanied by very limited migration of the additives with no change of the appearance of the surface (no staining). The ingredients of the whole stabilisation package need to be considered when choosing the acid scavenger for such system.

Selected Lohtragon® metal salts have proven their acid scavenger properties in polymer compounds.

Antistatic Additives

Charged polymer surfaces can significantly influence production processes, properties and the end use of plastics.

- Dust attraction affecting the appearance and performance of plastic parts
- Dirt accumulation on polymers causing handling issues during transport, storage and final use
- Clinging effect between plastic sheets
- Impact on electronic components
- Electric sparks can potentially cause fire or explosions

In order to control the build-up of static electricity external and/or internal antistatic additives and conductive fillers can be used. Although the typical ionic properties of inorganic metal salts are reduced in a polymer matrix, they contribute to reducing the surface resistance and, therefore, Lohtragon® metal salts offer antistatic properties.

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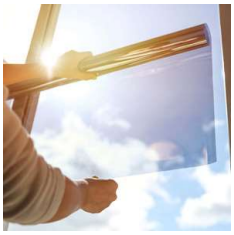
Antioxidants / Light Stabilizers



For the durability of a plastic in its life cycle, the objective is to maintain the initial characteristics as long as possible. The stabilization of the polymers against oxidation reactions is important to avoid the loss of mechanical strength and other properties. This unwanted degradation of polymers can occur throughout their compounding, molding and extrusion processes and their life cycle in use. Exposure to UV-light can be particularly damaging to a polymer and impact the initial characteristics like yellowing, physical degradation and thus loss of gloss, chalking, cracking and lower mechanical properties.

This degradation and ageing can be inhibited or retarded by the right choice of polymer additives – antioxidants and light stabilizer systems based on Lohtragon® metal salts acid scavenger.
In addition the Lohtragon® acid scavenger range supports the efficacy of antioxidant packages due to neutralizing catalytic traces of acids.

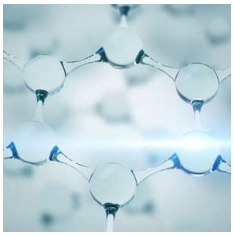
Nucleating Agents

Nucleating agents are used to improve the optical properties of semi-crystalline polymers like polyolefins, polyamides, polyesters and others. Semi-crystalline areas lead to an opaque appearance of the plastic and influence the mechanical properties.

The crystallization of polymers is a thermal process and in addition to the cooling rate, nucleating agents can influence the speed and type of the polymer crystallization.

The Lohtragon® competence in particle engineering leads to specific nucleating (clarifying) agents which positively impact the morphology of polymers and due to their defined crystalline form in the polymer – while well dispersed – these metal salts increase the crystallization rate of the polymer in a controlled way.

Crosslinking Agents



Polymers like polyethylene with linear chain structures typically show thermoplastic behaviour. The conversion into three-dimensional networks leads to improved properties such as high temperature properties, mechanical strength, chemical and stress cracking resistance and newly introduced properties like shape memory.

The Lohtragon® range offers metal salts based on Zinc, Aluminum, Iron and also special anions like Peroxide for crosslinking various type of polymers.

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Blowing Agents

Plastic foams are widely used because of weight reduction and cost efficiency. In addition various other properties are improved like flexibility, dampening properties, thermal and sound insulation.

In order to achieve low density plastics selected Lohtragon® metal salts can be used as endothermic blowing agents.

The selection of the blowing agent depends on the type of polymer, the type of cellular structures to be achieved and specific requirements related to the final use. The advantage of using one of the Lohtragon® products is that during the blowing process mainly CO_2 and water vapor is generated. The endothermic reaction is induced by heat and can be controlled by the heat supply. Typically, these short cycle time foaming processes with endothermic blowing agents are easy to control and lead to fine cell structures.

The outstanding purity of the Lohtragon® metals salts leads to the fulfillment of various regulatory standards like food contact approval.

Moisture Control

Plastic products based on PE, PET or other polymer types might need a defined water content level. This level of moisture can be necessary to control a moisture-induced reaction with other compound ingredients or in case of closed plastic packaging to ensure a certain humidity.

Contact

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Lohtragon® – A Brand of Dr. Paul Lohmann®

For over 135 years, the company Dr. Paul Lohmann has been able to establish and maintain its leading position as an international manufacturer of mineral and metal salts that meet the highest quality standards. The product range includes over 400 different salts, from Aluminum to Zinc, in a total of over 7,000 different specifications. Dr. Paul Lohmann® supplies its specialty salts worldwide to customers in the pharmaceutical industry, food sector, food supplements, cosmetics and – under the Lohtragon® brand – to customers in industrial applications.

Lohtragon® stands for unique competences in manufacturing, optimizing and developing metal salts for a broad variety of industrial market segments. Established in diversity, tailor-made for you, your application and your process - our solution for your challenges!

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