



Crystallizing Solutions



Flowability Excellence with the Lohtragon[®] Flow Enhancers: Optimized Powder Handling for Safe and User-Friendly End Products

Optimize your production efficiency and product quality with Lohtragon[®] Flow Enhancers. Specifically designed to **improve the flowability and dust behavior of powders and other solid materials**, our product range includes anti-caking agents, anti-clumping agents, and anti-sticking agents. Ideal for industries where precise powder handling is essential – such as construction, home care, and polymers – Lohtragon[®] solutions ensure reliability, safety, and efficient processing.

For Improved Flow and Handling – The Lohtragon® Flow Enhancer Portfolio

Your Benefits at a Glance

- ✓ Consistent Product Quality: Ensures high flowability for uniform, high-performing dry end products
- ✓ Efficient Production Processes:

 Enables smooth handling, accurate dosing, and minimal downtime for faster and cleaner operations
- ✓ Enhanced Operational Safety:

 Reduces risks during storage, transport, and processing through user-friendly, dust-reduced handling
- ✓ Regulatory & Market Compliance: Supports sustainable, declaration-friendly formulations aligned with regulatory and consumer expectations
- ✓ Silica-Free Ingredient Compatibility:
 Offers mineral-based, silica-free solutions that integrate seamlessly into diverse formulations
- ✓ Functional Performance Advantages:
 Delivers enhanced flowability, prevents caking and lumping, and ensures low dust generation

Our mineral-based solutions, including magnesium and calcium salts, offer **declaration-friendly, sustainable, and highly compatible alternatives to conventional flow aids**. Their unique microstructure actively absorbs moisture, reduces dust, and prevents clumping and ingredient binding. From goods receipt to final product, the Lohtragon® Flow Enhancer portfolio enables smooth, safe, and consistent handling of dry materials – boosting production throughput and preserving product integrity.

Flow Enhancer	Specific Feature
Lohtragon [®] B42 Tricalcium Citrate, anhydrous	 (Water-)Insoluble mineral salt with structure-stabilizing properties Acts as physical spacer to maintain free-flowing behavior Ideal for low pH systems and moisture-sensitive powder formulations
Lohtragon® C35 Magnesium Hydroxide	 Exhibits moisture-absorbing behavior; less hygroscopic than Mg Oxide Well-suited for moisture-sensitive products with undesired high-water uptake Mildly alkaline nature helps stabilize pH in acid formulations
Lohtragon® C36 Magnesium Carbonate	 (Water-)Insoluble, porous material with strong moisture absorption Supports structure stability and effective particle separation Ideal for pH neutral, dry formulations requiring flow and anti-caking support
Lohtragon[®] C43 Trimagnesium Dicitrate, anhydrous	 Slightly alkaline with pH-modifying capabilities Supports powder blend uniformity by reducing clumping and bridging Special micronized grade for enhanced dispersion
Lohtragon [®] C46 Magnesium Oxide	 Insoluble and highly effective in absorbing moisture Performs well under thermally demanding conditions Supports dry surface structure & particle separation in sensitive powder blends
Lohtragon® L35 Tricalcium Phosphate	 (Water-)Insoluble and highly effective in absorbing moisture Inert, stable compound ideal for neutral pH formulations Functions as a physical spacer for improved powder dispersion & bulk handling



Flowability Excellence with our Lohtragon[®] Flow Enhancers: Backed by Proven Application Lab Expertise

Tailored Flow Additives for Your Unique Needs

Your application is unique – so are our solutions: partner with us to benefit from Lohtragon® Flow Additives and **take advantage of our tailor-made solutions** designed to meet your unique industry needs. Our team of experts is ready to support you, assisting to ensure your product's success. Further products of our portfolio might be suitable, depending on your product matrix – <u>get in touch with us!</u>

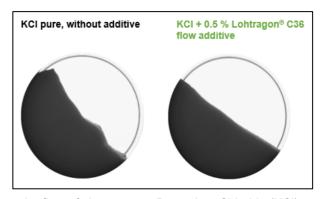
Proven Flow-Functionality – Validated by In-House Testing

Efficient Flow Enhancement at Low Dosages

Lohtragon® Flow Enhancers deliver strong flowability improvements even at low concentrations, without causing unwanted side effects. Their performance is verified through comprehensive in-house testing.

Rotating Drum Rheometer Testing – Quantifying Flow Performance

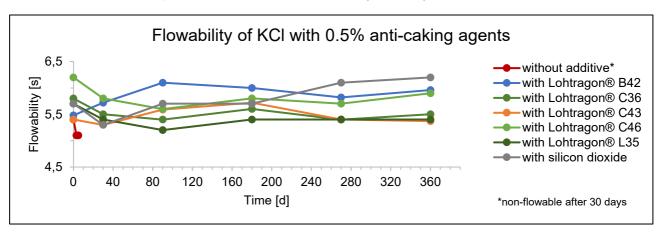
Using an automated powder tester for cohesion based on the rotating drum principle, flowability is measured by the powder's dynamic angle of repose, where lower angles indicate better flow. The dynamic cohesive index reflects the cohesive forces between the grains. As shown on the



right, adding just 0.5% Lohtragon® C36 significantly improves the flow of clump-prone Potassium Chloride (KCI).

Funnel Testing – Proven Flow Functionality

In accordance with Ph. Eur. 2.9.16, stainless-steel funnel testing evaluates vertical powder flow over time (100 g sample, Ø 10 mm, 3x measurement, room temperature). As shown in below graph, after 12 months, KCl blended with the different Lohtragon® Flow Enhancers from maintained excellent flowability – comparable to samples with silicon dioxide. In contrast, pure KCl became non-flowable after just 30 days.



Extensive testing of our Lohtragon[®] Flow Enhancers confirms their outstanding ability to improve the flowability of Potassium Chloride. Even after 12 months of storage at room temperature, flow performance remains fully intact. As silica-free solutions, **Lohtragon[®] products offer a reliable and high-performing** alternative for those seeking declaration-friendly, **silica-free formulations without compromising on effectiveness.**

Rheometer Testing – Advanced Analytics for Optimal Powder Flow and Performance

To ensure the best performance in powder processing of our flowability-enhancing metal salts, we offer extended analytical support. Besides, above powder rotating and funnel testing, additional application data can be measured using our in-house rheometer. This includes parameters such as stability index, specific energy, conditioned bulk density, aeration ratio, and pressure drop. These measurements allow us to predict and optimize powder performance under various conditions, helping you design ideal formulations for your specific needs.

The information given in the document corresponds to our current knowledge. We warrant in the frame of our General Terms and Conditions of Sale that our products are manufactured in accordance with the specifications. However, we disclaim any liability with regard to the suitability of our products for a particular purpose or application or their compatibility with other substances. Tests have to be performed by the customer who also bears the risk in this respect. Nothing herein shall be construed as a recommendation to use our products in conflict with third parties' rights.



Flowability Excellence with our Lohtragon® Flow Enhancers: Backed by Proven Application Lab Expertise

Improve Your Formulation: Ensure Consistent Flow and Process Safety

Streamline your production and improve product reliability with Lohtragon[®] Flow Enhancers. Designed to optimize flowability, safety, and efficiency in powder-based formulations, our silica-free additives prevent caking, minimize dust, and ensure long-lasting flow performance. Backed by in-house rheometer and funnel testing, Lohtragon[®] products deliver flow behavior comparable to conventional solutions – while offering the added benefit of declaration-friendly, silica-free formulations.

With multiple products and the option for customized developments, Lohtragon[®] offers a trusted flow enhancer range for cleaner, more stable powder handling. **Ready to upgrade your formulation?** Get in touch with our team today and request your Lohtragon[®] Flow Enhancer sample.

Contact Us



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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!

Established Products

By choosing Lohtragon® products, you benefit from direct manufacturer sourcing and our "Made in Germany" quality and reliability promise.

Joint Developments

From concept phase to tailored product optimization, we are your partner to solve any development challenge.

Expert Services

Rely on services from our application technology, regulatory affairs, logistics, quality departments and more. We fully support you in all areas.