



# Acetates

**Lohtragon®**

Crystallizing Solutions



## Info Sheet Lohtragon®

### The Lohtragon® Acetate Range Advancements in Performance and Sustainability

Acetates are chemical compounds derived from acetic acid. With their unique properties and manifold application areas for industrial applications, they are one of our major Lohtragon® anion groups dedicated for the specific needs of industrial markets. From Ammonium to Zinc, from aqueous solutions to solids and from adhesion modifiers to water purifiers, they play a vital role in numerous industries.



### Lohtragon® Acetates – Our Set-up Leading to Your Added Value

- ◆ **From Ammonium to Zinc:** access a portfolio of > 20 different Acetate products in various chemical grades
- ◆ **Focus on quality** and product properties enabling best performances in various application areas
- ◆ **Source directly from the manufacturer** with production sites in Germany
- ◆ **Innovation beyond standard** and tailor-made solutions
- ◆ Reliability of supply
- ◆ Extensive services and flexibility
- ◆ Sustainability approach

All Leading to Your Added Value.

### Acetates – Key Characteristics

Acetates have several special properties and uses. Here are a few key characteristics:

- ◆ **Solubility:** Metal Acetates are generally soluble in water, which makes them versatile for various applications. The solubility allows for easy preparation of solutions and facilitates their use in chemical reactions.
- ◆ **Stability:** Acetates exhibit good stability, especially at moderate temperatures. They can withstand mild heating without decomposing, making them suitable for several industrial processes.
- ◆ **Precursors** for other compounds: Metal Acetates serve as important precursors for the synthesis of various compounds. They can be used as starting materials for the production of catalysts, pigments, dyes, pharmaceuticals, and other organic and inorganic chemicals.
- ◆ **Buffering** capacity: Acetates are known for their buffering capacity, which means they can resist changes in pH when acids or bases are added. This property makes metal Acetates useful in laboratory settings and in various chemical reactions that require a specific pH range.
- ◆ **Catalytic properties:** Certain metal acetates exhibit catalytic activity, enabling them to accelerate chemical reactions or serve as catalysts in specific processes. They find application in organic synthesis, polymerization reactions, and other catalytic processes.
- ◆ **Environmental applications:** Metal Acetates, particularly those of transition metals like Iron and Aluminum, are used in water treatment and wastewater management. They help in the removal of pollutants, such as Phosphates, from industrial and municipal effluents.

It's worth noting that the specific properties and applications of metal Acetates can vary depending on the particular metal involved, as different metals exhibit different chemical behaviors and reactivity.

## The Lohtragon® Acetate Range Advancements in Performance and Sustainability

### Our Acetate Portfolio – Source Directly from the Manufacturer

With more than 20 different Acetates, our portfolio is a key contributor to your acetate needs. Our metal salts are manufactured at our two German production sites in Emmerthal and Lüneburg.

| Product               | Type | Used substance                  | CAS no.    | Product description*                          |
|-----------------------|------|---------------------------------|------------|---|
| <b>Ammonium</b>       |      |                                 |            |   |
| Lohtragon® O05        | 20   | Ammonium Acetate                | 631-61-8   | crystals   chem. pure                         |
| Lohtragon® O55        | 10   | Ammonium Acetate Solution       | 631-61-8   | solution   approx. 50 %                       |
| <b>Calcium</b>        |      |                                 |            |   |
| Lohtragon® O01        | 172  | Calcium Acetate                 | 62-54-4    | powder   chem. pure                           |
| Lohtragon® O01 ST/176 | 176  | Calcium Acetate                 | 62-54-4    | powder   chem. pure   additional parameters   |
| Lohtragon® O01 ST/179 | 179  | Calcium Acetate                 | 62-54-4    | powder   purity acc. to E 263                 |
| Lohtragon® O01 ST/180 | 180  | Calcium Acetate                 | 62-54-4    | Granules   purity acc. to E 263               |
| Lohtragon® O50        | 6    | Calcium Acetate Solution        | 62-54-4    | solution   approx. 24 %                       |
| <b>Copper</b>         |      |                                 |            |   |
| Lohtragon® K02        | 27   | Copper(II) Acetate 1-hydrate    | 6046-93-1  | crystalline powder   chem. pure               |
| <b>Lithium</b>        |      |                                 |            |   |
| Lohtragon® B53        | 3    | Lithium Acetate 2-hydrate       | 6108-17-4  | crystalline powder   chem. pure               |
| <b>Magnesium</b>      |      |                                 |            |   |
| Lohtragon® K19        | 47   | Magnesium Acetate 4-hydrate     | 16674-78-5 | crystals   chem. pure   optimized flowability |
| Lohtragon® K19 ST/48  | 48   | Magnesium Acetate 4-hydrate     | 16674-78-5 | crystals   chem. pure   additional parameters |
| Lohtragon® K19 ST/49  | 49   | Magnesium Acetate 4-hydrate     | 16674-78-5 | crystals   mineral for use in foods           |
| Lohtragon® K91        | 8    | Magnesium Acetate Solution      | 16674-78-5 | solution   approx. 50 %                       |
| Lohtragon® K91 ST/11  | 11   | Magnesium Acetate Solution      | 16674-78-5 | solution   approx. 55 %                       |
| Lohtragon® K92        | 10   | Magnesium Acetate, anhydrous    | 142-72-3   | powder   chem. pure                           |
| Lohtragon® K92 ST/11  | 11   | Magnesium Acetate, anhydrous    | 142-72-3   | powder   mineral for use in foods             |
| Lohtragon® K92 ST/12  | 12   | Magnesium Acetate, anhydrous    | 142-72-3   | powder   chem. pure   additional parameters   |
| <b>Manganese</b>      |      |                                 |            |   |
| Lohtragon® O03        | 35   | Manganese(II) Acetate 4-hydrate | 6156-78-1  | crystals   chem. pure                         |
| <b>Potassium</b>      |      |                                 |            |   |
| Lohtragon® O02        | 90   | Potassium Acetate, anhydrous    | 127-08-2   | powder   purity acc. to E 261                 |
| Lohtragon® O52        | 20   | Potassium Acetate Solution      | 127-08-2   | solution   approx. 70 %                       |
| <b>Sodium</b>         |      |                                 |            |   |
| Lohtragon® K16        | 53   | Sodium Acetate 3-hydrate        | 6131-90-4  | crystals   chem. pure                         |
| Lohtragon® K16 ST/54  | 54   | Sodium Acetate 3-hydrate        | 6131-90-4  | crystals   purity acc. to E 262(i)            |
| Lohtragon® K18        | 83   | Sodium Acetate, anhydrous       | 127-09-3   | powder   chem. pure                           |
| Lohtragon® K18 ST/84  | 84   | Sodium Acetate, anhydrous       | 127-09-3   | powder   purity acc. to E 262(i)              |
| Lohtragon® K98        | 4    | Sodium Acetate Solution         | 127-09-3   | solution   approx. 30 %                       |

## The Lohtragon® Acetate Range Advancements in Performance and Sustainability

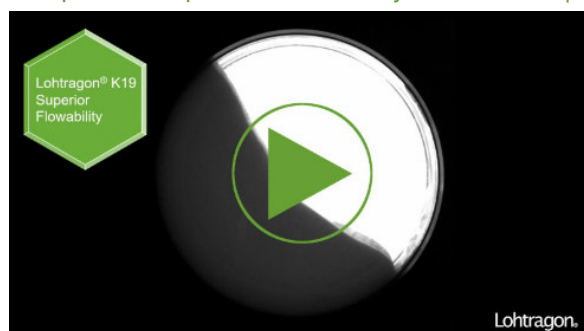
### Our Acetate Portfolio – Source Directly from the Manufacturer

| Product              | Type | Used substance          | CAS no.   | Product description*                        |
|----------------------|------|-------------------------|-----------|---|
| <b>Zinc</b>          |      |                         |           |   |
| Lohtragon® O56       | 2    | Zinc Acetate, anhydrous | 557-34-6  | powder   chem. pure                         |
| Lohtragon® O06       | 44   | Zinc Acetate 2-hydrate  | 5970-45-6 | crystalline powder   chem. pure             |
| Lohtragon® O06 ST/43 | 43   | Zinc Acetate 2-hydrate  | 5970-45-6 | crystalline powder   purity acc. to E 650   |
| Lohtragon® O06 ST/46 | 46   | Zinc Acetate 2-hydrate  | 5970-45-6 | powder   chem. pure   additional parameters |
| Lohtragon® O86       | 2    | Zinc Acetate Solution   | 5970-45-6 | solution   approx. 25 %                     |

\*E No qualities refer to European food legislation (EU regulation no. 231/2012). For chemically pure qualities, please contact us for your food contact need. Beyond our established product range, our Lohtragon® metal salt competences in production, R&D and quality departments offer you custom specifications and new developments. Your Acetate of interest is not listed? You have further quality requirements or regulatory needs? Contact us!

### Lohtragon® Acetates: Product-related Competences

#### Competence: Optimized Flowability Performance | Lohtragon® K19



Our Lohtragon® K19 is one product example of our existing acetate range that is characterized by its optimized flow properties. Benefiting from our competences in product modification and manufacturing expertise, the product shows accurate dosing behavior and lower tendency to lump compared to standard product types.

Click [here](#) and watch the video from our rheometer!

Our precise knowledge and long years of experience as a developer and manufacturer of metal salts enable us to steer and control highly sophisticated process steps. The

constant high purity of our metal salts guarantees a defined chemical behavior and high process reliability, no matter how many batches have to be processed. We can adapt the chemical and physical properties of our products in line with their intended purpose, and can develop individual processes and solutions in collaboration with our customers.

The improved performance of our Lohtragon® K19 is based on specific adjustments, such as the optimal particle size, shape and distribution as well as an adapted surface texture and porosity. The showcase of the flowability is only one example of several physical and chemical modification options that are possible.

## The Lohtragon® Acetate Range Advancements in Performance and Sustainability

### Lohtragon® Acetates in Action – Applications & Case Studies

Our Lohtragon® Acetates are used in a variety of different applications. Here are some industrial market examples, followed by selected case studies:



Your application of interest is not mentioned? You have further application requests? Get in touch with us!

#### Case Study: Lubricants | Lohtragon® O01

In the formulation of lubricating pastes and greases, soaps act as thickeners. More and more **special Calcium complex greases** are replacing the proven systems, such as lithium based ones. The conversion of fatty acids by saponification leads to water-insoluble metal soaps. Lohtragon® O01 has shown suitability for this purpose. The specific product structure of the Lohtragon® O01 makes it **the ideal formulation ingredient for calcium complex soaps**.

#### Case Study: Fire Extinguisher | Lohtragon® O52

Extinguishing a fire and effectively preventing its expansion is the most important first measure while witnessing a fire outbreak. Extinguishing agents are selected to suit the type of fire to be extinguished. Our Lohtragon® O52 has **proven its performance** especially for class F or class K cooking fat fires, by being harmless to health and the environment. Its highly effective dispersion mechanism contributes to the saponification of the oil or fat. The resultant layer acts as a blocker, preventing access to oxygen and thus the spread and reigniting of the fire.

#### Case Study: Automotive Catalyst | Lohtragon® K19

Catalytic converters for emission control in vehicles convert the toxic emissions from combustion engines, mainly carbon monoxide, nitrogen oxides and unburned hydrocarbons, into harmless substances such as carbon dioxide, nitrogen and water. Lohtragon® K19 as one product example acts as activator, typically based on the cation, it reduces considerably the temperature for the catalytic conversion of NOx. The acetate anion ensures a **good thermal decomposition behavior in the formulation of wash coats**. In particular the Lohtragon® K02 can be mentioned, too with a remarkably low thermal composition temperature of below 250°C.

#### Case Study: Transesterification Catalyst | Lohtragon® O56 and Lohtragon® K92

Transesterification, a standard reaction in organic chemistry, is related to many industrial processes. It is needed, if polyesters and polyethers are not accessible through the direct synthesis of suitable acids with alcohols. Lohtragon® O56 is a **proven transesterification catalyst** especially due to highest possible purity.

For the production of PET foils in the field of polymer additives, charging aids are needed. Our Lohtragon® K92 takes over this function, highly suitable due to its good flowability and low water content.

## The Lohtragon® Acetate Range Advancements in Performance and Sustainability

### Case Study: Trimerization Catalyst, Polyisocyanurate Hard Foam (PIR) | Lohtragon® O02

Hard foams such as PIRs are synthesized through the catalysis of polyurethanes using Lohtragon® O02 as an active trimerization catalyst. Potassium plays a **key role as the catalytic driver in PIR systems** promoting the isocyanurate, trimerization reaction in the rigid polyisocyanurate foam. The high purity of our Lohtragon® O02 and the batch-to-batch consistency are two key elements for this application.

### Case Study: Home Care & Cleaning | Lohtragon® O56

Machine dishwashing requires the use of **glass corrosion inhibitors** due to the aggressive, alkaline cleaning and process parameters involved. Specially adapted types containing appropriate metal salts offer a wide range of applications for powder, tablet and liquid cleaning systems. Lohtragon® O56 has proven itself in this regard. It contributes to smoother glass surfaces, supporting clear and shiny glasses for several dishwasher cycles.

### Case Study: Precursor for Glass, Ceramics & Pigments | Lohtragon® K19

Lohtragon® products are used as precursor materials for high performance ceramics and glasses. Our Lohtragon® K19, characterized by a high purity and optimized flowability, focuses on an **easy processability** in comparison to classic organometallic Magnesium compounds.

## Lohtragon® Product Selector for Acetates

|                           | Adhesives | Catalysts & Auxiliary Materials | Chelating Agents | Construction Industry | Crop Protection | Energy | Fire Extinguishers | Glass, Ceramics & Pigments | Home Care & Cleaning | Lubricants | Medical Products | pH Control | Polymer Additives | Surface Treatment | Water Purification |
|---------------------------|-----------|---------------------------------|------------------|-----------------------|-----------------|--------|--------------------|----------------------------|----------------------|------------|------------------|------------|-------------------|-------------------|--------------------|
| <b>Ammonium Acetates</b>  |           |                                 |                  |                       |                 |        |                    |                            |                      |            |                  |            |                   |                   |                    |
| Lohtragon® O05            |           | ✓                               | ✓                |                       |                 |        |                    |                            |                      |            |                  | ✓          |                   | ✓                 |                    |
| Lohtragon® O55            |           | ✓                               | ✓                |                       |                 |        |                    |                            |                      |            |                  | ✓          |                   | ✓                 |                    |
| <b>Calcium Acetates</b>   |           |                                 |                  |                       |                 |        |                    |                            |                      |            |                  |            |                   |                   |                    |
| Lohtragon® O01            | ✓         |                                 |                  | ✓                     | ✓               |        |                    | ✓                          |                      | ✓          | ✓                |            | ✓                 |                   |                    |
| Lohtragon® O50            |           |                                 |                  |                       |                 |        |                    |                            |                      |            | ✓                |            |                   |                   | ✓                  |
| <b>Copper Acetates</b>    |           |                                 |                  |                       |                 |        |                    |                            |                      |            |                  |            |                   |                   |                    |
| Lohtragon® K02            |           | ✓                               |                  |                       |                 |        |                    | ✓                          |                      |            |                  |            | ✓                 |                   |                    |
| <b>Lithium Acetates</b>   |           |                                 |                  |                       |                 |        |                    |                            |                      |            |                  |            |                   |                   |                    |
| Lohtragon® B53            |           | ✓                               |                  |                       |                 | ✓      |                    |                            |                      | ✓          |                  | ✓          |                   |                   |                    |
| <b>Magnesium Acetates</b> |           |                                 |                  |                       |                 |        |                    |                            |                      |            |                  |            |                   |                   |                    |
| Lohtragon® K19            | ✓         | ✓                               |                  |                       |                 |        |                    | ✓                          |                      |            |                  |            | ✓                 |                   |                    |
| Lohtragon® K91            |           | ✓                               |                  |                       |                 |        |                    |                            |                      |            |                  |            |                   |                   |                    |
| Lohtragon® K92            |           | ✓                               |                  |                       |                 |        | ✓                  |                            |                      |            |                  |            |                   |                   |                    |
| <b>Manganese Acetates</b> |           |                                 |                  |                       |                 |        |                    |                            |                      |            |                  |            |                   |                   |                    |
| Lohtragon® O03            |           | ✓                               |                  |                       |                 | ✓      |                    |                            | ✓                    |            |                  |            |                   |                   |                    |
| <b>Potassium Acetates</b> |           |                                 |                  |                       |                 |        |                    |                            |                      |            |                  |            |                   |                   |                    |
| Lohtragon® O02            | ✓         | ✓                               |                  |                       |                 |        | ✓                  |                            |                      |            |                  |            | ✓                 |                   |                    |
| Lohtragon® O52            |           |                                 |                  |                       |                 |        | ✓                  |                            |                      |            |                  |            |                   |                   |                    |
| <b>Sodium Acetates</b>    |           |                                 |                  |                       |                 |        |                    |                            |                      |            |                  |            |                   |                   |                    |
| Lohtragon® K16            |           |                                 |                  |                       | ✓               | ✓      |                    |                            |                      |            |                  | ✓          |                   | ✓                 |                    |
| Lohtragon® K18            |           | ✓                               |                  |                       | ✓               |        |                    |                            |                      |            |                  | ✓          |                   | ✓                 |                    |
| Lohtragon® K98            |           |                                 |                  |                       | ✓               |        |                    |                            |                      |            |                  | ✓          |                   |                   |                    |
| <b>Zinc Acetates</b>      |           |                                 |                  |                       |                 |        |                    |                            |                      |            |                  |            |                   |                   |                    |
| Lohtragon® O06            | ✓         | ✓                               |                  |                       |                 |        |                    |                            | ✓                    |            |                  |            |                   |                   |                    |
| Lohtragon® O56            | ✓         | ✓                               |                  |                       |                 |        |                    | ✓                          | ✓                    |            |                  |            | ✓                 |                   |                    |
| Lohtragon® O86            |           | ✓                               |                  |                       | ✓               |        |                    |                            |                      |            |                  |            | ✓                 |                   |                    |



## The Lohtragon® Acetate Range Advancements in Performance and Sustainability

### Focus on Sustainability

- ◆ Lohtragon® considers sustainability aspects
- ◆ Raw material sourcing is the starting point
- ◆ Aqueous solutions vs solids are worth to consider – whenever possible

The Lohtragon® mindset around sustainability in metal salt production includes manifold principles to enable a responsible way of handling resources and to protect the environment. We are committed to this approach along the entire value chain. Considering sustainability aspects for our Acetates, we will share with you two approaches.

Sourcing of sustainable produced raw materials is one of the key factors for our Lohtragon® portfolio. For example, for the production of our anhydrous Magnesium Acetate types, Dr. Paul Lohmann® uses **raw materials, which are directly coming from nature**. These products are committed to environmentally-sound mining, focusing on maintaining the natural environment as close as possible to its pre-mining state. Land restoration and reforestation with olive trees are carried out to bring the mining area back into line with the original landscape and to restore its full potential.



Thinking about carbon footprint improvements, we also consider the product form. Comparing aqueous solutions to its metal salt solids, the **aqueous product enables significant CO<sub>2</sub> savings**. Skipping energy-intensive evaporation and drying processes in the production of the solution leads to more sustainable processes and an improved carbon footprint. For instance, the production of 15 t Potassium Acetate solid requires approx. 0.5 kg/CO<sub>2</sub> more than the aqueous solution (50 %). Considering a transportation distance of e.g. 500 km by truck, this leads to a CO<sub>2</sub> saving of approx. 7,300 kg/CO<sub>2</sub>. This means a saving of more than 2,500 l diesel resulting in a distance of approx. 39,000 km (consumption of 7 l/100 kg assumed). More details on these thoughts are available on request.

Contact us for more information on our sustainability strategy and approaches.  
Feel also free to [access our corporate sustainability report](#) approved by the German Sustainability Code.

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### Contact Us

Connect directly with our Lohtragon® experts in our German headquarter.



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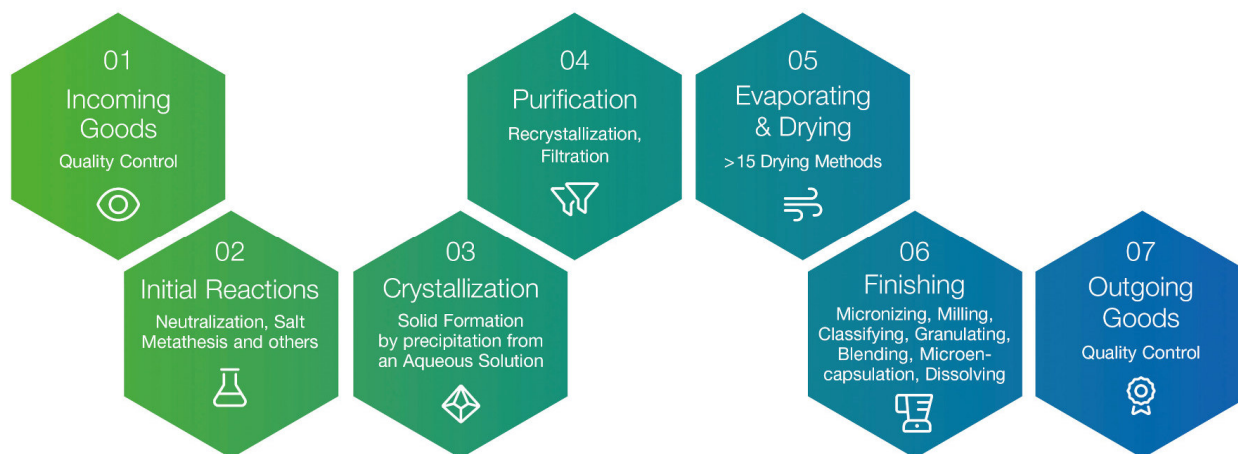
[contact@lohtragon.com](mailto:contact@lohtragon.com)



[www.lohtragon.com](http://www.lohtragon.com)

### 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.