

**EMD
ELECTRONICS**

Make it bright.

livilux® – OLED Materials by
Merck KGaA, Darmstadt, Germany



 **livilux®**

Light, that sets the bar.

Without light there would be no life on our planet – and no images to inspire and fascinate people. livilux® materials bring light to life, generating dynamic and animated images, creating “living light” through our broad portfolio of OLED materials.

Its vivid colors and brilliance are unparalleled in the display and lighting industry. Together, we create new zeniths for the communication of the future.

Welcome to the world of OLED materials at Merck KGaA, Darmstadt, Germany.

Progressive Vision.

We aim to transform innovations into marketable products that create new dimensions in display technology and help you to achieve a key competitive edge in a constantly changing market. With decades of experience in developing and manufacturing livilux® OLED materials and a strong portfolio of global patents, Merck KGaA, Darmstadt, Germany has a solid foundation for its range of high-purity and high-stability materials that are customized to precisely meet your requirements. With one of the largest R&D teams in the industry, we cooperate closely with the market leaders in the OLED display industry.

We are your reliable partner in the development of innovative materials for future OLED technologies in this ever-changing market. As a leading technology partner, we transform innovation into marketable products and offer a unique portfolio of premium materials for OLEDs – from well-established materials to cutting-edge innovations, from R&D samples to industrial-scale production.

creating your highlights.

Our broad range of livilux® OLED materials enables you to make light come alive! Whether modern materials for vacuum evaporation processes or inks for printing processes: We support you in integrating ultra high-quality components into your systems. Together we will create a new visual experience, enhancing communication in the future.

The OLED Technology.

OLEDs have definitive advantages: Extremely thin and lightweight, they offer new perspectives in the display industry. OLED displays deliver a perfect image from every viewing angle – with extraordinary color brilliance and very high contrast. OLEDs have rapid response times of under one millisecond, making them perfectly suited for showcasing video sequences. OLEDs are used in all types of display applications, from microdisplays to large TVs. Thanks to their low power consumption, they are particularly suited for use in portable devices such as smartphones, smartwatches and tablets.

The development of suitable plastic substrates is paving the way for flexible and transparent OLED displays. In the future, it will be possible to install large displays in small spaces and to use these displays where glass is not an option. OLED technology sets new standards for lighting applications, not only displays. OLEDs are extremely thin and lightweight area light sources that generate a pleasant, naturally diffuse light. OLEDs enable completely new design possibilities, while also being extremely energy efficient.

livilux® – Materials made in Germany.

Merck KGaA, Darmstadt, Germany develops and manufactures OLED materials in close cooperation with you and provides application support to optimize materials for your specific requirements.

livilux® OLED materials for vapor and printing applications.

A far-reaching effect. livilux® for vaporization.

Today, vacuum thermal evaporation is the most common manufacturing technology for OLEDs. For peak performance, highly purified molecules are necessary. Our livilux® OLED materials are produced using cutting-edge technology, purified in multiple steps, and tested for quality in state-of-the-art laboratories.

livilux® OLED materials for vaporization cover a broad range:

- Hole transport materials
- Electron transport materials
- Host materials
- Emitter materials
- Hole and electron blocking materials

Make it large. livilux® for printing.

OLED inks have the potential to revolutionize display and lighting production. Inkjet-printed large-size OLEDs are no longer a dream! livilux® OLED inks combine the benefits of evaporable materials with the advantages of solution processing, while retaining the excellent physical properties of evaporable materials.

The livilux® OLED inks range encompasses:

- Hole transport inks
- Hole injection inks
- Emitter and host inks

livilux® – Excellent Quality. Reliable. Reproducible.

The "full stack approach".

The performance of an OLED is determined by the system as a whole, the "full stack". The interaction of the layers must be controlled to optimize performance of the overall device. In our material development, we always consider and evaluate the influence of materials in a full stack to understand the potential for optimization.

Close cooperation with partners enables Merck KGaA, Darmstadt, Germany to understand the stack architecture and to optimize device performance with harmonized materials.



YOU need us here. We are already there.

Local presence.

We know that customer proximity is key to successful individual solutions. This shortens communication paths and saves valuable development time. With Merck KGaA, Darmstadt, Germany, you can rely on our global technical assistance – no matter whether you are in Korea, Japan, China, Taiwan, Europe or the United States. And our OLED application laboratories support you in achieving your goals. To ensure that everything is in the right place at the right time, we are at your disposal as a true global player with a professional logistics network.

Innovation driven from Germany.

Merck KGaA, Darmstadt, Germany, is a leading science and technology company in healthcare, life science and electronics. Around 57,000 employees work to make a positive difference to millions of people's lives every day by creating more joyful and sustainable ways to live. From advancing gene editing technologies and discovering unique ways to treat the most challenging diseases to enabling the intelligence of devices – the company is everywhere. In 2019, Merck KGaA, Darmstadt, Germany, generated sales of € 16.2 billion in 66 countries.

Founded in 1668, Merck KGaA, Darmstadt, Germany, is the world's oldest pharmaceutical and chemical company. The founding family remains the majority owner of the publicly listed corporate group. Merck KGaA, Darmstadt, Germany, holds the global rights to the Merck KGaA, Darmstadt, Germany, name and brand. The only exceptions are the United States and Canada, where the company operates as EMD Serono, MilliporeSigma and EMD Electronics.

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