

Functional Adhesive Tapes

How Lohmann is Providing Solutions for the Future of Electric Mobility

Despite the challenges faced in establishing a competitive European battery industry, the global EV market is constantly growing. As a proportion of new car registrations, sales of EVs increased from 28% in Q1-2023 to 41% in Q3-2024. In Europe new EV registrations increased to 56% in Q3-2024 in the top five countries. (Source: Strategy & PWC, Electric Vehicle Sales Review Q3-2024). Positively, and in part driven by government regulation, the market for electric vehicles is forecast to steadily grow and, according to S&P Global Mobility, by the end of 2025 to account for 20.4% of the total market.

However, to increase the speed of EV adoption there remain challenges to overcome such as: range anxiety, improved and reliable charging network, the speed of charging and the safety concerns with regards to battery thermal events.

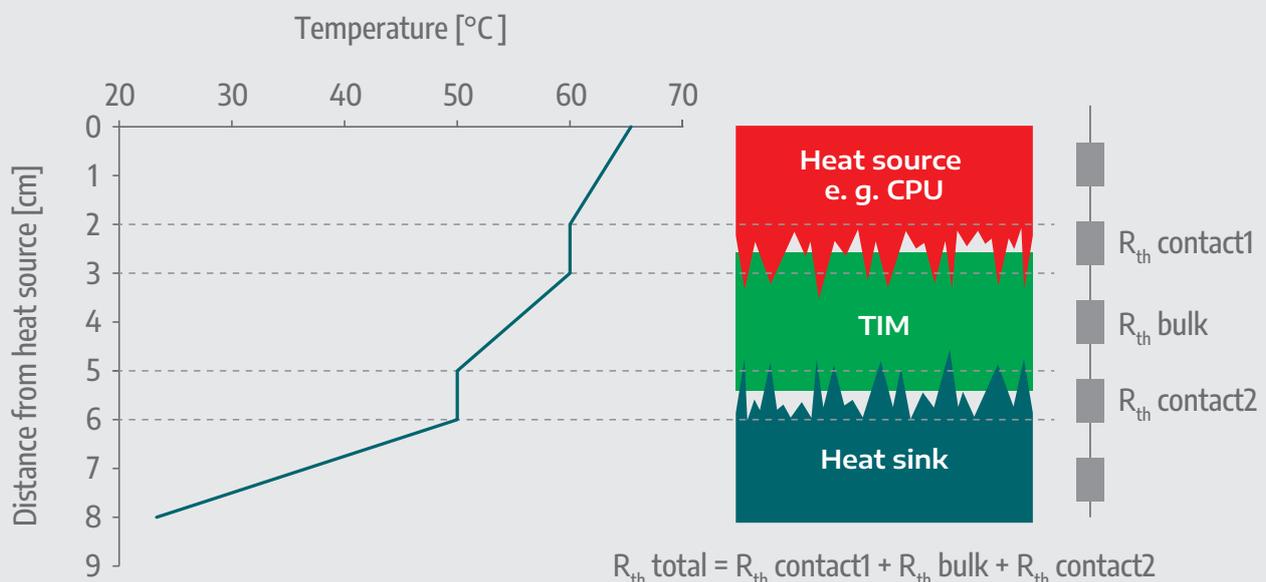
To improve battery performance and speed-of-charging, excellent thermal management is key. Battery packs generate the most heat during rapid charging and high-power discharge events. To keep battery cells within an optimal temperature range, where they take the least

damage – between 15°C to 35°C – the materials and battery pack design has to be selected to enable a stable heat transfer from the cooling system to the battery cells and vice versa.

Efficient heat transfer is not only essential for the longevity of battery cells, but also for the other temperature-sensitive components that have to be protected against heat and cold.



Our Battery Team at Lohmann
(f. l. t. r.: Phil Löt, Nicole Ehrmann, Siddhant Srivastava)



Improving thermal management is a key reason Lohmann developed their new product line – **the DuploCOLL TC series.**

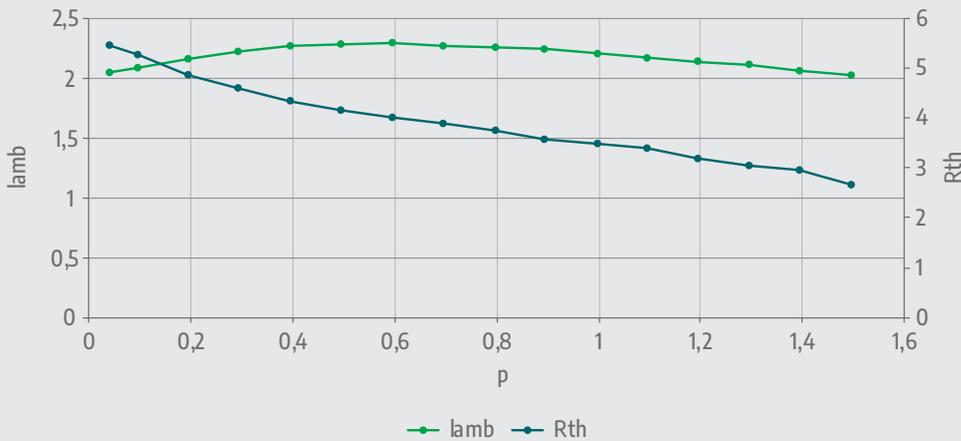
These thermally conductive tapes have been developed on the basis of solvent- and silicone-free adhesives which meet the latest requirements for thickness (250µm – 2mm), fire stability (UL94-V0) and high electrical insulation.

In addition to these „functional“ properties, the pressure sensitive adhesive tapes have exceptionally good wet-out on to different surface structures, thus reducing the thermal resistance between the temperature source, the tape and the temperature sink. This is where Lohmann’s range of thermally conductive, pressure-sensitive adhesive tapes come into their own.

At 2-Watts, the thermal conductivity, measured in W/m*K, may not be remarkable, however the specific thermal resistance R_{th} [W/K] is low. Whilst this value varies due to the different thicknesses of the material the thermal conductivity remains constant for all thicknesses. The lower the thermal resistance of the junction, the better the heat flow from the source to the target (battery cell to cooling plate, LED to heat sink, etc.).



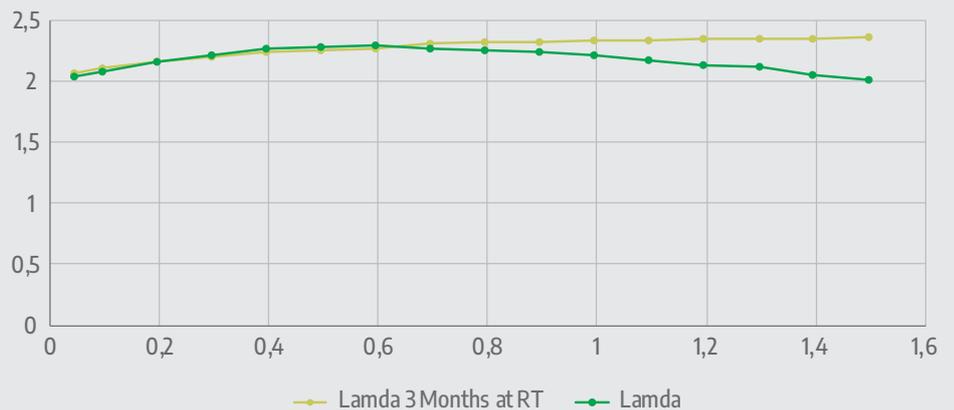
Thermal Conductivity of DC 74615 TC



Thermal conductivity and thermal resistance of DuploCOLL 74615 TC (thickness: 1,5mm, thermal conductivity nominal: 2 W/mK) Method: ASTM 5470-17; T: 50°C

Comparison of Thermal Conductivity before and after Ageing - DC 74615TC

DuploCOLL 74615 TC:
thermal conductivity before and after ageing for 3 months at room-temperature.



Being a key component to enhance thermal management properties is where Lohmann's DuploCOLL TC series delivers its greatest advantage. By applying slight pressure, the tape adheres easily onto the surface of the substrate and significantly reduces contact resistance Rth 1+2.

The adhesive system - which Lohmann both developed and manufactures in Europe - can be customised in-house to provide customers with their required design, dimension and format, offering where required greater scope for further processing.

Lohmann are committed to being the customer's partner of choice, from the first component idea through to serial production.

If you have questions or require further information then please do not hesitate to contact us. Our specialist team at Lohmann look forward to discussing with you the benefits our new DuploCOLL TC series has to offer.



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