

Analog Core Technologies: Solution Examples

1 Dicing Tape

Market position

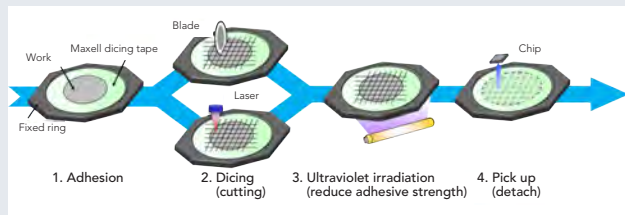
We have a leading share of the global market for semiconductor material for dicing, moving toward miniaturization and thinner films.

Technological capabilities

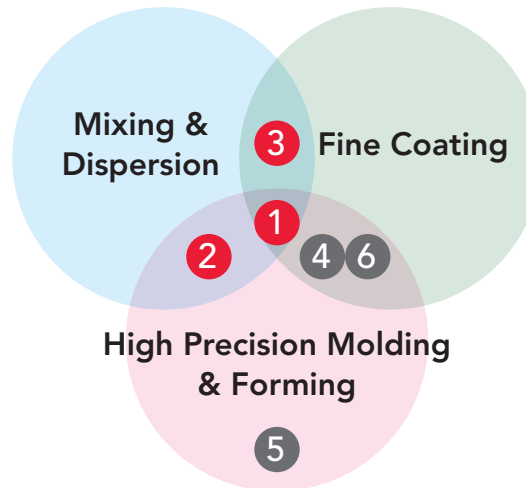
Maxell's unique dicing tape was created by combining three Analog Core Technologies: technology for uniform Mixing & Dispersion of adhesives and additives after thinning with solvent; Fine Coating, which enables uniform coating over a wide area of adhesive adjusted to a suitable coating viscosity; and High Precision Molding & Forming, which produces a roll shape through optimal drying conditions.

Development

Using our proprietary Analog Core Technologies (Mixing & Dispersion, Fine Coating, and High Precision Molding & Forming), we will develop optimal products, keeping pace with changes in semiconductor manufacturing processes and strengthening our relationships with leading semiconductor manufacturers.



The Maxell Group has created numerous products by combining the Mixing & Dispersion technology, Fine Coating technology, and High Precision Molding & Forming technology that have been defined as its Analog Core Technologies.



3 Coated Separators

Market position

Demand for various classes of electric vehicles (xEVs) is expected to increase. The lithium ion batteries used in EVs need to offer higher output and capacity, along with improved safety. Ube Maxell Kyoto Co., Ltd. supplies coated separators that use proprietary dispersion and coating technologies. The separators have enhanced dimensional stability against the heat of automotive lithium ion batteries, making them highly safe.

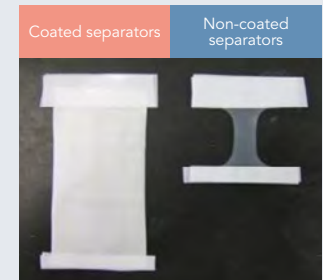
Technological capabilities

Ube Maxell Kyoto uses proprietary technology for applying a proprietary coating of uniformly dispersed special inorganic particles with high speed and precision over the entire surface of the separator to form a uniform, heat-resistant thin film.

If the lithium ion battery becomes abnormally hot, this heat-resistant thin film suppresses thermal contraction of the separator, helping to control short-circuiting of the electrodes.

Development

We aim to supply the technology for expanded use of lithium ion batteries for xEVs and adoption of lithium ion batteries for industrial equipment.



Comparison of the exterior of separators after a heating test

2 Heat-Resistant Coin-type Lithium Batteries

Market position

- Rapid expansion of the Tire Pressure Monitoring Systems (TPMS) market has been spurred by moves to make the systems compulsory in every country.
- As the leading manufacturer in terms of global market share*, we have solid customer relationships built up through joint development with major global TPMS manufacturers.

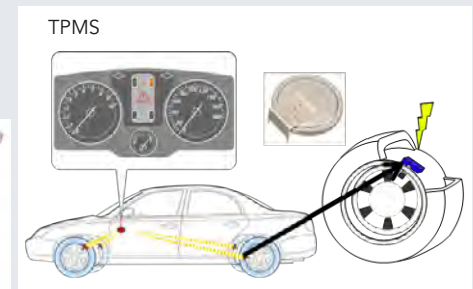
* As determined by Maxell's research

Technological capabilities

- These batteries are fitted inside tires and therefore need to operate in a harsh environment, with temperatures ranging between -40°C and 125 °C, gravitational acceleration of 2,000 G, and speeds of 300 km/h.
- As an expert in the field of batteries, Maxell has selected unique materials and applies its technologies for uniform Mixing & Dispersion and for sealing (forming) so as to prevent leakage of liquids to realize stable operation.

Development

- We are currently developing a TPMS battery that can adhere directly to the tire, making reference to road surface sensing, etc.



Analog Core Technologies: Solution Examples

4 LED Headlamp Lenses

Market position

In 2007, our lenses were used in the world's first mass-produced LED headlamps, and we have retained the No. 1 share* of the global market ever since.

* As determined by Maxell's research

Technological capabilities

This product is made by applying molding and lens forming technology cultivated in the field of TVs and projectors. Using nanometer-level processing accuracy and precision measuring technologies together with an integrated in-house production system for molding and forming, we have achieved high quality that outperforms other companies.

Development

In addition to standard round lenses, we have developed products such as irregular shaped lenses and light guides.

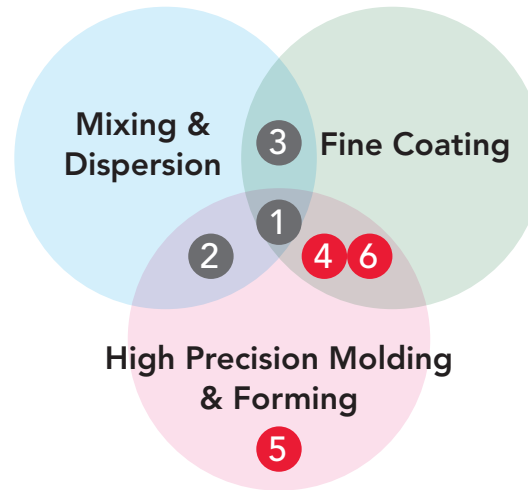
We have expanded our manufacturing bases in China (2012) and Malaysia (2015), reducing lead times to meet customer needs.



LED headlamp lens



Headlamp unit



6 In-Car Camera Lens Units

Market position

We have a leading position in the global market thanks to our integrated production system, from optical design to manufacturing, and a hybrid construction that combines glass and plastic.

Technological capabilities

We create plastic lenses with alignment molding technology and optical axis control through unique mechanism design and process technologies.

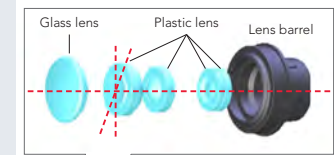
We apply precision coatings with antireflective and heat-resistance functions to the molded lenses.

An automatic assembly machine can completely assemble the lens comprising 7 to 10 layers.

We realized high-quality lenses using these Analog Core Technologies.

Development

We are aiming for a 20% share of the global market by responding to advanced specification requirements, following changes in demand from lenses for viewing to lenses for sensing.



In-car camera lens units

5 Head-Up Displays (HUDs)

Market position

Following advances in autonomous driving, HUDs featuring augmented reality (AR) are scheduled to begin mass production in 2021. AR-HUDs are based on the concept of safe driving support for drivers (progress information display, etc.).

Technological capabilities

The HUDs feature optical components that use Analog Core Technologies developed in the field of projectors.

We have realized remote display, miniaturization, and low power consumption through the use of free-form optical elements built using optical design, and High Precision Molding & Forming technologies.

Development

We will develop the products from luxury vehicles to ordinary vehicles to meet customer needs.

Through imaging and optical technology products, we will provide safety and security to contribute to society.



Image of HUD

HUD