

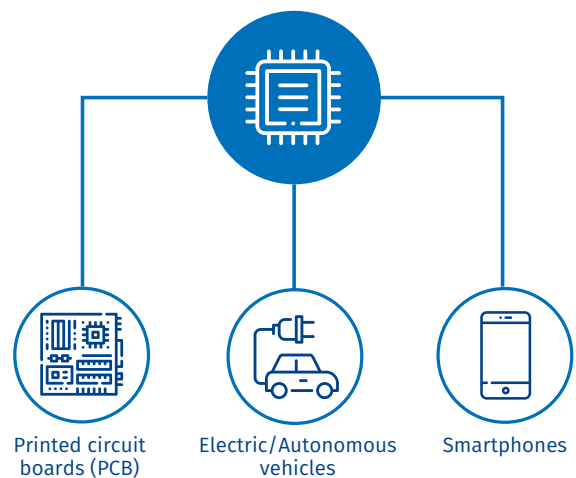
# Powering Connectivity: Advanced Material Science for Connectors

Technology that drives greater connectivity is growing rapidly. The electric vehicle (EV) market is projected to grow at an annual rate of 20% over the next decade. During the same time period, autonomous vehicles are expected to see 63% annualized growth – largely due to roll-out of 5G and the Internet of Things (IoT).

Beyond transportation, IoT offers countless ways to enhance convenience in our lives, including connected homes and automation in workplaces. Widespread adoption of these technologies substantially increases the demand for connectors built into hardware that makes them accessible.

Yet, manufacturers must deliver connectors designed to process high power levels, while adhering to miniaturization trends. Connectors for 5G-enabled smartphones, for example, handle higher-frequency signal levels with reduced space, due to the need for additional antennas. Autonomous transportation requires a vast number of high-quality connectors to rapidly and reliably exchange sensor data and ensure vehicles operate safely. Selecting materials that offer high design flexibility without compromising connector performance is crucial for manufacturers.

## KEY CONNECTOR APPLICATIONS



# DSM's advanced connector material solutions portfolio offers:



## >600V

Comparative Tracking Index (CTI)

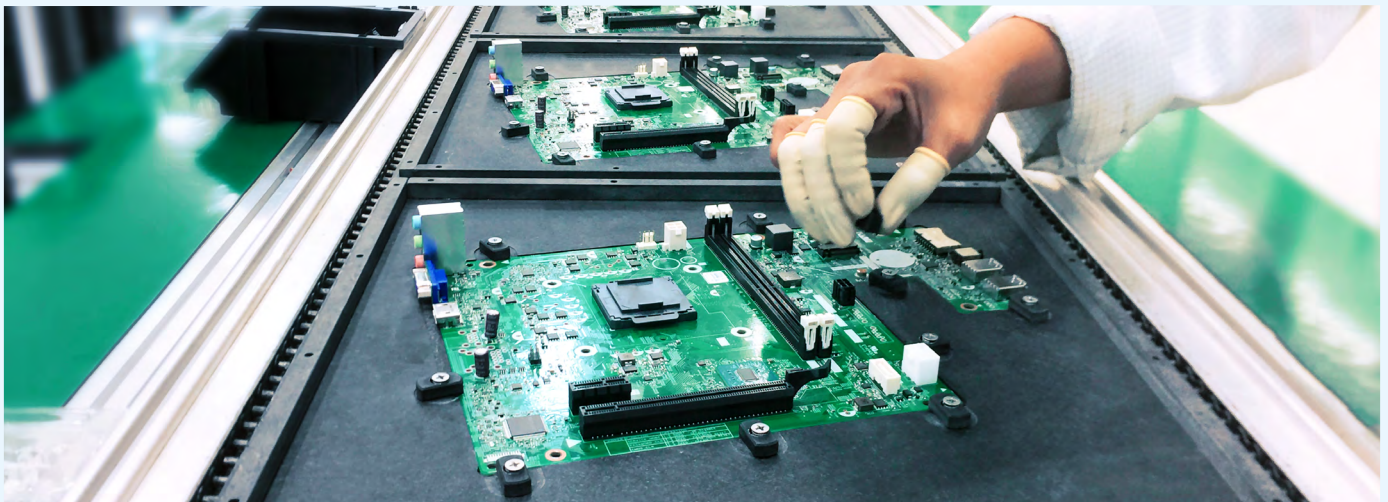


## V-0

UL-94 flammability rating

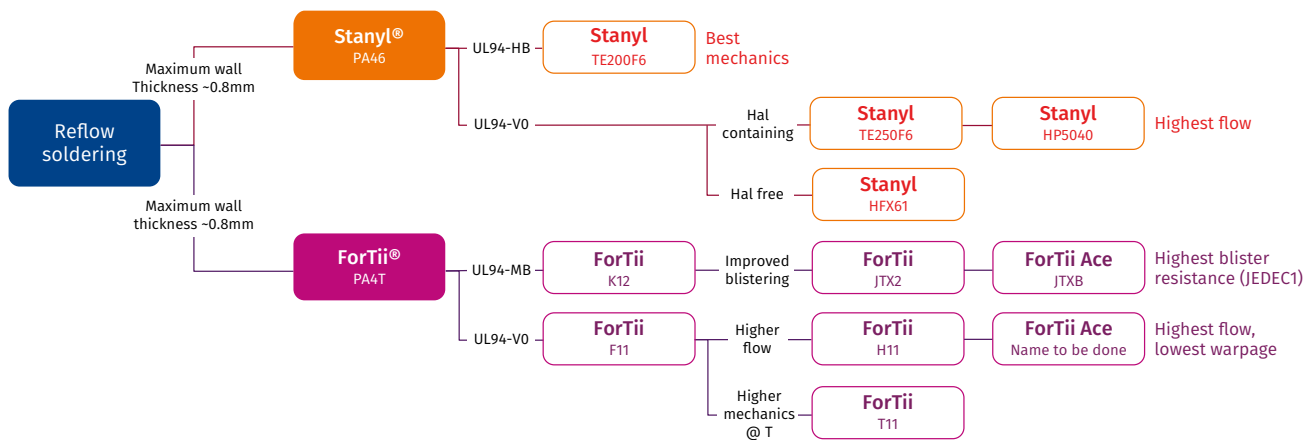
- Excellent mechanical strength and electrical properties
- Superior flow and processability for thin-walled, miniaturized designs
- Unmatched comparative tracking index (CTI) for small creep distances
- High heat deflection temperature (HDT) to ensure pin retention after reflow soldering
- Thoroughly tested UL-94 V-0 and V-2 grades
- Fully halogen-free and flame-retardant grades
- Level 1 JEDEC moisture sensitivity level (MSL) blistering resistance
- Color-friendly materials
- Sustainable materials made from recycled or bio-based feedstocks

We are a global leader in connector material science innovation. Our experienced team has developed a robust portfolio of materials for connectors built to support next-generation technologies across a broad range of global industries. Backed by extensive research, testing and collaboration with OEMs and connector manufacturers, our solutions deliver on all customers' safety, reliability and design flexibility requirements.



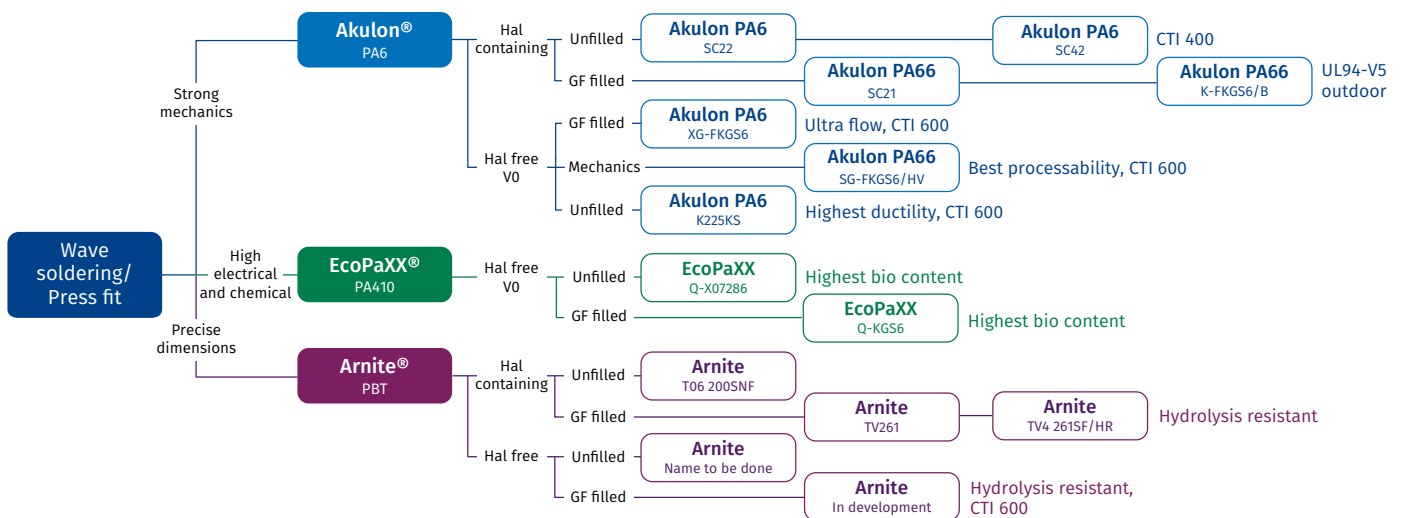
## REFLOW SOLDERING CONNECTOR SOLUTIONS

Electronics manufacturers leverage reflow soldering to produce high-quality small printed circuit boards (PCBs). Reflow connectors developed for components in compact spaces, with thin walls and terminals placed closer together, require high design flexibility. Yet, materials must also offer superior flame retardancy, heat resistance, mechanical strength and low moisture absorption to prevent parts from failing prematurely. A high comparative tracking index (CTI) is required to prevent the risk of electrical fire.



## WAVE SOLDERING AND PRESS FIT CONNECTOR SOLUTIONS

Since PCBs pass through currents of molten solder during wave soldering, connector insulating plastics must be exceptionally reliable. These connectors are designed to process higher voltages which require materials with superior electrical properties measured by UL-94 or other similar testing. Although flame retardancy is needed to ensure end-part reliability, manufacturers increasingly look to design with halogen-free plastics to improve sustainability.



DSM has a proven track record delivering innovative connector solutions. Our global manufacturing, research and technology, and application development teams continuously enhance our plastics portfolio to respond to customers' existing and future

challenges. We partner with OEMs developing connectors for every industry to understand individual requirements, and supply material solutions that go above and beyond customers' expectations.

Contact us at [dsm.com/contactdem](https://dsm.com/contactdem) to learn more about our portfolio of advanced material solutions for connectors.



Royal DSM is a global science-based company active in health, nutrition and materials. By connecting its unique competences in life sciences and materials sciences DSM is driving economic prosperity, environmental progress and social advances to create sustainable value for all stakeholders simultaneously. DSM delivers innovative solutions that nourish, protect and improve performance in global markets such as food and dietary supplements, personal care, feed, medical devices, automotive, paints, electrical and electronics, life protection, alternative energy and bio-based materials. DSM and its associated companies deliver annual net sales of about €10 billion with approximately 25,000 employees. The company is listed on Euronext Amsterdam. More information can be found at [www.dsm.com](http://www.dsm.com). © DSM 2020