Toyochem Develops New Low Trauma, High Moisture-permeable Urethane Adhesives for Healthcare Field

February 24, 2021, Tokyo, Japan—Toyochem Co., Ltd., the polymers and coatings arm of the Tokyo-based Toyo Ink Group, has released a new line of “Soft Skin” polyurethane-based pressure-sensitive adhesives (PSAs) designed to meet the growing demand for safe, low-trauma medical devices formulated for sensitive skin individuals. Suitable applications include surgical tapes and dressing films customized for the medical and healthcare fields. The new adhesive system offers high moisture permeability and low skin exfoliation for a pain-free removal or repositioning of the adhesive material. In addition, the new compositions do not contain silicones or other substances that may contaminate coatings lines or processing environments.

Drawing on its expertise in urethane chemistry in the development of protective films for the electronics industry, Toyochem engineered a medical-grade urethane composition with a uniquely soft and flexible urethane-based composition. The product adheres well to the skin, while causing very low trauma to the keratin layer when the dressing is removed or repositioned. “The challenge is finding the right balance between adhesion and release,” said Nao Nakamura, general manager of Toyochem’s adhesives division. “Materials for medical devices and dressing must have the elasticity to conform to skin surfaces and movement in order to prevent water, dirt or bacteria from entering and infecting the wound. They also need to have the right amount of release to prevent trauma to the tender skin surrounding it. With the new development, we’re able to strike a fine balance that meets both requirements.”

Moreover, Toyochem’s new urethane PSA system demonstrates exceptional moisture permeability with water vapor transmission rates of 2,000g/m²/24 hours, achieving values that are considerably higher than those of conventional acrylic PSAs. Poor moisture permeability can trap heat and water vapors between the skin and adhesive layer, often leading to skin irritation, maceration and even bacterial growth. Toyochem’s PSA product, however, is designed to substantially raise the water vapor transmission ability of the adhesive layer, allowing moisture to be evaporated to the outside of the adhesive material.

At present, silicones are widely used in the manufacturing of wound management devices, due to their biocompatibility. The new PSAs from Toyochem, however, are silicone-free and have been proven safe for human skin contact. They can be customized to meet International Standards ISO 10993-1, making it a more user- and cost-friendly alternative to silicone adhesives.

About Toyochem Co., Ltd.
Toyochem, a wholly owned subsidiary of the Toyo Ink Group, oversees the Group’s Polymers and Coatings-related business segment as a core operating company. Headquartered in Tokyo, the company operates three production facilities in Japan. Using the Group’s polymer design technologies...
that have been cultivated for over a century, Toyochem manufactures polymers, adhesive tapes, marking films and coatings for a wide array of industrial applications. The company's slogan “Something New, Close to You” embodies its commitment to continuously bring new value to everyday lives by delivering new solutions that use Toyochem polymers as their core material. For more information, visit www.toyo-chem.com/en/.

For more information about the Toyo Ink Group, see the website of the parent company Toyo Ink SC Holdings Co., Ltd. at schd.toyoinkgroup.com/en/.

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