



Inspires innovation of new, more sustainable faux leather

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Vistamaxx™ performance polymers are used to produce a sustainable faux leather which is lightweight and cost effective.

Key advantages

- More leather-like feel than PVC
- 40% lighter than PVC
- More durable than PU
- 20% lighter than PU

Challenge

Taiwan-based China General Plastics Corporation (CGPC), one of the world's top-ten manufacturers of polyvinyl chloride (PVC) films and faux leather, was interested in finding an alternative solution to PVC-based materials.

PVC is the most commonly used polymer in the manufacture of faux leather because of its high durability and low cost.

PVC is water-durable, crack resistant at room temperature,

and resilient to wear and tear due to its chemical properties. In some cases, however, OEMs have switched from PVC to polyurethane (PU), because it feels more like genuine leather and is lighter than PVC. But, PU leather is about twice as expensive as PVC leather, making it cost-prohibitive for many producers of low-margin consumer goods.

Solution

In 2002, CGPC began collaborating with its polymer supplier ExxonMobil Chemical to develop a compelling alternative to synthetic leathers made from PVC and PU.

After six years of research, during which dozens of materials ranging from ethylene vinyl acetate (EVA) to rubber were tested, only one material met CGPC's performance requirements for a new PVC-free faux leather. That material is Vistamaxx™ performance polymer, which is used as the key component in their thermoplastic olefin (TPO) compound. With Vistamaxx as the primary polymer, CGPC's Verdor™ TPO faux leather combines the durability of PVC with the leather-like texture of PU. Having finally discovered a material that met its requirements, CGPC began providing sample shipments of Verdor faux leather to OEMs in 2008.

"We're very proud of the collaborative effort in developing Verdor faux leather. It involved leveraging ExxonMobil's expertise in specialty elastomer technology to refine our know-how in applications," said William C.Y. Hsu, vice president of CGPC.

Verdor faux leather provides a better leather-like texture than PVC and is more durable to weathering and water exposure than PU. It is also 40% lighter than PVC and 20% lighter than PU, and less susceptible to discoloration over time.

The manufacturing process also requires no new capital investment for companies like CGPC that already manufacture PVC. The flexible compounding and processing properties of Vistamaxx polymers allow CGPC to use its existing PVC binder coating, calendaring and foaming lines. Overall costs for Verdor faux leather are lower than PU, offering a better commercial value.



Results

OEMs are testing PVC-free faux leather in their product designs, while producing green product lines in small numbers to test the market's desire for sustainable products. CGPC counts a leading U.S. sporting goods manufacturer among its customers who are preparing for the transition to the next step in synthetic leather history with Verdor faux leather. Baseballs and baseball gloves made with Verdor faux leather are as soft as real leather, yet many times more resistant to wear and tear.

CGPC sees its role as facilitating faster times to market for manufacturers, but fully recognizes that, in the short term, there will be hurdles to overcome in the technology adoption lifecycle.

"We see our greatest contribution as working with ExxonMobil to facilitate even more collaboration, both upstream with raw material and additive suppliers and downstream with end product manufacturers," said Hsu.

In the footwear market, the trend toward sustainable materials and manufacturing processes is hard to ignore. This is where CGPC is laying its stake in the short term, offering footwear manufacturers a light and leather-like material that is crack resistant in cold temperatures as low as -30°C (-22°F).

In the coming years, CGPC envisions Verdor faux leather gaining traction in a wide range of consumer goods including stationery, luggage and furniture, and ultimately capturing a significant share of the massive automotive interior market.

"The stakes are high, and with ExxonMobil's support, we are confident that Verdor faux leather will be the game-changing alternative to PVC," said Hsu.



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