

# Santoprene™ TPV reduces weight of air ducts for Hyundai vehicle platforms

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## Key advantages

- Lower weight
- Long-term sealing performance
- Withstands noise vibration and harshness
- Reduced energy use
- Processing scrap recyclable

Air ducts made with Santoprene thermoplastic vulcanizate (TPV) meet long-term sealing requirements, may reduce energy use during manufacture and can be recycled within the manufacturing stream.

South Korean auto maker Hyundai wanted a lighter weight, more energy-efficient solution for the short air ducts of its MD, RB and UB vehicle platforms. Looking for a material with a proven record in engineered air management applications, Hyundai turned to Santoprene™ TPV from ExxonMobil to meet long-term sealing requirements and withstand noise vibration and harshness (NVH).

## Lightweight solution

Santoprene TPV is lighter than many traditional materials used for short air ducts such as NBR/PVC (nitrile butadiene rubber plus polyvinyl chloride chip), CR (polychloroprene), ECO (epichlorohydrine rubber), CPE (chlorinated polyethylene rubber) and EPDM (ethylene-propylene-diene-monomer) rubber.

The Hyundai's short air ducts are injection molded by Leehan, a Tier 1 supplier based in South Korea, using a modified conventional rubber mold design.

"Santoprene TPV provides an opportunity to reduce vehicle weight and as a result, in conjunction with other light-weighting efforts, may help improve fuel efficiency," said Mr. H.C. Lee, a representative of Leehan. "For example, an air duct made with Santoprene TPV is typically 20 to 30 percent lighter than an air duct made with thermoset rubber."

## Lower energy use

Santoprene TPV may also allow lower energy use during production than traditional materials for air management applications. Manufacturing air ducts with Santoprene TPV uses up to 50 percent less energy, compared to EPDM rubber compounds, as they do not require heat curing and have a typical cycle time of 1-1.5 minutes. EPDM rubber needs curing and has a typical cycle time of four minutes.

## Simpler manufacturing

The injection molded air ducts are heat welded to the polypropylene resonator and pipe, simplifying air management component manufacturing. This process, which does not require clamps, reduces the number of parts and labor required.

Santoprene™ TPV can contribute to a reduction in overall waste in manufacturing as any scrap produced during processing can be returned directly into the hopper.

“We will recommend these lighter air management systems made with Santoprene TPV for other new vehicles outside the region,” said Mr. Y.K. Seo, Hyundai management.

ExxonMobil has been developing Santoprene TPVs for automotive air management systems for many years and they have been successfully used in short air ducts globally.



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