

Improving window and door seal quality for high-rise buildings



Key advantages

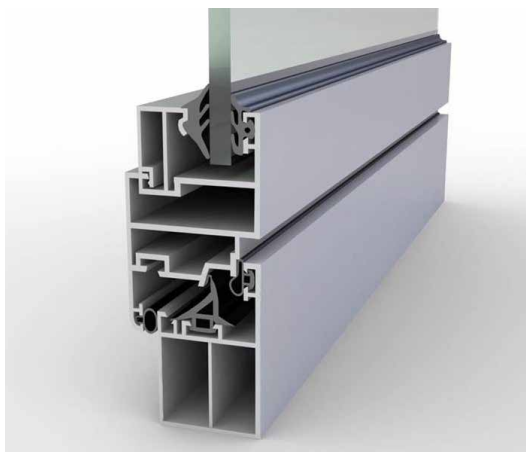
- Long term durable sealing performance
- Excellent weathering resistance
- Profile design flexibility
- Consistent dimensional stability
- Manufacturing efficiencies for small volumes

Eliteflex Industries Sdn. Bhd., a leading extruder of seals for Asia Pacific and Middle East markets, is using Santoprene® thermoplastic vulcanizate (TPV) to improve the performance of window and door seals used in high-rise commercial and residential buildings.

Rising demand for quality seals

Over the past 20 years, the proliferation of high-rise buildings has driven the need to improve window and door seal quality. Glazing seals, used on both sides of the glass, provide air and water tightness as well as cohesion between the frame and the glazing. Weatherseals, inside and around the window/door system, prevent air and water infiltration.

Additionally, each building has its own specific seal profile design and, within one project, several seal profiles are often needed. As a result, small quantities of each seal profile are required.



This conceptual profile illustrates where Santoprene TPV can be used to maximize window and door seal quality in high-rise buildings

Seeking a suitable material

“PVC shrinks and hardens when exposed to the outdoor elements and could not meet the increasing sealing requirements of high rise buildings. Alternatively, EPDM (ethylene propylene diene monomer) rubber is difficult to produce cost-effectively in small quantities,” said Mr. K. C. Wong, managing director, Eliteflex Industries Sdn. Bhd. “So, we were looking for an alternative material to meet the demand for relatively small quantities of high-quality window and door seals.”

Through its technical support capabilities, Santoprene® TPV team provided material and processing knowledge, and die design recommendations. As a result, Santoprene TPV profile trials were conducted. These proved successful because it offers a combination of performance benefits and is easy to process.

“Tests proved that Santoprene TPV was the obvious alternative”, said Wong. “It provides excellent sealing performance and weathering resistance. And, it is easy to process, making it a cost-effective way to produce small quantities of different seal profiles.”

Long-term sealing

Santoprene TPV offers excellent long-term sealability over a wide temperature range and better long-term compression stress relaxation than EPDM rubber. It also exhibits excellent fatigue resistance with no cracking or crazing, even at extreme temperatures (-51°C to 135°C).

Weathering resistance

Santoprene TPV provides good UV light stability over a wide service temperature range, cold temperature flexibility and excellent ozone and chemical resistance.

Design flexibility

Santoprene TPV profiles can be heat welded, requiring no adhesives or injection-molded corners, and are easy to install and assemble. The profiles also exhibit consistent dimensional stability which is key for long-term window and door seal quality. Santoprene TPV can be coextruded, in dual hardness or with polyolefins like polypropylene. It can be easily colored and offers better color matching than EPDM seals.

Ease of processing

Manufacturing limited quantities of seals or profiles is easier and more cost-effective using Santoprene TPV than thermoset rubber because the process is less complex and has fewer steps. Unlike thermoset rubber, Santoprene TPV does not require compounding and can be processed like a thermoplastic. As a result, shorter cycle times, higher throughput and in-process recycling of scrap material are possible. This can deliver lower part costs, reduced tool/machine use, less waste and optimization of material logistic costs.



Because Santoprene TPV extrudes easily, the production of weatherseals with complex profiles is relatively straightforward. This provides designers with greater flexibility when it comes to creating profile geometries.





Al Bidda Tower,
Doha, Qatar

Proven performance globally

Because Santoprene® TPV provides excellent sealing performance and weathering resistance it has been used to produce high-quality window and door seals for some of the most prestigious and aesthetically striking buildings in the world. In the Asia Pacific region and Australia, these buildings include Al Bidda Tower in Doha, Ilham Bahru Tower in Kuala Lumpur, and Upper West Side Apartments in Melbourne.

“Santoprene TPV has helped Eliteflex become one of Malaysia’s leading manufacturers of high-quality window and door seals today,” said Wong. “Such has been our success that our products are also being used in overseas markets like Singapore, Australia and Qatar.”

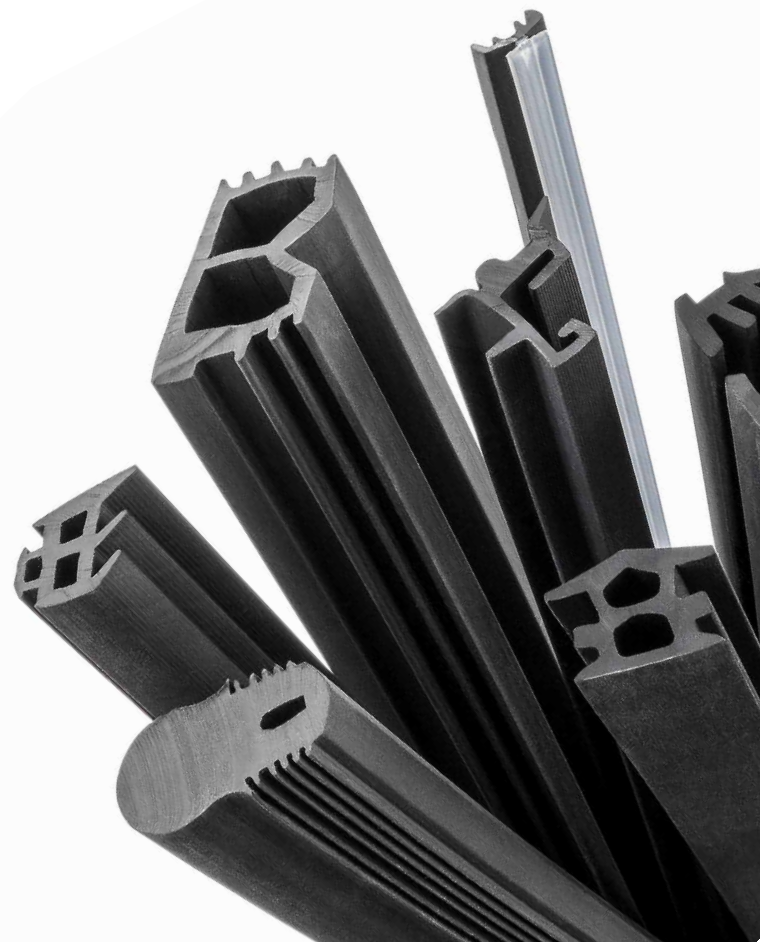
Meeting evolving trends

Santoprene TPV seals provide the construction industry with opportunities to meet evolving demands for more sustainable solutions. It has a lower density than EPDM rubber, silicone or PVC, making part weight reduction possible. This can lead to less fuel consumption during transportation which may reduce CO₂ emissions. Also, Santoprene TPV profiles and parts are heat weldable, so no adhesives are required.

“With proven performance and the sustainability opportunities provided by Santoprene TPV to meet ‘green building’ trends, it is an even better fit for the future,” said Wong.



Ilham Bahru tower,
Kuala Lumpur, Malaysia



Contact information

Americas

8040 Dixie Highway, Florence, KY 41042 USA

Product Information Service

t: +1-800-833-4882 t: +1-859-372-3244

Customer Service

t: +1-800-526-4960 t: +1-859-372-3214

e: info-engineeredmaterials-am@celanese.com

Europe

Am Unisys-Park 1, 65843 Sulzbach, Germany

Product Information Service

t: +(00)-800-86427-531 t: +49-(0)-69-45009-1011

e: info-engineeredmaterials-eu@celanese.com

Asia

4560 Jinke Road, Zhang Jiang Hi Tech Park
Shanghai 201203 PRC

Customer Service

t: +86 21 3861 9266 f: +86 21 3861 9599

e: info-engineeredmaterials-asia@celanese.com

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Contact us for more information:

santoprene.com

santoprene.answerperson@celanese.com

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