Dow Performance Silicones

With decades of performance, DOWSIL™ pavement sealants exhibit durability

DOWSIL™

Case Study: Tulsa International Airport

City and Country
Tulsa, Oklahoma, USA

Products*
- DOWSIL™ 890-SL Silicone Joint Sealant
- DOWSIL™ 888 Silicone Joint Sealant

Key Participants
- **Property Owner**
  Tulsa International Airport – Frank Relja, Airports Facilities Section Chief
- **Distributor**
  SSI

*Prior to February 2018, products listed were branded as Dow Corning.

Since Tulsa International Airport first applied DOWSIL™ silicone pavement sealants on its runways in 1991, the products have stood the test of time and are still performing. With its weather and UV resistance, high movement capability, and low modulus, DOWSIL™ 890-SL Silicone Joint Sealant offers superior durability.

"For more than 20 years, these products have been performing on our main runway and terminal apron," said Frank Relja, Airports Facilities Section Chief for the Tulsa International Airport.

Standing Up To Environmental Stress

Located in a region with significant temperature ranges, Tulsa International Airport can experience 115°F temperatures in the summer, while temperatures can drop below 0°F in the winter. The region also receives a substantial amount of both snow and rain.

"The high impact of planes landing on the pavement and going over the joints is not normally a problem – until you introduce rain and snow," Relja said. "When water gets into the joints, it can be a problem without the right sealant."

Temperature changes cause the pavement to expand and contract, requiring a flexible joint sealant. DOWSIL™ silicone pavement sealants remain flexible over a wide temperature range and also have high movement capability, which allows them to stretch easily without putting strain on the joint and to readily return to their original size after being compressed.

"The weather here is hard on pavement," said Dale Baker of SSI, a Dow distributor. "There's a lot of wear and tear, and the pavement goes through a lot of freeze/thaw cycles."

Sealants keep water out of the joints, which helps reduce erosion of the subbase and corrosion of the metal tie bars embedded in the concrete slabs. DOWSIL™ silicone pavement sealants are designed to provide a long-term seal that provides ongoing protection.

50+ YEARS PROVEN PERFORMANCE

"One of the sealant's primary functions is to seal out moisture and incompressible debris," Baker said. "Dirt, stones or ice can break the concrete slab edge when they're forced into the joint under heavy weight. But the long-term durability of silicone sealants gives them a flexibility and service life that hot-pour rubber sealants and urethanes can't match."

A High-Impact Challenge

Due to concrete and asphalt thermal expansion cycles and the deflection caused between opposing concrete slabs during an aircraft takeoff or landing, the joints between the large airport runway slabs are specially designed to move within the silicone's superior movement capabilities (+100/-50%).

High-impact landings cause some of the rubber to come off aircraft tires – requiring a rubber removal process on the runway that uses high-pressure water blasting.

"As the rubber builds up, it reduces the friction between the aircraft's tires and the pavement, so we need to remove the rubber from the runways," Relja said. "Unfortunately, the rubber removal process can damage the sealants used in the pavement joints."

Working with Baker, Relja discovered that making a small adjustment in the placement of the silicone sealants in the joint could protect the products from the rubber removal process and increase the longevity of the joints.

Superior Technical Support

Airport officials were originally sold on DOWSIL™ products because of Dow's high-quality technical support, including a warranty, extensive product testing and attentive customer service.

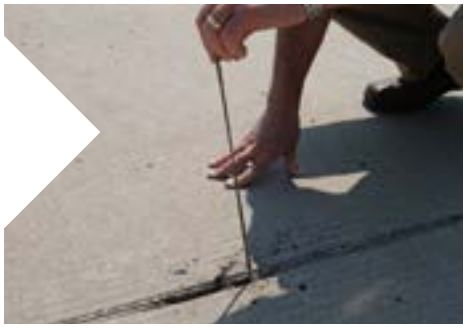
"I know from experience that silicone performs well for long periods of time," Relja said. "But Dow was the only company to give us a five-year warranty on the materials and labor. They really stand by their products."

Another product used at Tulsa International Airport is DOWSIL™ 888 Silicone Joint Sealant, which also has high movement capability and durability. As expected with any sealant application, both products have required only a few repairs during more than 20 years of service on the airport's runways and taxiways.

"I'm always searching for the best product, and in my opinion I haven't found anything better," Relja said.

Silicone Solutions For Airports

Silicone sealants have been specified and used successfully in many airfield applications. Both DOWSIL™ 890-SL



Field adhesion testing identifies issues such as improper joint cleaning, improper sealant installation or other problems that could negatively impact the adhesion of the cured sealant.

Silicone Joint Sealant and DOWSIL™ 888 Silicone Joint Sealant meet the FAA Airport Construction Standard (P-605) for joint sealing of concrete runways and asphalt runway shoulders.

Contact Us

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