Dow performance silicones

Silicones protect the world's most inclined tower

CASE STUDY: CAPITOL GATE

The project

- With a facade constructed from 23,000 square metres of glass and steel, the iconic and breath taking Capital Gate is the world's most inclined high rise building.
- At 35 storeys high and 160 m tall, Capital Gate is the centrepiece of the business and residential Capital Centre development. It offers 20,000 sq metres of office space on the lower levels and houses a presidential style five star hotel on the upper levels named 'Hyatt at Capital Centre', where each of the 189 designer rooms will be of a different shape and orientation.
- Incredibly, the tower will lean 18 degrees westward which is 14 degrees more than the Leaning Tower of Pisa.
- Capital Gate pays tribute to the legacy of His Highness Sheikh Zayed Bin Sultan Al Nahyan, the late President of the UAE.
- Approximately 12,500 triangular shaped insulating glass units were constructed using DOWSIL™ 3362 Insulating Glass Sealant which form more than 720 diamond shapes on the external facade.
- DOWSIL™ 791 Silicone Weatherproofing Sealant was specified due to its proven durability and performance in climates where extreme weather conditions are prevalent.

50+ YEARS PROVEN PERFORMANCE

City and country

Abu Dhabi, United Arab Emirates

Products*

- DOWSIL™ 3362 Insulating Glass Sealant
- DOWSIL™791 Silicone Weatherproofing Sealant

Key participants

- **Owner and developer**
  Adnec (Abu Dhabi National Exhibitions Company)
- **Architect**
  RMJM
- **Insulating Glazing Manufacturer**
  White Aluminium Enterprises – Glass Processing Division
- **Steel and glass contractors**
  Waagner Biro Stahlbau group
- **Weathersealing technical distributor**
  Emirates Specialities Co LLC

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

The challenge

With floor plates that are staggered from the 10th floor up, the new Capital Gate building leans and twists like a corkscrew as it reaches skywards, thus creating an image which looks different from every direction. With a bespoke cladding system created for each floor, planning, construction and erection of the specially commissioned irregular diamond shaped facade was in itself a colossal challenge as was the manufacture, installation and weatherproofing of the asymmetrical, energy efficient glazing.

Photo courtesy of ADNEC

The solution

DOWSIL™ 3362 Insulating Glass Sealant was selected as the secondary edge sealant for each insulating glass unit, due to its excellent temperature stability and resistance to ozone and ultraviolet radiation – an absolute pre-requisite for the local climate. The glazed units were manufactured by White Aluminium who are certified members of the Dow Quality Bond™ initiative. Mr Jabr Doshan, Deputy General Manager of White Aluminium commented, “This project was particularly challenging given that each glass unit was unique which required careful and precise management by our production team. The sensitive solar control low-e coating was applied onto the glass by the glass manufacturer Cardinal in the USA. We removed the coating from the edges during cutting to avoid contact with the silicone.”

Unitised panels were constructed from diamond shapes which were prefabricated from triangular tubes, then glazed and weather sealed with DOWSIL™ 791 Silicone Weatherproofing Sealant.

They were then lifted into position and mechanically fixed to the main supporting structure. Christian Holler, Project Manager for Waagner Biro explained, “We had no hesitation in specifying DOWSIL™ 791 Silicone Weatherproofing Sealant for the weatherproofing of this project, given its compatibility with DOWSIL™ 3362 Insulating Glass Sealant and its long proven performance record on many prestigious and challenging projects around the globe.”

The building facade of the Capital Gate Tower was completed in 2009 and the interior fitting is scheduled for completion by the end of 2010.

DOWSIL™ 3362 Insulating Glass Sealant

A neutral curing silicone sealant specifically formulated for use as a secondary seal in the manufacture of high performance insulating glass units, with outstanding adhesion to a wide range of substrates including coated, enamelled and reflective glass. DOWSIL™ 3362 Insulating Glass Sealant has excellent temperature stability, is resistant to ozone and ultra-violet radiation and is certified by European Technical Approval ETA 03/0003 and complies with EN 1279-4 requirements.

DOWSIL™ 791 Silicone Weatherproofing Sealant

A premium performance weatherproofing sealant, DOWSIL™ 791 Silicone Weatherproofing Sealant is suitable for the weathersealing of structurally glazed facades, planar systems and general glazing and building facades constructed of brick, stone and traditional buildings products. With excellent weatherability and UV resistance, it is ideal for expansion, connection, perimeter and all other types of movement joints.

About Quality Bond™

Quality Bond™ lifts silicone sealing and bonding to the highest level through the instigation of standards of best practices in quality control, quality assurance and product application by specialist silicone fabricators and applicators. Quality Bond™ allows customers and specifiers to share in Dow’s industry-leading expertise and benefit from our proven global performance track record. For more information, please visit qualitybond.com.

For more information

Learn more about Dow’s full range of High Performance Building solutions by visiting us online at **dow.com/construction**.

Dow has sales offices, manufacturing sites and science and technology laboratories around the globe. Find local contact information at **dow.com/contactus**.

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