DOW BUILDING SCIENCE

Select and specify

Product guide for Europe, Middle East and Africa

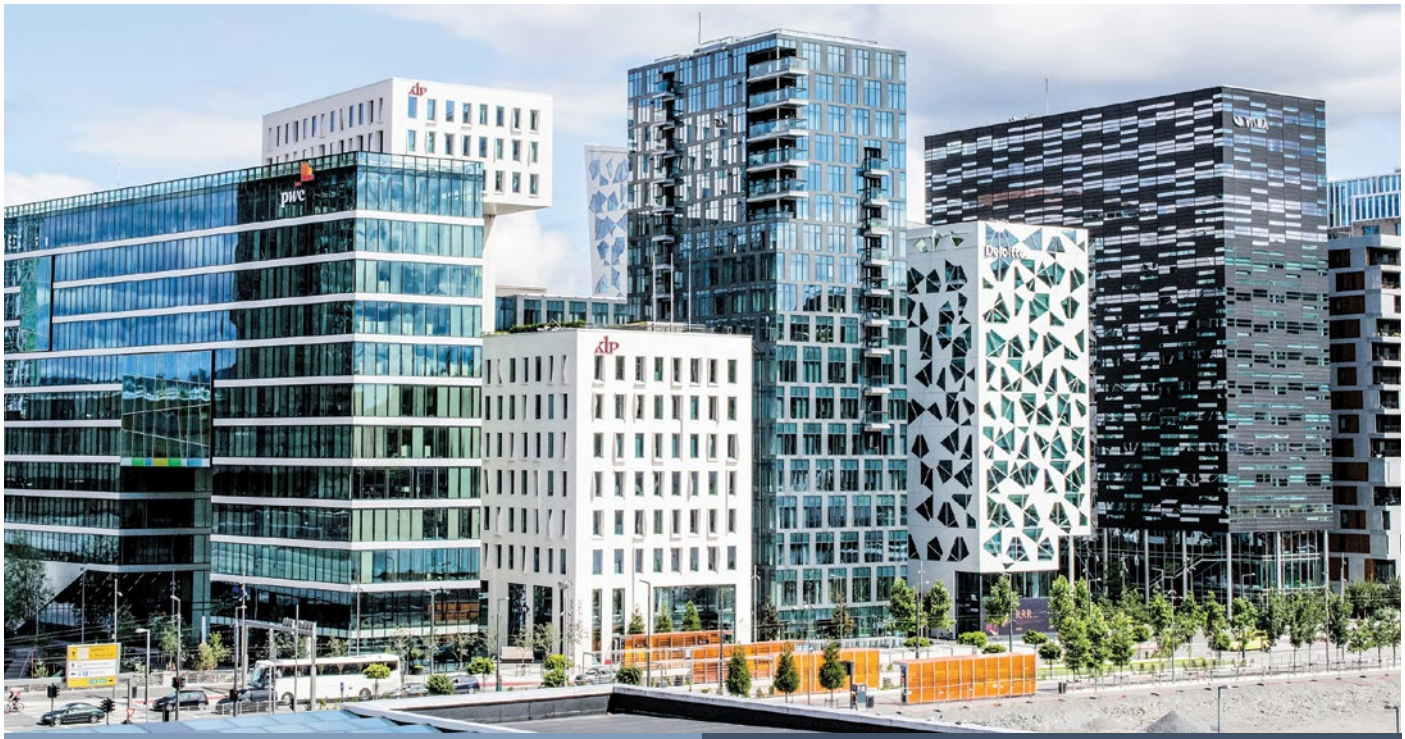
An introduction to Select and specify

A product guide to the DOWSIL™ Range for high-performance building

Dow Building Science collaborates with industry professionals around the world to develop solutions and innovations which enhance design and aesthetics, increase durability, advance the energy efficiency of buildings and improve the health and safety of building occupants. Taking a holistic approach, Dow brings together expertise from across the company to help customers find solutions to a wide range of high-performance building challenges.

This product guide provides a comprehensive overview of the DOWSIL™ Range of proven material solutions for high-performing sealing applications in structural glazing, insulating glazing, weatherproofing, fire protection, crystal clear bonding, air tightness and panel bonding. It is intended to assist specifiers and applicators with product selection as well as introduce more recent innovations to the Dow portfolio which include new solutions beyond silicones. The DOWSIL™ Membrane Façade System is one such example of a non-silicone solution recently introduced.

We invite you to engage with our team of design and performance experts at an early project stage, who are dedicated to help solve technically challenging and complex design problems, assisting in the delivery of buildable solutions. Alternatively, we invite you to visit **dow.com/buildingscienceconnect** for more detailed product information. For details of our global facade range, please refer to our global product guide titled “Shaping the façades of world cities with silicone technologies”, which is available at dow.com.



Bringing ideas **to reality**

Contents

What is high-performance building?

Addressing the need for well-designed, sustainable buildings

A façade is just one piece of a complex puzzle which contributes to the overall optimization and integration of a building's performance. It is technically difficult to assess the individual contribution of various façade components and simultaneously consider the influence of climate, building control systems and occupancy rates. However, Dow is committed to meeting and exceeding the service expectations of architects, specifiers and contractors through the application of proven expertise and to providing a true understanding of how existing and new materials and can contribute and be implemented to meet project goals, in an environmentally responsible and innovative way.

Design & aesthetics

The unmatched capabilities of silicon technology enable unique and limitless design possibilities that enhance building performance. Such benefits include greater aesthetics, increased daylighting, more dwelling space and expanded color options for spectacular designs. Latest developments offer super high strength and crystal clear products, which combine performance with unique aesthetics.

Durability

Outperforming organic materials with long-lasting durability, high elasticity for better distribution of stress and related performance properties, silicone materials for glass façade applications offer an impressive performance record exceeding 50 years. They require little maintenance throughout their long service life and have the added assurance of available industry-leading warranties.

Safety

Silicones boast a demonstrated history of providing durable protection due to outstanding UV and high-temperature resistance. A broad strength profile and long-term flexibility make them suitable for high performance elastic bonding, supporting design trends such as XXL glass designs, protective bonding, hurricane glazing or seismic applications. Silicones are not flame-propagating, so are popular where fire-retardant sealing or smoke protection is required.

Sustainability & energy efficiency

With dedicated R&D teams driving toward energy smart construction, silicon-based solutions for high-performance building and net-zero structures include technologies directly impacting energy performance which help reduce the risk of condensation and provide high performance insulation solutions for watertight and airtight weatherproofing and more. The sustainable nature of silicones and Dow's range of carbon-neutral silicones for building facades contribute to green certifications such as LEED, BREEAM and other global equivalents.

Productivity

The future has arrived with next generation silicones that help achieve economic joint designs and positively impact product efficiency and volume output. Ultra-fast curing systems can increase efficiency and productivity, particularly in continuous processing, automated fabrication and specific bonding designs, thereby enhancing overall productivity. 3D printing specifically for complex detailing in façade designs is also growing and silicones can play a key role, due to their benefits and durability.

Unleashing the power of Dow technologies

Tailored to last and perform

Dow's product portfolio for bonding and sealing offers a complete range from silicones to organic-based technologies and adhesives for modern glass façades.

For more than 50 years, Dow has used its pioneered and proven technologies to advance sustainable construction. Our silicone products for building façades are characterized by their outstanding weathering properties, UV resistance, temperature resistance, long-term elasticity and long service life. With safety always the top priority, Dow provides silicone solutions which have been granted European Technical Assessments (ETA) based upon the European guideline on structural glazing (European Technical Assessment Guideline - ETAG 002).

Our silicone adhesives and sealants provide a fully compatible, long-term-durable system and assist in realizing high-performing designs that are reliable and efficient. The newly developed DOWSIL™ Membrane Facade System based on EPDM, hybrid technology and butyl for sealing and bonding complements the facade package.

The diagram below indicates the areas of application for solutions from Dow Building Science.

1 Structural glazing silicone
Two-component, fast curing
DOWSIL™ 993 Structural Glazing Sealant
DOWSIL™ 994 Ultra-Fast Bonding Sealant
One-component
DOWSIL™ 895 Structural Glazing Sealant
DOWSIL™ 995 Silicone Structural Sealant

2 Insulating glass sealant
(Secondary seal)
Two-component
DOWSIL™ 3362 Insulating Glass Sealant
DOWSIL™ 3363 Insulating Glass Sealant
One-component
DOWSIL™ 3793 Insulating Glass Sealant
DOWSIL™ 3545* Insulating Glass Sealant

3 Insulating glass sealant
(Primary seal)
DOWSIL™ 335 Butyl Sealant

4 Weatherproofing sealant
DOWSIL™ 791 Silicone Weatherproofing Sealant
DOWSIL™ 790 Building Silicone Sealant (clean sealant)

5 Double-sided tape
(Gasket)

6 Backfill material
(i.e. Closed-cell PE)

7 Metal profile section
(e.g. Anodised aluminium, stainless steel)

8 Insulating glass spacer

9 Gasket

* For residential insulating glass only

Silicone structural bonding and sealing with confidence

A proven track record

Successful sealing and bonding of the building envelope while meeting performance and quality standards requires careful planning and execution. Collaboration with Dow technical specialists is recommended in the early phase of project design, with a goal of achieving a smarter building through innovative thinking and the use of suitable materials that enable the intent of the design. Building project teams are supported through to project delivery with services such as thermal modeling, performance simulations, and laboratory testing on all materials in contact with the sealant to ensure adhesion and compatibility. Trained and certified fabricators and applicators can be recommended via the Dow Quality Bond™ program for long-term security, safety and peace of mind, as well as access to extended project warranties (see page 23).

50+ YEARS PROVEN PERFORMANCE

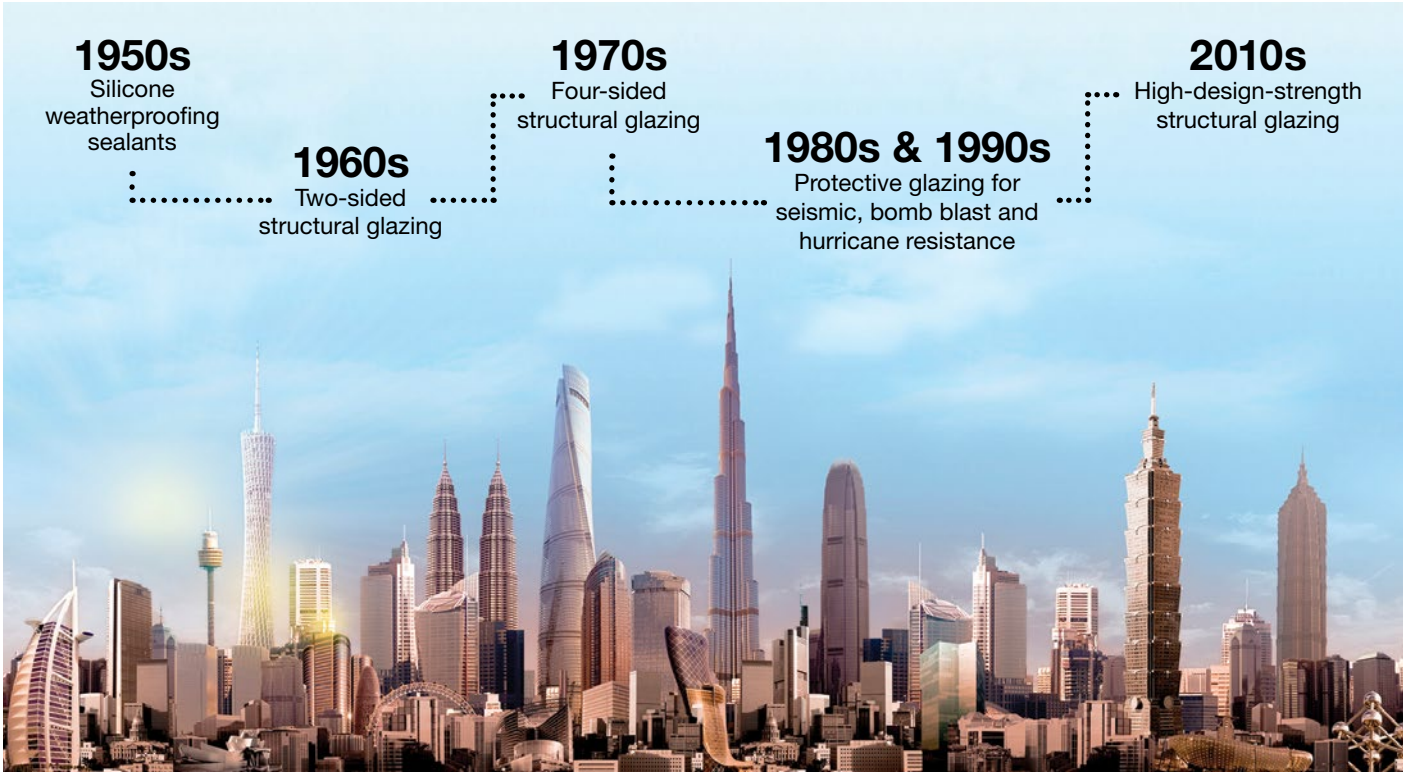
50+ years of proven silicone performance

Under normal conditions of design, application and maintenance, the expected lifetime of silicone in structural glazing applications is greater than 50 years. This recently has been verified by two independent scientific studies by The Federal Institute for Materials Research and Testing (BAM) in Germany and the ift Rosenheim, also in Germany. For further details on these studies, visit **dow.com/50plus** and download our “50+ Years of proven silicone performance” brochure.

Dow has more than 50 years of expertise in weathersealing and structural glazing, with our oldest four-sided silicone structural glazing project being constructed in the 1970s and still functioning according to its intended performance. For optimum assurance, it is recommended that the question of durability be addressed at the façade system level with all components included.

Our products and services

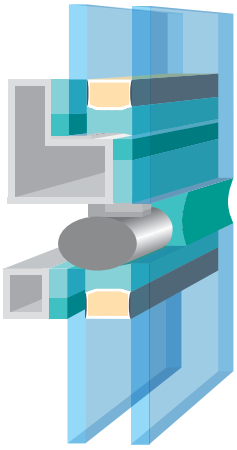
The following pages provide an overview of Dow’s creative architectural solutions, innovative products and industry-leading expertise. We invite you to contact your local Dow representative for further information or for collaboration on future construction projects. Alternatively, please visit **dow.com/contactus.**



Structural Glazing (SG) silicones

Proven durability and performance


Image courtesy of Wojciech Wandzel


Stepped insulating glass unit

Technologies and benefits

Dow offers a range of one and two component silicones based on proven neutral alkoxy technology for structural bonding of glass, metal and other building components. With excellent long-term durability and UV resistance, these state-of-the-art façade silicones have high structural capability and are designed to control dynamic and static loads while accommodating building movement.

Their excellent long-term adhesion performance is proven through external testing and approvals such as ETAG 002, ASTM, GB and many other standards, while their temperature resistance and weatherability properties make them fit for use in all climates.

A durable, elastic bond

DOWSIL™ Structural Glazing Silicones have high movement capability, which is particularly important given the increasing trend toward larger glass units. The optimum ratio between movement and structural capability makes this technology ideal for small, medium and high-rise glass façades.

Advanced structural glazing

Recently introduced DOWSIL™ 994 Ultra-Fast Bonding Sealant is a two-component high-strength silicone with ultrafast curing properties that can enable significant improvement in the speed of productivity. Due to a very fast adhesion buildup, units can be moved and shipped faster. DOWSIL™ 994 Sealant has a European approval for structural glazing.

Our latest innovation in enabling unique aesthetics and design freedom is our crystal clear structural silicone, DOWSIL™ 2400 Silicone Assembly Sealant suitable for specific crystal clear structural glazing applications bonding glass to glass or glass to metal.

DOWSIL™ Structural Glazing façade range

One-component

DOWSIL™ 895 Structural Glazing Sealant
- Neutral; moisture curing; low odor
- Onsite and factory bonding; ready to use
- Multiple colors – black, all grey shades, white with ETAG 002
- Color-matched to DOWSIL™ 993 Silicone Structural Glazing Sealant for mockup preparation

DOWSIL™ 995 Silicone Structural Sealant
- Neutral; moisture curing
- Ready to use
- Suitable for structural applications, especially hurricane glazing and protective glazing using window films
- High tensile strength; excellent mechanical properties

Two-component

DOWSIL™ 993 Silicone Structural Glazing Sealant
- Fast curing; low odor
- High movement capability; high strength
- Multiple colors – black, all grey shades, white with ETAG 002
- International certifications, including general approval on enameled glass (DIBT)

DOWSIL™ 994 Ultra-Fast Bonding Sealant
- Extremely fast curing to enhance productivity
- Low odor
- High movement capability; high structuralstrength
- European Technical Assessment in accordance with ETAG 002
- European Technical Approval ETA 18/0571 (black)

Reparation kits for structural glazing

DOWSIL™ 993 Silicone Structural Glazing Sealant Cartridge System
- Ready-to-use twin kit
- European Technical Assessment in accordance with ETAG 002
- Manual mixing with drilling machine required – 10:1 ratio by weight
- Applied with a standard applicator gun

DOWSIL™ 993 Structural Glazing Repair Kit
- Ready-to-use twin kit for enhanced productivity and high mixing quality
- European Technical Assessment in accordance with ETAG 002
- Applied with battery applicator gun

These are typical properties, not to be construed as specifications.

dow.com/structuralglazing

A new level of performance for insulating glass

Engineered for comfort, efficiency and high performance

A comprehensive range of insulating glass (IG) sealants is available from Dow to help designers achieve the desired appearance, performance and durability of windows and glass façades in both residential and commercial buildings. Suitable for single-pane, multipane and gas-filled glazing, our range includes a high-temperature-resistant butyl for primary seals and high-performance silicones for secondary seals.

Aula Medica lecture hall complex at Karolinska Institutet | Stockholm, Sweden

DOWSIL™ 3362 Silicone Insulating Glass Sealant was specified for secondary sealing of the facility's triple-glazed units.

Photo courtesy of Ulf Sirborn

DOWSIL™ 3362 Insulating Glass Sealant — Successful performer

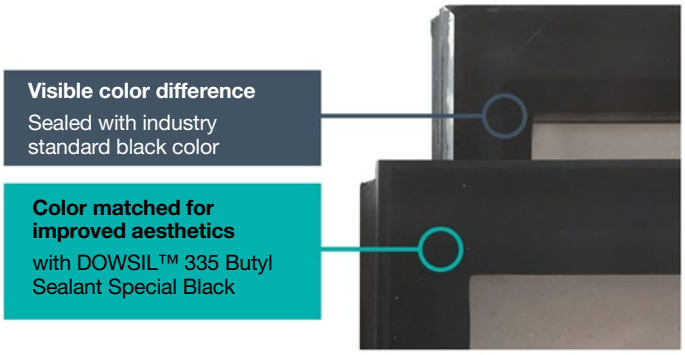
DOWSIL™ 3362 Insulating Glass Sealant has a long, successful track record of use in projects around the world. Two-part and neutral-curing, this secondary sealant has excellent adhesion to a wide range of substrates, including coated, enameled and reflective glass. It has a European Technical Assessment in accordance with ETAG 002 and complies with the requirements of EN 1279.

DOWSIL™ 3363 Insulating Glass Sealant | **Standard sealant**

Due to DOWSIL™ 3363 Insulating Glass Sealant's high design strength of 0.21 MPa, you can use up to 30% less sealant to achieve the same strength compared to conventional secondary silicones, but faster joint filling during production, which helps enhance productivity

DOWSIL™ 3363 Insulating Glass Sealant — High strength and productivity

Façade designs with larger XXL glass formats, high wind, high climatic loads and other considerations typically lead to larger joints. DOWSIL™ 3363 Insulating Glass Sealant provides the highest design strength on the market with European Technical Assessment according to ETAG 002 and allows for more economical joints that are up to 30% smaller. This has a positive impact on aesthetics due to a slim joint design. It also improves productivity during unit fabrication, as the joint can be filled faster. DOWSIL™ 3363 Sealant has been tested according to EN1279 and is well-suited for highly demanding façade designs.

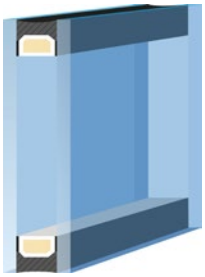


DOWSIL™ 335 Butyl Sealant — One edge, one color

A heat-applied, one-component Polyisobutylene, DOWSIL™ 335 Butyl Sealant for IG is a primary seal for high performance glass systems that is particularly suited for use where elevated temperatures are anticipated in warmer climates. Color-matched to DOWSIL™ 3362 Insulating Glass Sealant and DOWSIL™ 3363 Insulating Glass Sealant for a homogeneous color and improved aesthetics at the glass edge, DOWSIL™ 335 Butyl Sealant features high-temperature resistance (up to +95°C for the special black color) and can be used in conjunction with warm edge spacers and standard spacers manufactured from plastic, metal or combinations of both.

Insulating Glass (IG) sealants

Performance, productivity and energy efficiency



Our silicone secondary sealants are based on proven neutral-cure alkoxy technology, which offers outstanding resistance to UV and high temperatures, as well as high structural capability. All products are suitable for single-pane and multipane glazing and all DOWSIL™ Two component insulating glass sealants are suitable for use with gas-filled units.

With an increasing trend toward triple-glazed units for enhanced thermal performance, climatic loads can be quite high. If high windloads also are anticipated, the sealant bite can significantly increase, impacting the production line speed to allow larger cavities to be filled.

All DOWSIL™ Insulating Glass Silicones are compatible and designed for use with our range of structural glazing and weatherproofing silicones.

DOWSIL™ Insulating Glass façade range

One-component

DOWSIL™ 3793 Insulating Glass Sealant
- Moisture curing; low odor
- Manual application and repair jobs where joint depth is limited
- For gas-filled IG applications according to EN 1279

DOWSIL™ 3545 Insulating Glass Sealant
- Immediate strength enables fast handling of insulating glass units
- High elastic recovery and high strength to limit movement of the butyl

Butyl seal

DOWSIL™ 335 Butyl Sealant
For high-temperature resistance and one-color design
- Heat-applied, one-component Polyisobutylene
- High-temperature resistance (up to +95°C for special black)
- Color-matched to DOWSIL™ 3362 Sealant and DOWSIL™ 3363 Sealant for improved aesthetics at the glass edge

Two-component

DOWSIL™ 3362 Insulating Glass Sealant
For proven performance
- Fast curing; low odor
- For gas-filled IG applications according to EN 1279, SNJF, CEKAL
- Thermal conductivity: 0.318 W/m2K
- European Technical Assessment ETA 002
- Good long-term adhesion to glass and spacers
- Factory bonding using dispensing pumps

DOWSIL™ 3363 Insulating Glass Sealant
- For high strength and productivity
- Fast curing; low odor
- Ideal for demanding IG applications where economic joints and productivity are required
- Thermal conductivity: 0.36 W/m2K
- High design strength: 0.21 MPa – less joints up to 30%
- European Technical Assessment ETA 002
- Good long-term adhesion to glass and spacers
- Factory bonding using dispensing pumps

These are typical properties, not to be construed as specifications.

SG IG Products: Structural Glazing (SG) silicones & Insulating Glass (SG) sealants

Structural glazing and insulating glass: products, applications and properties

	Structural glazing (SG) silicones				Insulating glass (IG) sealants – secondary seal				IG – primary seal
	DOWSIL™ 993 Silicone Structural Glazing Sealant	DOWSIL™ 994 Ultra Fast Window Bonding Sealant	DOWSIL™ 895 Structural Glazing Sealant	DOWSIL™ 995 Silicone Structural Sealant	DOWSIL™ 3362 Insulating Glass Sealant	DOWSIL™ 3363 Insulating Glass Sealant	DOWSIL™ 3793 Insulating Glass Sealant	DOWSIL™ 3545 Insulating Glass Sealant	DOWSIL™ 335 Butyl Sealant
Applications									
Building type	commercial	commercial	commercial	commercial	commercial	commercial	commercial	residential	commercial/residential
Standard SG – 2-sided and 4-sided	✓	✓	✓	✓					
Smart SG – high strength in supertall buildings	✓	✓				✓			
Smart SG – ultrahigh strength with trapezoidal joint designs	✓	✓							
SG for hurricane glazing	✓	✓		✓					
SG for bomb-blast applications	✓	✓		✓					
SG for seismic activities	✓	✓		✓					
SG for point-fixed façades	✓	✓							
Toggle systems					✓	✓			
Onsite repair glazing	✓	✓	✓	✓					
IG – gas-filled double-glazed/triple-glazed for SG					✓	✓	✓	✓	✓
IG – symmetric and stepped for SG					✓	✓	✓	✓	✓
IG – economical for high productivity						✓			
IG – in high-load designs (hurricane, bomb blast, climatic, etc.)						✓			
Technical properties									
Cure system	2-part, neutral, RTV	2-part, neutral, RTV	1-part, neutral, RTV	1-part, neutral, RTV	2-part, neutral, RTV	2-part, neutral, RTV	1-part, neutral, RTV	1-part, neutral, RTV	polyisobutylene
Color	black, white, grey	black	black, white, grey	black, grey	black, white, grey	black, white, grey	black, white, grey	black	black, special black
Application method	hydraulic, pneumatic, or gear pump	hydraulic, pneumatic, or gear pump	manual gun	manual gun	hydraulic, pneumatic, or gear pump	hydraulic, pneumatic, or gear pump	hydraulic, pneumatic, or gear pump	hydraulic, pneumatic, or gear pump	butyliser
Mixing ratio by weight	10:1	10:1 to 10:2	n/a	n/a	10:1	10:1			
Time until bonded/sealed units are ready for load-bearing (at +23°C and 50% relative humidity)[1]	3 days	24 hours	3 days to 3 weeks	3 days to 3 weeks	3 days	3 days	3 days to 3 weeks	3 days to 3 weeks	
Joint depth restrictions, mm	< 60	< 60	< 14	< 14	< 60	< 60	< 14	< 14	2-3
Service temperature range, °C	-50 to +150	-50 to +150	-50 to +150	-50 to +150	-50 to +150	-50 to +150	-50 to +150	-50 to +150	
Shelf life, months	14	6	12	18	14	14	12	9	36
Working time/skin-over time (at +23°C and 50% relative humidity), minutes	10-30	3-10	15	10-20	10-30	10-30	15-20	10-15	
Shore A hardness – ASTM D2240	40	39	38	40	41	60	35	> 45	
Tensile strength, N/mm² – ISO8339	0.95		1.06		0.89	1.5	2.8 (ASTM D0412)	> 1.1	
Tear strength, kN/m – ASTM D624	6.0		19.0	8.5	6.0		17.0		
Dynamic design strength, N/mm²	0.14 (For high dynamic strength up to 0.21, please consult with Dow experts)	0.14	0.14	0.14	0.14	0.21	0.14		
Approvals/certifications/standards met	CE-Mark, ETAG 002, SNJF-VEC, SNJF VI-VEC, ASTM C1184, EN 13022, DIN 4102-B1	CE-Mark, ETAG 002	CE-Mark, ETAG 002, SNJF-VEC, SNJF VI-VEC, EN 13022	TT-S-001543A class A, TT-S-00230C class A, ASTM C-920 class 50, ASTM C1184, GB 16776, EN 13022	CE-Mark, ETAG 002, SNJF-VI-VEC, EN 1279, CEKAL	CE-Mark, ETAG 002, SNJF-VI-VEC, EN 1279, CEKAL	EN 1279	CEKAL, EN 1279	CEKAL, EN 1279

[1]For 1-part sealants, time varies depending on joint depth.
These are typical properties, not to be construed as specifications.

Specification writers: These values are not intended for use in preparing specifications. Please contact your local Dow sales office before writing specifications on these products.

Minimize nature's toll on the building envelope

Weatherproofing sealants with 65+ years of experience

Effective weatherproofing of a building façade is key in determining long-term performance. Airtightness and protection against weather and water ingress are crucial to maintaining an energy-efficient building skin. Dow Building Science has more than 65 years of experience in design, performance and durability.

DOWSIL™ Weathersealing Silicones stay flexible and maintain adhesion, even in high-movement joints. Suitable for glass and nonglass façades, they have high long-term elasticity and exhibit superior durability in outdoor UV exposure. With excellent adhesion to glass, metal and a variety of other common building substrates, DOWSIL™ Weathersealing Silicones provide outstanding life-cycle value and are compatible with all DOWSIL™ SG and IG sealants.

DOWSIL™ Weatherproofing façade range

Weather sealants for façades

Glass façades

DOWSIL™ 791 Silicone Weatherproofing Sealant
- Ready to use; one-component; low odor
- High movement capability and flexibility: +/- 50%
- Neutral cure; noncorrosive
- UV and high-temperature resistance
- Meets ISO 11600-F+G-25LM

DOWSIL™ 790 Building Silicone Sealant
- Ultra-low modulus for flexibility
- Minimizes staining on sensitive substrates
- Compatible with all DOWSIL™ structural glazing and insulating glazing sealants
- Due to the variability of stone substrates, Dow recommends testing for compatibility with natural stone and marble prior to use

Nonglass façades

DOWSIL™ 813C Construction & Concrete Silicone Sealant
- Weathersealing of mineral substrates such as precast concrete and brickwork
- Ready to use; one-part; low odor
- High movement capability and flexibility: +/- 50%
- Neutral cure; noncorrosive
- UV and temperature resistance
- Meets ISO 11600-F-25LM
- Wide variety of colors

Seal and waterproof construction gaps in building façades

Introducing a choice of two new high performance EPDM membranes from Dow that can act as a vapor control, according to EN 13984, making them ideal for creating interior or exterior weather and air-tight seals.

Bonded and secured using DOWSIL™ 300 Adhesive, DOWSIL™ Membranes are easy to use and provide a safe, compatible and durable system package which complements the DOWSIL™ Range of high performance sealants

Membrane façade system

DOWSIL™ Membrane Dual
- For use inside and outside
- EPDM membrane for creating weather and air-tight seals according to EN13984
- Low water-vapor permeability (μ-value =100.000)
- Available on 25m log rolls
- Widths: 100mm, 150mm, 200mm, 250mm, 300mm, 350mm and 1.4m
- Thickness: 0.6mm, 1.0mm, 1.2mm

DOWSIL™ Membrane Outside 0.6
- EDPM Membrane for use in curtain wall designs as outer weatherproofing
- High water-vapor permeability
- Available on 25m log rolls
- Widths: 100mm, 150mm, 200mm, 250mm, 300mm, 350mm and 1.4m
- Thickness: 0.6mm

DOWSIL™ 300 Adhesive
- One-component hybrid adhesive for DOWSIL™ membrane fixation
- Broad adhesion profile on various substrates such as metals, concrete and other mineral substrates
- Supplied in 600ml foil sausages

Complementary weatherproofing products

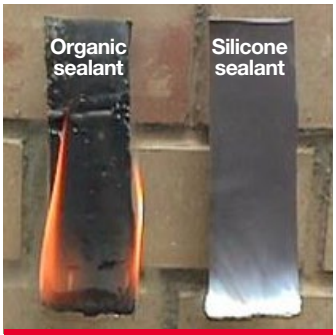
DOWSIL™ 123 Silicone Seal
- Preformed silicone seal for weatherproofing joints
- Economical, high-performance alternative to recaulking
- Low modulus; high movement capability
- Easy to install; available in a range of colors and finishes
- Can be secured with DOWSIL™ 791 Silicone Weatherproofing Sealant

dow.com/building-envelope

dow.com/membranes

Sealants and foams for fire resistance

Protective Fire Safety Sealing Solutions



Silicones are not flame propagating

Dow provides a range of sealants and foams for interior and exterior fire sealing applications, such as sealing of joints, pipes, cable penetrations and wall-to-floor connections. Designed to help prevent the spread of fire and smoke through wall and floor joints, these products provide superior performance and enable the construction of safer buildings when compared to standard sealants.

Special silicone formulations can provide high-temperature resistance up to +265°C – and even up to +315°C short-term. Their burning behavior is beneficial in fire and smoke sealing applications, as they are not flame-propagating – a good technology to offer high safety performance.

DOWSIL™ Fire Safety Range

Fire-retardant sealants

DOWSIL™ FIRESTOP 700 Sealant
- For weathersealing of building facades
- One-component silicone for weathersealing of expansion joints and pipe and cable penetrations in fire-rated structures
- Up to a four-hour fire rating
- Excellent weathering characteristics; long service life
- Conforms to ISO 11600-F&G25LM
- CE marked as a fire-resistant sealant according to EAD 350141-00-1106
- Tested and classified according to EN 1366-4 and 13501-2 (joint design details on request)
- Tested according to EN 1716
- Classified SNJF Category 1, CD Approval UAE

DOWSIL™ Smoke Seal 800SL Self-Leveling Silicone Sealant
- For horizontal applications where flame and smoke-retarding properties are required (e.g., floor-to-wall connections)
- One-component; noncorrosive
- Up to a four-hour rating
- High movement capability
- Tested and classified according to: EN 1366-4 and 13501-2 (joint design details on request)
- Tested and classified according to EN 11925 and EN 13510-1
- Tested according to EN 1716, UL 2079 and EN 15651-4

DOWSIL™ FIRESTOP 400 Sealant
- Intumescent acrylic for internal use to help maintain integrity of firewalls
- Suitable for joints around door and window frames and joints in fire-rated partitions
- Up to a four-hour fire rating
- Fire resistance tested according to BS 476-22

Fire-retardant sealants cont.

DOWSIL™ 813FR Fire Retardant Silicone (Middle East only)
- A fire-rated, one-part silicone for expansion joints and weathersealing of building facades
- Fire reaction:
  - Fire reaction classified B,s2,d0 according to EN13501-1
- Fire resistance:
  - Tested for linear joints according to EN1366-4
  - Rated in integrity (E) and insulation (I) of up to 4 hours can be achieved
- Excellent unprimed adhesion to most porous and non-porous construction substrates
- High joint movement capability ±50% (ISO9047)
- Excellent weathering characteristics, including resistance to ozone, UV radiation and temperature extremes
- Application temperature +5°C to +50°C

Fire-retardent foam

DOWSIL™ 3-6548 RTV Silicone Foam
- For prevention of smoke and gas through penetration seals in walls and floors
- Up to a four-hour fire rating
- Good flexibility under the most demanding conditions
- Forms to fit complex, irregular shapes
- Tested and classified according to EN 11925 and EN 13501-1
- Tested and classified according to EN 1366 3/4 and EN 13501-2

These are typical properties, not to be construed as specifications.

WP FP Products: Weatherproofing & fire protection

Weatherproofing and fire protection: products, applications and properties

	Weathersealing (WS)				Fire resistance				
	DOWSIL™ 791 Silicone Weatherproofing Sealant	DOWSIL™ 791T Silicone Weatherproofing Sealant	DOWSIL™ 790 Building Silicone Sealant	DOWSIL™ 813C Construction and Concrete Silicone Sealant	DOWSIL™ FIRESTOP 700 Sealant	DOWSIL™ FIRESTOP 400 Sealant	DOWSIL™ Smoke Seal 800SL Self-Leveling Silicone Sealant	DOWSIL™ 3-6548 RTV Silicone Foam	DOWSIL™ 813FR Fire Retardant Silicone
Applications									
Special features	WS – standard	WS – transparent	nonstaining		silicone gap and joint sealer	interior sealing	self-leveling	silicone foam	silicone joint and gap sealer
WS – weathersealing of glass façades	✓	✓	✓	✓					
Compatible with DOWSIL™ structural glazing (SG) and insulating glass (IG) silicones	✓	✓	✓	✓	✓	✓			
WS – construction and concrete			✓	✓	✓				✓
Technical properties									
Cure system	1-part, neutral, RTV silicone	1-part, neutral, RTV silicone	1-part, neutral, RTV silicone	1-part, neutral, RTV silicone	1-part, neutral, RTV silicone	1-part, neutral, RTV acrylic	1-part, neutral, self-leveling, RTV silicone	2-part, neutral, closed-cell, RTV silicone foam	1-part, neutral, RTV silicone
Color	several colors (see pg 21)	transparent	several colors (see page 21)	several colors (see pg 20)	black, grey, white	white	black	dark grey	black, white, grey, brown, bronze, sand
Application with manual gun	✓	✓	✓	✓	✓	✓		✓	✓
Application with hydraulic, pneumatic or gear pump	✓	✓		✓	✓				
Time until bonded/sealed units are ready for load-bearing (at +23°C and 50% relative humidity)[1]	3 days to 3 weeks	3 days to 3 weeks	3 days to 3 weeks	3 days to 3 weeks	3 days to 3 weeks		3 days to 3 weeks	2 days	
Joint depth restrictions, mm	<14	<14	<14	<14	<14	<14			>14
Service temperature range, °C	-50 to +150	-50 to +150	-50 to +150	-40 to +149	-50 to +150	-50 to +150	-50 to +150	-50 to +150	-50°C to +150°C
Shelf life, months	12	12	12	12	12	12	12	12	12 months
Skin-over time (at +23°C and 50% relative humidity), minutes	20	10-15	9	20	15	30	25	2	15
Shore A hardness – ASTM D2240	29	15	11	29					
Tensile strength, N/mm² – ISO 8339	0.75	0.5		0.75	0.46				0.75
Modulus 100%, MPa – ISO 8339	0.35	0.32	0.08	0.35				0.23	
Elongation at break, % – ISO 8339	380	575	840	380					
Movement capability – ISO 9047	±50%	±50%	+/-25%	±50%	±50%	7.5%	±25%		±50%
Approvals/certifications/standards met	ISO 11600-F+G-25LM, SNJF, DIN 18540-F	ISO 11600-F+G-25LM, ISO 846	ISO 11600F-25LM	ISO 11600-F-25LM, SNJF, DIN 18540-F, EN 15651-4, EN 141882-class A	ISO 11600 F&G25LM, EAD 350141-00-1106, EN 1366-4 & 13501-2, EN1716, SNJF Cat 1, CD Approval UAE Abu Dhabi Civil Defense Approval	BS476 Part 22	EN 1366-4 & 13501-2, EN 11925 & 13510-1, EN 1716, UL 2079, EN 15651-4	EN 11925, EN 13501-1, EN 1366 3/4, EN 13501-2	Reaction to fire: classified B, s2, d0 according to EN13501-1 Fire resistance tested for linear joints according to EN1366-4 Fire resistance rating up to 4 hours: integrity (E) and insulation (I)

[1]For 1-part sealants, time varies depending on joint depth.
[2]Depending on application.
These are typical properties, not to be construed as specifications.

Specification writers: These values are not intended for use in preparing specifications. Please contact your local Dow sales office before writing specifications on these products.

Primers, cleaners and auxiliary products

Facilitating optimum performance of DOWSIL™ materials

Products for surface pre-treatment

Dow provides a full range of cleaners, primers and combinations of both tailored for use with our façade, insulating glass and weathersealing silicones. Cleaners remove dust, grease and other contaminants from nonporous surfaces. Primers help to enhance adhesion buildup on different surfaces. All primers for non-porous substrates are equipped with a UV tracer. This ensures reliable control of primer application using a UV lamp. Cleaners, primers and sealants are fully compatible systems and typically are recommended based on substrate testing at Dow's laboratory.

DOWSIL™ Façade accessory range

Cleaners

DOWSIL™ R-40 Universal Cleaner
- For cleaning of nonporous substrates used for structural glazing, insulating glazing, windows and doors, such as metal profiles, glass, plastics, etc.

DOWSIL™ R41 Cleaner Plus
- For preparation of nonporous substrates used for structural glazing, insulating glass, window and door applications
- For preparation of nonporous substrates, especially plastics, in window bonding applications
- The addition of a special catalyst helps improve adhesion buildup during the bonding process

These are typical properties, not to be construed as specifications.

Primers

DOWSIL™ Primer-C
For nonporous substrates
- Specially designed for polyester-powder-coated aluminium
- For application using the two-cloth method
- Slightly affects surface appearance
- Air-dry for a minimum of 30 minutes
- Includes a UV tracer to control primer application

DOWSIL™ Construction Primer P
For porous substrates
- Film-building epoxy-resin base
- For brush application
- Air-dry for a minimum of 30 minutes
- Thick fluid

DOWSIL™ 1200 OS Primer
For nonporous substrates
- Silane-based primer
- For application using the two-cloth method
- Includes a UV tracer to control primer application
- For anodized aluminium and other nonporous substrates

DOWSIL™ 1203 3in1 Primer
3-in-1 cleaner, primer and tracer
- Solvent-based primer-cleaner
- For nonporous substrates
- Can be used to clean and prime substrates
- Air-dry for a minimum of 30 minutes

Primers and cleaners: products, applications and properties

	Application	Substrates	Special features	Viscosity	Application method	ml of product required per m²
DOWSIL™ R-40 Universal Cleaner	cleaning	class, metal	solvent-based cleaner	clear fluid	2-cloth	3
DOWSIL™ R41 Cleaner Plus	cleaning	PVC, plastics, glass, metal	solvent-based cleaner	clear fluid	2-cloth	3
DOWSIL™ Primer 1200 OS	priming	non-porous	can make primer visible with UV lamp	clear fluid	2-cloth	3
DOWSIL™ 1203 3in1 Primer	priming	non-porous	can make primer visible with UV lamp	clear fluid	2-cloth	–
DOWSIL™ Primer-C	priming	PPC (polyester-powder-coated) aluminium	solvent-based primer	clear fluid	2-cloth or brush	4
DOWSIL™ Construction Primer P	priming	porous	film-building, alkoxy-silane-resin-based primer	clear, thick fluid	brush	7

Specification writers: These values are not intended for use in preparing specifications. Please contact your local Dow sales office before writing specifications on these products.

Pump cleaners

Pump cleaners are required to clean parts of the sealant-dispensing equipment including mixing heads. This is required for any color change, but also if the pump is not in use for a longer period. A special catalyst cleaner for pumps has been developed to allow a quick color change (e.g., from black to grey). It avoids a costly exchange of the hose and gaskets and provides an economic solution for color change. This is a convenient way to enhance productivity and reduce cost.

DOWSIL™ Façade accessory range

Cleaners

DOWSIL™ 3522 Cleaning Solvent Concentrated
- A general solvent for cleaning base and catalyst residues from two-component pump dispensing equipment

DOWSIL™ 3535 Catalyst Cleaner
- A nonreactive cleaner for two-component pump dispensing equipment
- Solvent-free
- Allows fast and easy switch of catalyst colors during production
- Noncorrosive

Auxiliary product

DOWSIL™ High Performance Spacer Tape
For structural glazing
- A closed-cell, high-density, double-sided, self-adhering tape
- For prefixing insulating glass units to the metal subframe during sealant cure
- Ensures a proper joint thickness; limits joint depth
- Safe and compatible with all DOWSIL™ SG, IG and weatherproofing silicone sealants

These are typical properties, not to be construed as specifications.

Crystal clear silicones

For structural glass connections

The use of glass in building façades continues to increase in popularity, with a variety of systems for fixation of glass curtainwalls now developed and marketed in the industry. Dow has recently introduced breakthrough technologies tailored to improve the aesthetics, and durability of glass construction and assembly.

DOWSIL™ 2400 Silicone Assembly Sealant is a one-part reactive hot-melt technology for glass-to-glass and glass-to-metal connections. Potential applications in which this sealant would be advantageous include structural glass connections and assembly, weathersealing of glass-to-glass butt joints, bonding of glass fins, two-sided insulating glass used with a crystal clear spacer, and specific structural glazing designs. Due to its hot-melt properties, the sealant provides immediate strength once cooled.

DOWSIL™ Crystal Clear Spacer is a fully cured, pre-formed transparent silicone spacer for use in the assembly of air-filled insulating glass for glass doors (entrance doors, commercial refrigerator doors), interior applications and glass panels requiring full vision. Developed to help meet the growing trend for full vision glazing, new DOWSIL™ Crystal Clear Spacer can be applied on opposite sides of air-filled glass units to increase the range of vision. Easy to apply, it offers both durability and an enhanced aesthetic appearance. As an example, the use of DOWSIL™ Crystal Clear Spacer can be advantageous when applied to commercial refrigerator doors where product presentation and visibility in a retail environment is highly desirable.

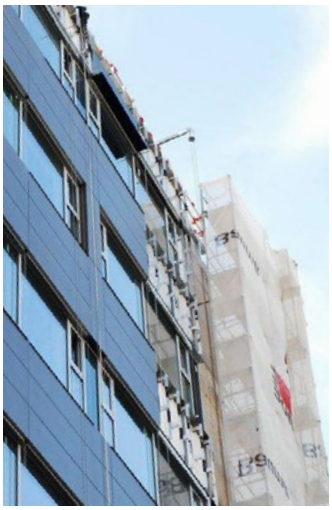
dow.com/crystalclearspacer

Invisible panel fixation of rainscreens and ventilated façades

High-performance bonding for façade cladding

With a proven history of pioneering structural silicone glazing, Dow now brings its technical expertise and industry leadership to architectural panel-bonding applications.

Tailor-made for nonglass cladding, the DOWSIL™ PanelFix System is a highly durable solution for silicone panel-bonding. Suitable for elastic bonding of rainscreen and ventilated façade panels – both in the factory and onsite – the DOWSIL™ PanelFix System offers time-saving features, including easy surface preparation and extrusion of the adhesive, excellent compression resistance, and deadload support enabled by its instant green strength.



ICE Kraków Congress Center | Kraków, Poland
Image courtesy of G Ziemianski

The DOWSIL™ PanelFix System, which includes DOWSIL™ 896 PanelFix Tape and DOWSIL™ 896 PanelFix Silicone Adhesive, also provides advantages for architects, building owners and engineers by expanding building cladding possibilities through enabling the selection of lower-weight, less-expensive cladding options free from the thickness considerations typically requiring mechanical fixation. With no need for metal fasteners between the panel and the supporting structure, the bonding is not visible, which improves the aesthetic appearance of the façade.

European Technical Assessment for DOWSIL™ 896 PanelFix – ETA 17/0689

Certified by the British Board of Agrément (BBA), Agrément Certificate Number 16/5306.

The DOWSIL™ PanelFix System is suitable for fixation of architectural panels manufactured from:

- Aluminium
- Ceramics
- Fiber-reinforced cement
- High-pressure laminates
- Aluminium-based composite panels
- Prefabricated mineral wool boards

The DOWSIL™ PanelFix System can be used onsite and in-factory. Quality is a key element in panel bonding – even more so when the bonding application is done at the job site. To keep quality of application at the highest possible level, Dow has extended its Quality Bond™ program to panel bonding. Applicators must be trained prior to applying the DOWSIL™ PanelFix System and are required to follow a dedicated and documented quality-control procedure. Application companies and applicators are audited regularly. Learn more at **dow.com/panelfix**.

Key benefits of the DOWSIL™ PanelFix System are:

- Panel bonding in ventilated façades
- Instant strength – easy to apply
- Onsite and factory bonding
- High-temperature and UV resistance
- No creep under high temperature (+85°C/85% RH)
- European approval
- BBA approval (UK)

dow.com/panelfix

For efficiency, aesthetics, and durability of glass wall embedding

DOWSIL™ 375 Construction & Glass Embedding

For pure glass aesthetics and an unobstructed view

The increasing popularity of glass panels for balcony balustrades in modern building designs brings individuality and elegance, allowing natural and artificial light to flow freely and unobstructed views from both the inside and outside the property.

Installation of glass balustrade systems without frames is now even easier and quicker following the introduction of a new pourable, self-levelling, two-component polyurethane from Dow. DOWSIL™ 375 Construction & Glass Embedding has been specifically developed to securely mount and support flat and curved monolithic or laminated glass panels in the U-shaped profiles used in these system designs and in other interior and exterior embedding applications. It is easy to mix and install on-site and has a very high cure speed at room temperature to provide safety and rigidity.

Dow recommends the application of fully compatible DOWSIL™ 791 Weatherproofing Sealant over the top surface of the polyurethane once cured, to offer protection from water ingress and UV exposure.

Key benefits of DOWSIL™ 375 Construction & Glass Embedding are:

- Pure glass aesthetics with invisible bonding
- Rapid strength build-up for enhanced safety
- Excellent flowability for efficient application
- Lightweight container sizes – easy handling
- Efficient and fast application for enhanced productivity
- Optimized rigidity to minimize panel deflection.
- Compatible and warranted system
- Option available to pigment the material in black

Approvals

Balustrade assemblies made with DOWSIL™ 375 Construction & Glass Embedding have passed pendulum tests according to DIN 18008-4 at an independent test institute.

Available packaging

DOWSIL™ 375 Construction & Glass Embedding is a two-component system. Part A polyol 16kg Part B hardener 3kg. The components can be easily mixed to create a homogenous color in the Part A pail packaging using a drill equipped with a mixing paddle.

dow.com/glassembedding

Carbon-neutral silicones for more sustainable building facades

Innovative Dow Carbon-Neutral Silicone Service for structural glazing, insulating glass, weathersealing applications

The first-ever carbon neutrality service is now available for silicones used in structural glazing, insulating glass and weathersealing applications on high performance building façades. Produced in compliance with the internationally recognized PAS 2060 verified carbon neutrality standard, Dow carbon-neutral silicones for building façades can support green-building design initiatives, enhance façade sustainability and improve green-building ratings.

Global carbon neutrality support

Architects and building designers can request the Dow Carbon-Neutral Silicone Service for Building Façades on specific projects globally. Please visit dow.com/carbonneutralsilicones for more information.

Documentation and project support tools include:

- Environmental Product Declarations (EPDs) for life-cycle environmental assessment of products
- Externally audited CO2 certificates, following the PAS 2060 standard for verified carbon neutrality
- Life Cycle Analyses (LCAs) to show the positive environmental impact of carbon neutrality
- Product specifications for use in submittals
- COOL 4.0 project management tools with integrated carbon neutrality services on specific projects
- dow.com/buildingscienceconnect is a showcase of Dow products, services and solutions which introduces product specific details of the carbon-neutral silicones product offer

dow.com/carbonneutralsilicones

Available container sizes and colors

Structural glazing and insulating glass

The following information is provided for reference purposes only. Please contact your local Dow sales office or Dow distributor for information regarding availability and lead times.

Product	Container size(s)	Available color(s)
Structural glazing sealants		
DOWSIL™ 895 Structural Glazing Sealant	310 ml, 600 ml, 20 l, 250 kg	black, white, dark grey, light grey, middle grey, custom color
DOWSIL™ 993 Structural Glazing Sealant - Base	20 l, 250 kg	mixed: black, white, dark grey, light grey, middle grey, custom color
DOWSIL™ 993 Structural Glazing Sealant - Catalyst	25 kg	
DOWSIL™ 993 HV/GER Structural Glazing Sealant Catalyst	25 kg, 200 kg	
DOWSIL™ 993 Structural Glazing Reparation Kit	330 g, 600 g	
DOWSIL™ 993 Structural Glazing Repair Kit	675 ml	black
DOWSIL™ 994 Ultra-Fast Structural Glazing Sealant Base	250 kg	mixed: black
DOWSIL™ 994 Ultra-Fast Structural Glazing Catalyst	25 kg, 200 kg	black
DOWSIL™ 995 Structural Glazing Sealant	305 ml	black, white, grey
Insulating glass silicones		
DOWSIL™ 3362 Insulating Glass Sealant - Base	20 l, 250 kg	mixed: black, white, dark grey, middle grey, light grey, custom color
DOWSIL™ 3362 HV Insulating Glass Sealant - Catalyst	25 kg	
DOWSIL™ 3362 HV/GER Insulating Glass Sealant - Catalyst	25 kg, 200 kg	
DOWSIL™ 3363 Insulating Glass Sealant - Base	250 kg	mixed: black, white, dark grey, light grey, middle grey
DOWSIL™ 3363 Insulating Glass Sealant - Catalyst	25 kg, 200 kg	
DOWSIL™ 3793 Insulating Glass Sealant	600 ml, 20 l, 250 kg	black, white
DOWSIL™ 3545 Insulating Glass Sealant	310 ml, 600 ml, 20 l, 250 kg	black
DOWSIL™ 335 Butyl Sealant	7.4 kg	black, special black

These are typical properties, not to be construed as specifications.

Available container sizes and colors

Crystal clear silicone, weatherproofing and fire resistance

The following information is provided for reference purposes only. Please contact your local Dow sales office or Dow distributor for information regarding availability and lead times.

Product	Container size(s)	Available color(s)
Crystal clear silicones		
DOWSIL™ 2400 Silicone Assembly Sealant	304 ml, 22 kg	crystal clear
Weatherproofing		
DOWSIL™ 790 Building Sealant	591 ml	black, grey, bronze, limestone, camel, precast white, custom color
DOWSIL™ 791 Silicone Weatherproofing Sealant	310 ml, 500 ml, 600 ml, 250 kg	black, white, anthracite, bronze, brown, buff, grey, limestone, metal grey, stone, custom color
DOWSIL™ 791T Silicone Weatherproofing Sealant	310 ml, 600 ml	transparent
DOWSIL™ 813C Construction and Concrete Silicone Sealant	310 ml, 600 ml	black, white, white-grey, german white, brown, sand, stone, anthracite, bronze, champagne, grey, pink coral, red beige, custom color
Fire resistance		
DOWSIL™ FIRESTOP 400 Sealant	310 ml	white, grey
DOWSIL™ FIRESTOP 700 Sealant	310 ml, 600 ml, 20 l, 250 kg	black, white, grey
DOWSIL™ 813FR Fire Retardant Silicone	600 ml	black, white, grey, brown, bronze, sand
DOWSIL™ 3-6548 RTV Foam Kit	198 g	grey
DOWSIL™ 3-6548 RTV Foam Part A	18.1 kg, 20 kg, 204.1 kg	grey
DOWSIL™ 3-6548 RTV Foam Part B	18.1 kg, 20 kg, 204.1 kg	grey
DOWSIL™ Smoke Seal 800 SL Self-Leveling Silicone Sealant	10 kg, 22 kg	black

These are typical properties, not to be construed as specifications.

Leading expertise

Global specification

Dow's dedicated project support team work in close collaboration with architects and consultants on a global basis, to offer training, specification advice and leading support. This has proven to be especially valuable when addressing technically challenging and complex designs in façade construction where knowledge and experience transfer can be key. Early engagement by Dow with project stakeholders can support efficiency of design and exploration of innovative solutions which can be captured and tested at project conception to produce smarter, deliverable buildings.

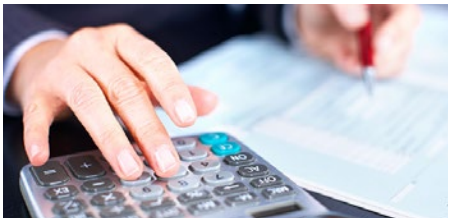
Digital project management

Keeping your projects on the fast-track to success

COOL (COnstruction OnLine)

Efficient processes are paramount in enabling both you and your customers run a project smoothly and on-time. That's why we support you with our user-friendly COOL online planning tool during the planning phase and over the course of the project.

A modern and efficient way to handle projects, COOL provides support for design planning, joint calculation, laboratory tests and service and warranty inquiries through an intuitive user interface. Service and warranty inquiries are also accelerated and simplified considerably thanks to the project data stored in COOL. Find out more at **dow.com/cool**.

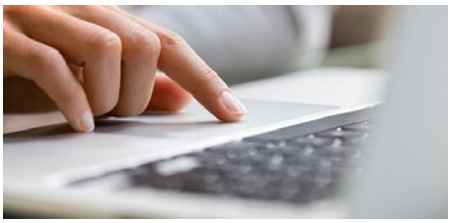


Structural calculators

Calculators are available for structural glazing, insulating glazing, crystal-clear bonding and panel bonding applications. These calculators have been developed to give an indicative estimate of sealant and primer usage as well as structural bite, deadload, glueline thickness and thermal movement calculations. Complete testing and/or design approval by Dow technical experts is recommended prior to product application.

Dow Inspiration Studio and Technical Academy

Dow is more than just your supplier of innovative silicone materials. We want to collaborate with you on every stage of your project, from concept to completion. This starts by sharing our proven experience in silicone sealants and adhesives. Start your collaboration today with Dow by attending one of our training workshops in our brand new Inspirationstudio. Workshop dates, languages and registration can be found at **qualitybond.com**.



Building Science Connect

Search our product catalogue and connect with Dow specialists at **dow.com/buildingscience**, for easy access to technical and specification documents, building services and webinars.

Dow Quality Bond™

Bringing quality to incredible heights

The Dow Quality Bond™ program lifts silicone sealing and bonding to the highest level by implementing standards of best practice in quality control, quality assurance and production application with specialist silicone applicators.

Launched in Europe in 2007 for high performance silicone applications, Quality Bond™ has gone from strength-to-strength and has a high level of fabricator and applicator membership around the world. The value of Quality Bond™ is widely recognised by architects and consultants who request and depend on Quality Bond™ members to uphold standards of application to ensure best performance, safety and durability of building projects.

Benefits for specifiers

By specifying a Quality Bond™ member on your project, you gain the assurance that your sealant applicator has been trained and audited to meet the highest quality standards set by Dow.

Currently available in Europe, the Middle East, Africa, India, ASEAN, and Greater China, Quality Bond™ reinforces our commitment to instilling the highest quality standards.

With accelerating architectural creativity and fast-growing requirements in energy efficiency and transparency fuelling demand for advanced glazing and bonding solutions, Quality Bond™ ensures the very best in performance, safety, and durability.

Benefits for members

Becoming a qualified member indicates to your customers that your performance standards and training are world-class. Members of the Quality Bond™ community share in our extensive know-how in structural glazing, insulating glazing, panel bonding and other silicone-based bonding and sealing applications.

For further information on Quality Bond membership, please visit **qualitybond.com**.

Learn more

About Dow Building Science

Dow Building Science, part of Dow Consumer Solutions, collaborates with industry professionals around the world to develop solutions to enhance design and aesthetics, increase durability, advance the energy efficiency of buildings, and improve the health and safety of building occupants. Taking a holistic approach, Dow brings together expertise from across the company to help customers find solutions to a wide range of high-performance building challenges. Featuring DOWSIL™ brand products, Dow's high-performance building solutions include proven materials for structural and protective glazing, weatherproofing, insulating glass, window and door fabrication, and building materials protection, as well as innovations for high-efficiency insulation, LED lighting, thermal management systems, and the incorporation of photovoltaic cells and solar panels into building design.

For more information

Learn more about Dow's full range of High Performance Building solutions, including service and support, at **dow.com/buildingscience**.

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

DOWSIL™

technologies by Dow

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Durability provisions and/or associated "50+ years" logos contained herein are forward-looking statements and may be materially impacted by elements such as, but not limited to, application conditions, excessive movements of the structures, substrates failure, exposure to environmental contaminants or natural deteriorating causes and phenomena. These elements may cause actual durability of our silicones to be materially different from said forward-looking statements.

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