Technical Data Sheet

DOWSIL™ 813FR Fire Retardant Silicone

Fire retardant silicone sealant for interior and exterior linear joints

Features & Benefits

- One part neutral sealant - moisture cure
- Excellent unprimed adhesion to most porous and non-porous construction substrates
- Excellent UV and temperature resistance
- Easy to apply in hot weather environments
- Long service life and durability
- Conforms to ISO 11600-F&G-25LM
- Joint movement capability ±50% (ISO 9047)
- Easy to apply: non-slump
- Tack-free in 30 minutes

Fire rating characteristics:

- 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)

Applications

- Sealing of vertical and horizontal linear expansion joints in fire rated applications

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Test[1]	Property	Unit	Result
	As Supplied		
ASTM D2202	Slump	mm	Max. 1
CTM 0097B	Density	g/ml	1.5
CTM98B	Working Time	min	20
ASTM C679	Tack-free Time (23°C, 50% R.H.)	min	30
CTM663A	Cure Rate (23°C, 50% R.H.), After 1 Day	mm	2
ISO 8339	Tensile Strength	MPa	0.75
ISO 8339	Elongation at Break	%	380
ISO 8339	Modulus at 100%	MPa	0.35

1. ASTM: American Society for Testing and Materials.
CTM: Corporate Test Method, copies of CTM's are available on request.
ISO: International Standardization Organization.

Form No. 62-2231-01-1121 S2D

Typical Properties (Cont.)

Test	Property	Unit	Result
ISO 9047	Joint Movement Capability	%	±50
ASTM D2240	Hardness, Durometer	Shore A	29
	Application Temperature	°C °F	+5 to +50 +41 to +122
	Service Temperature Range	°C	-50 to +150
EN13501-1[2]	Reaction to Fire		Class B, s2, d0
EN13501-2	Fire Resistance Rating	min	Up to 240 minutes integrity and insulation depending on joint detailing
Indoor Air Comfort Gold	VOC Emission		Passed
	Shelf Life	months	12

2. EN: European Norm.

Description

DOWSIL™ 813FR Fire Retardant Silicone is a low modulus, one-part, neutral curing, fire-rated silicone sealant. It has excellent unprimed adhesion to a range of common substrates including glass, stone, steel, masonry, brick, wood, etc. It is suitable for weather-sealing of building facades and expansion joints where a fire rating is required.

Technical Specifications and Standards

DOWSIL™ 813FR Fire Retardant Silicone

- Tested in linear expansion joint configurations to EN1366-4 (Warrington fire test report 19943A, Certifire (CF 5903). When tested for fire resistance, DOWSIL™ 813FR Fire Rated Silicone reaches up to 4 hours integrity and insulation
- Reaches a Euroclass B, s2, d0 according to EN 13501-1 (reaction to fire)
- Meets the requirements of ISO 11600-F&G-25LM

Fire Ratings

Fire test data is available illustrating that DOWSIL™ 813FR Fire Retardant Silicone can achieve up to a 4 hour fire resistance rating (integrity and insulation) at specified joint configurations.

The test data provides a good indication of the expected performance of the sealant in fire situations. Users should satisfy themselves that specific applications for which DOWSIL™ 813FR Fire Retardant Silicone is proposed are suitable and testing of a particular system may be required.

To achieve any specific fire rating, all substrates being used in the system must have at least an equivalent fire rating.

Joint Design

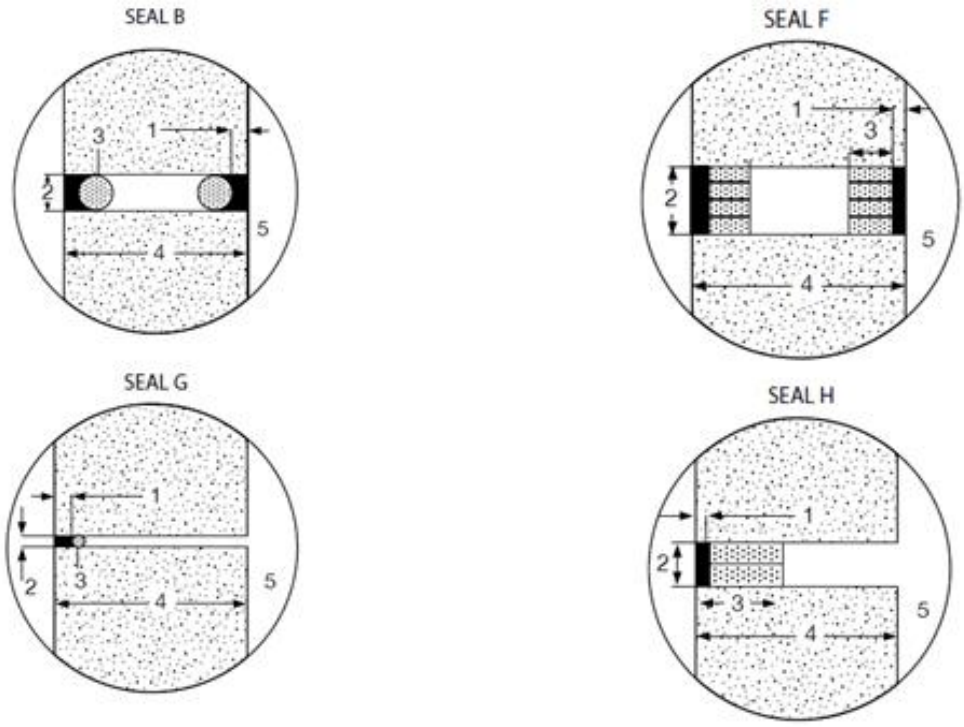

Figure 1: Typical linear joint types for DOWSIL™ 813FR Fire Retardant Silicone.

Legend

1. Joint depth
2. Joint width
3. Backing material depth or diameter (mineral wool or backer rod). For mineral wool the total depth in one or several layers is indicated
4. Supporting wall construction thickness
5. Fire side (FS) or non-fire side (NFS)

When designing joints using DOWSIL™ 813FR Fire Retardant Silicone, the minimum width shall be 6 mm.

Expansion joint types that have been tested are shown in Figure 1. The type of joint selected will depend on weatherproofing, fire and aesthetic requirements of the project. Attainment of specific fire ratings is dependent on the joint configuration. Detailed information is given in Table 1 and 2. Interpolation within the tested range between the maximum and the minimum nominal joint width is permitted provided the overall seal depth including the backing material is equal or higher. Further rules defining the extended application process of the test results are available.

For additional information or assistance, please contact the Dow Technical Services Department.

Table 1: Fire resistance test results for vertical linear joints in walls tested according to EN1366-4 and classified according to EN13501-2.

Width		Depth	Wall Thickness	Backer		Joint Type	E Fire Class	I Fire Class	Sealant Position
6 mm	x	6 mm	150 mm	2 x 30 mm	MW	F	240	240	FS+NFS
10 mm	x	6 mm	150 mm	2 x 30 mm	MW	F	240	240	FS+NFS
30 mm	x	10 mm	150 mm	2 x 30 mm	MW	F	240	240	FS+NFS
50 mm	x	10 mm	150 mm	2 x 30 mm	MW	F	240	240	FS+NFS
6 mm	x	6 mm	150 mm	60 mm	MW	H	240	240	NFS
30 mm	x	6 mm	150 mm	60 mm	MW	H	240	240	NFS
30 mm	x	10 mm	150 mm	60 mm	MW	H	240	120	NFS
10 mm	x	6 mm	150 mm	2 x 13 mmØ	PE	B	240	240	FS+NFS
30 mm	x	10 mm	150 mm	2 x 30 mmØ	PE	B	240	180	FS+NFS
10 mm	x	6 mm	150 mm	1 x 13 mmØ	PE	G	240	240	NFS

Table 2: Fire rating test results for horizontal linear joints in walls tested according to EN1366-4 and classified according to EN13501-2.

Width		Depth	Wall Thickness	Backer		Joint Type	E Fire Class	I Fire Class	Sealant Position
6 mm	x	6 mm	150 mm	2 x 30 mm	MW	F	240	240	FS+NFS
10 mm	x	6 mm	150 mm	2 x 30 mm	MW	F	240	240	FS+NFS
30 mm	x	6 mm	150 mm	2 x 30 mm	MW	F	240	240	FS+NFS
50 mm	x	10 mm	150 mm	2 x 30 mm	MW	F	240	240	FS+NFS
6 mm	x	6 mm	150 mm	60 mm	MW	H	240	240	NFS
30 mm	x	6 mm	150 mm	60 mm	MW	H	240	240	NFS
30 mm	x	10 mm	150 mm	60 mm	MW	H	240	240	NFS
10 mm	x	6 mm	150 mm	2 x 13 mmØ	PE	B	240	240	FS+NFS
30 mm	x	10 mm	150 mm	2 x 30 mmØ	PE	B	240	240	FS+NFS
10 mm	x	6 mm	150 mm	1 x 13 mmØ	PE	G	240	240	NFS

Substrate Preparation

Cleaning

Ensure that all surfaces are clean, dry, sound and free from frost. Clean all joints of release agents, water repellents, laitance, dust, dirt, old sealants and other contaminants which could impair adhesion. Metallic substrates should be degreased, grit blasted/washed to remove any contaminants that could impair adhesion. Suitable solvents like isopropyl alcohol, acetone or DOWSIL™ R-40 Universal Cleaner can be used to clean the metallic substrates[1].

[1]When using any solvent, always provide adequate ventilation. Avoid heat, sparks and open flames. Observe and follow all precautions listed on solvent container label or Product Safety Data Sheet as recommended by the solvent manufacturer and applicable federal, state, and local regulations.

Substrate Preparation (Cont.)

Cleaning (Cont.)
For further advice on cleaning specific substrates please contact the Dow Technical Services Department.

Adhesion
DOWSIL™ 813FR Fire Retardant Silicone has excellent adhesion to most common construction substrates.

If in doubt, or if unusual substrates are involved, please contact the Dow Technical Services Department.

Cement or concrete should be primed with DOWSIL™ P Primer for optimum adhesion.

Dow will carry out specific adhesion and compatibility testing on individual substrates to ensure that correct recommendations can be made. If there is any doubt concerning any aspect of the use of DOWSIL™ 813FR Fire Retardant Silicone, users are strongly advised to contact the Dow Technical Services Department.

Back-up Materials
Backer materials have been evaluated in various joint designs, such as closed-cell polyethylene and polyurethane foam backer rod and mineral wool. The mineral wool has a density of 45 kg/m^3 and is lightly compressed to 10%. The PU/PE backer rods are closed cell and have a density of 35 kg/m^3. The supporting construction is a standard rigid aerated concrete wall (thickness: 150 mm, density: 550 kg/m^3) Depending on the fire rating required and the joint/penetration design, the most suitable system can be selected by referring to the rating tables (see Table 1 and 2).

Masking
Areas adjacent to the joints should be masked with tape to prevent contamination of the substrates and to ensure a neat sealant line. Masking tape should be removed immediately after tooling.

Application
DOWSIL™ 813FR Fire Retardant Silicone should not be applied to surfaces that are below 5°C (41°F) as it is impossible to guarantee a dry, frost-free surface at these temperatures.

The joint should be tooled within 20 minutes of application to ensure good contact between the sealant and the substrate. Tooling of the sealant also gives a smooth, professional finish (Figure 2).

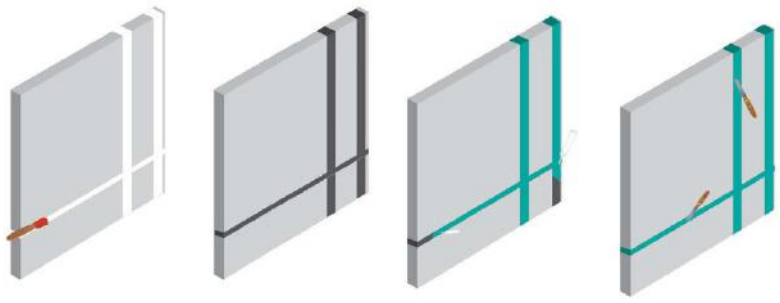

Figure 2: Typical tooling of linear joints for DOWSIL™ 813FR Fire Retardant Silicone.

Substrate Preparation (Cont.)

Clean-up
Excess sealant should be cleaned off tools and non-porous surfaces whilst in an uncured state using a suitable solvent, such as DOWSIL™ R-40 Universal Cleaner. Sealant adhering to porous surfaces should be left until just cured and then removed by abrasion or other mechanical means.

Typical Cure
Cure rate at 23°C and 50% RH:

- Tack-free time: 30 min
- Cure 2 mm depth: 1 day

Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life and Storage

When stored in cool, dry conditions below 30°C in the original unopened containers DOWSIL™ 813FR Fire Retardant Silicone has a usable life of 12 months from the date of production.

Packaging Information

DOWSIL™ 813FR Fire Retardant Silicone is available in 600 ml sausages.

Limitations

DOWSIL™ 813FR Fire Retardant Silicone should not be used against substrates that bleed oils, plasticizers or solvent. Consult the Dow Technical Service Department for further advice in specific applications.

DOWSIL™ 813FR Fire Retardant Silicone is not intended for use as the structural seal in any application.

DOWSIL™ 813FR Fire Retardant Silicone is not intended to be commercialized in the United States.

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health and Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, dow.com or consult your local Dow representative.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

dow.com