CONSTRUCTION SILICONE

Insulating Glass, Facade,
Curtain Wall
Window & Door

MF881-25HM

Two Component Silicone Structural Sealant for Gas-filled Insulating Glass

TYCOON GLOBAL

MF881-25HM

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Insulating Glass, Structural Glazing, Facade, Curtain Wall System

APPLICATIONS

TG-SEALANT MF881-25HM is a high performance two-component neutral cured silicone sealant specifically developed for the manufacturing of air and gas-filled insulating glass in structural glazing applications . This product is suitable for professional experienced IG manufacturer only. Tests with actual substrates and conditions have to be performed to ensure adhesion and material compatibility.

FEATURES

- Two co mpon en t , neutral cured silicone structural sealant.
- Excellent adhesion to a wide range of substrates including coated, enamelled and reflective glasses, anodised and polyester paint coated aluminium and stainless steel.
- Excellent temperature stability: - 60°C to 180 °C.
- High level of mechanical properties.
- High elasticity and high modulus .
- Low moisture vapour transmission property.
- Low gas permeation property.

TYPICAL PROPERTIES

TEST ITEMS		MEASURED VALUE
Base (Com A)	Appearance	White / Grey
	Viscosity	550,000 mPa.S
Catalyst (Com B)	Appearance	Black / White
	Viscosity	80,000 mPa.S
Mixture By weight (A:B = 16:1)	Appearance	Black / White / Grey
	Application Time (23℃, 50%)	30~60 mins
	Tack-free Time (23℃, 50%)	30~90 mins
Sag	Placed Vertical (50℃)	0
	Placed Horizontal	No deformation
Hardness	Shore A 24h	40
	Shore A 14 days	55~60
After 28 days at T 23℃ and 50% R.H.		
23℃ Tensile Strength	Ru,5	1.16 Mpa
	Cohesive failure area	100%
-20℃ Tensile Strength	Ru,5	1.24 Mpa
	Cohesive failure area	100%
80℃ Tensile Strength	Ru,5	0.76 Mpa
	Cohesive failure area	100%
23℃ Shear Strength	Ru,5	0.81 Mpa
-20℃ Shear Strength	Ru,5	0.89 Mpa
	Cohesive failure area	100%
80℃ Shear Strength	Ru,5	0.69 Mpa
	Cohesive failure area	100%
Creep Test		0.04 mm

Bubble	Without visual bubble
Resistance to UV-Ozone	Continuous irradiation under water-UV 2500 hrs, No change.
Elastic Recovery	0 %
Volume Shrinkage	3.60 %
Moisture Vapour Transmission Rate (MVPR)	11.5 [gr/m^2.24hrs.2mm] - EN1279/4
Gas Permeation Rate (Ar)	510 x 10^{-3} [gr/m^2.hrs] - EN1279/4
Remarks: $R_{u,5}$ describes the standard value of adhesion strength.	

MIXING AND DISPENSING INSTRUCTIONS

TG-SEALANT MF881-25HM has to be mixed homogeneously and air-bubble free in the correct ratio . MF881-25HM should be mixed in a ratio of 12:1 base to curing agent by weight, or equivalent 8:1 by volume for optimal properties. At this mix ratio, the sealant typically exhibits a working time of 30-50 minutes and allows units to be handled within 3 hours. Slight variations in mixing ratio can be tolerated, but these should not exceed 11:1 to 14:1 by weight to ensure minimum properties are obtained. To obtain the ultimate physical properties from TG-SEALANT MF881-25HM Silicone Structural Sealant it is recommended that the base and curing agent are thoroughly mixed using an airless mixing system found on most existing commercially available two-part silicone dispensing machines . Neither hand mixing nor the use of hand-held power mixers are satisfactory due to their incorporation of air into the material during mixing that would result in altered physical properties of the cured sealant. Most commercially available metering and mixing equipments are suitable .

Part A is stable in air, Part B is moisture-sensitive, must only be exposed briefly to air.

CURING

When mixing MF881-25HM base + TG-SEALANT MF881-25HM catalyst at approximately a 12:1 weight ratio , the material will become tack-free at about 50 minutes under ambient conditions of at 2 3 ° C , 50% R.H. Under these conditions approximately 70% of strength should develop within 24 hours . Development of full properties requires full evaporation of cure by-products and will normally be achieved within 7 days. Full properties will take additional time in colder climates or deeper SSG cavities.The speed of reaction depends on mainly on the temperature , the higher temperature the faster curing process . Heating above 50 °C is not advisable as it may lead to bubble formation.

APPLICABLE STANDARDS

- EU Specification: EN 1279 (part 2, 3, 4)
- EOTA ETAG 002 (IFT Rosenheim/ TUV Rheinland) and EN 15434

Weight Ratio	Volume Ratio
10:1	6.4:1
11:1	7.1:1
12:1	7.7:1
13:1	8.4:1
14:1	9.0:1
16:1	10 :1

SURFACE PREPARATION - IGU:

GLASS / SPACER - To achieve good adhesion, surfaces must be clean, dry and free from oil, grease and dust.

SURFACE PREPARATION - SGS:

Clean all joints and glazing pockets , removing all foreign matter and contaminants such as grease, oil , dust, water , frost, surface dirt, old sealants, or glazing compounds and protective coatings .Metal, glass and plastic surfaces should be cleaned by mechanical or solvent procedures . Where used , solvent (non-water alcohol/ acetone) should be wiped on and off with clean, oil- and lint-free cloths.
Advice on specific applications and surface pre - treatment methods is available from the Technical Service Department of TG-SEALANT .

♦ APPLICATION LIMITS

It is important when selecting components for a project that adhesion and compatibility tests are carried out , and found to be successful, before the project starts.
MF881-25HM adhesion with glass and Alu.spacer must be tested in advance and compatibility of gaskets, backer rods,setting blocks and other accessory materials with MF881-25HM best to be tested in advance .
Regarding facade structural glazing, primer is not usually required when using TG-SEALANT MF881-25HM . However , it is essential that adhesion be tested prior to use. Specific primer recommendations will be made by TG-SEALANT on a project basis. Please contact TG-SEALANT for further advice .

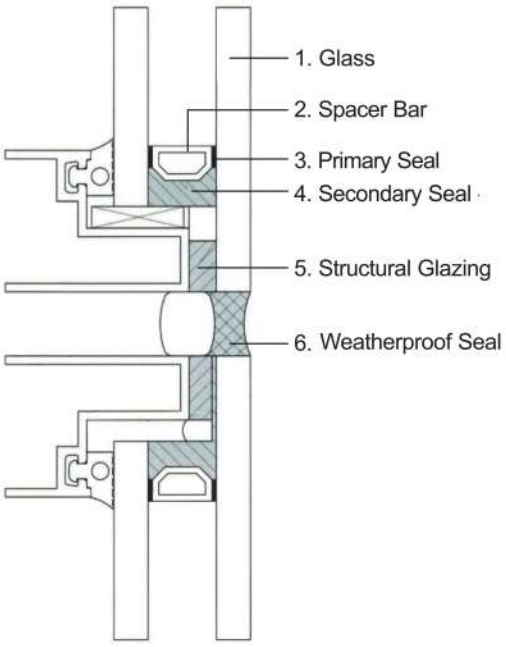
♦ SHELF LIFE AND STORAGE

12 months from the date of production below 30°C.

♦ PACKAGING

Com A 190 kg/drum

Com B 19 kg/pail

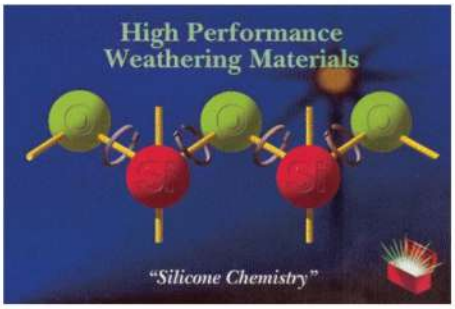


♦ FIRST AID INFORMATION

Eye Contact: Flush eyes with large amounts of water . If signs/symptoms persist , get medical att ention . **Skin Contact:** Remove contaminated clothing and shoes . Immediately flush skin with large amounts of water. Wash contaminated clothing and clean shoes before re use. **Inhalation:** Remove person to fresh air. If signs/symptoms develop, get medical attention. **If swallowed:** Do not induce vomiting unless instructed to do so by medical personnel. Give person two glasses of water. Never give anything by mouth to an unconscious person. **Keep out of reach children.** Refer to Material Safety Data Sheet (MSDS) and Technical Date Sheet(TDS) for deta ils . **Emergency Telephone Number:** +86 371 67982270

♦ COLORS

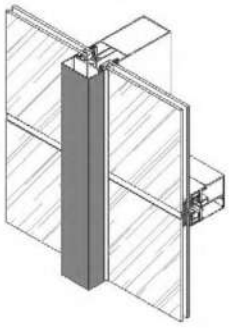
Black / Grey / White



Joint Design--Correct Planning is Essential

In structural glazing, the adhesive joints should be planned and arranged according to optical requirements, but they should also take into consideration changes in the adjacent parts under the effects of temperature and the movement capability of the silicone sealant. The joint design thus combines shape with functionality.

Important



Seven criteria must be observed:
1.The joint seal must be able to freely accommodate tensile and compressive movements between the joint edges. Three-sided adhesion of the sealant must be avoided, because it inevitably results in damage to the joint.
2.The ratio of joint bite Cs to joint thickness ts should be at least 1:1 and at most 3:1.
3.The minimum joint bite is always 6mm, irrespective of the calculated value.
4.The joint thickness ts should be at least 6mm.
5.Always round the result up, never down.
6.The structural joints must not be subjected to external loads as a result of forces such as settlements, shrinkage, creep or permanent stress caused by gaskets etc.

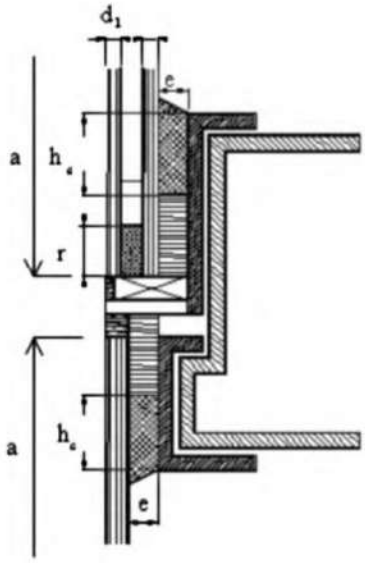
Calculating the joint bite Cs

Joint bite Cs as a function of the wind load in supported constructions:

$$Cs = \frac{wa}{2000\,f1}$$

Cs– minimum bite of the adhesive joint(mm)
a-- length of the short edge of the glass pane or of the element(mm); with irregularly dimensioned glass element: longest of the short glass panes [1)]
w-- maximum wind load to be received (kN/mm^2).
f1-- maximum adhesive stress for supported construction, 0.2N/mm^2.

[1)] If the sides of the glass panes are of varying length, then the length of the longest side is used for the calculation.

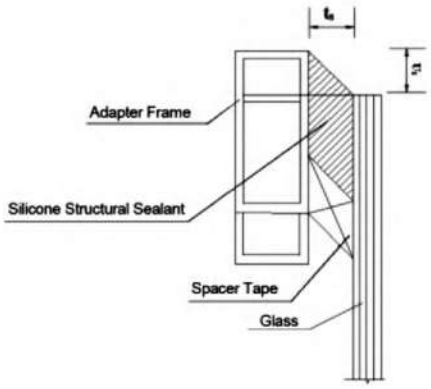


Calculating the joint thickness ts

$$ts \geq \frac{us}{\sqrt{\delta(2+\delta)}} \quad ①$$

$$us = \theta hg \quad ②$$

ts-- minimum thickness of the adhesive joint (mm). us-- relative displacement in length of glass panel to adapter frame(mm), relative displacement yield from support construction lateral displacement can be calculated according to formula ②, take into account displacement from temperature difference if necessary.
θ -- elastic layer displacement angle limit value (rad) of support construction subject to wind load standard value.
hg -- glazing height = vertical dimension a or b.
-- adhesive deformation tolerance, elongation subject to tensile stress of 0.14kN/mm^2.



Silicone Structural Sealant Joint Thickness Drawing