

Steel Bonding Structural Adhesive



HM-120 Steel bonding structural adhesive is two-component epoxy product. It has high bond strength, and cures at room temperature. It is very durable, has high shock resistance properties, excellent self-adhesion and bond to steel and concrete, with high shear rate. It could be used for planting rebars in structures located in seismic regions.

▲▲ Advantages

- Good thixotropic properties, the static stack height can reach 2-3 cm, non-sagging, easy to apply, eliminates waste and need for reapplication.
- Unique structural toughness properties, superior bonding strength, good fatigue resistance. No stripping or tearing damage.
- Successful grafting of hydrophilic groups and hydrophobic groups in the molecular structure. Superior performance in both dry and humid conditions.
- Moderate curing time, longer application time, no need to rush application.
- Advanced high speed dual planetary power mixing equipment. The raw material is mixed uniformly. And by vacuum treatment, there are no bubbles introduced. More stable property, and longer shelf life.
- High percentage of effective ingredient, low density, save at least 30% glue needed.
- HM-120 has passed safety reports, non-toxic test, horizontal flame test, non-ethanediamine test, acute oral toxicity test etc.

▲▲ Excellent Product Characteristics

- Two-component bisphenol-A type modified epoxy resin, non-hydrophilic product, with superior adhesion, excellent synthetic mechanical properties, waterproof, corrosion, and environmentally friendly.
- Construction application in wide temperature range, no dripping, simple construction, excellent performance.
- Durable and has good acid-alkali resistance, low sensitivity to moisture, waterproof, anti-corrosion, environmentally friendly.
- Good thixotropic properties, non-sagging when applied on vertical -side or overhead surfaces.
- Suitable for almost all building/structure substrates.

▲▲ Application Range

- All kinds of building structure reinforcement, wall floor, beam-columns and other steel-bonded reinforcement.
- The steel planting and anchor bolt anchoring of various building and highway projects.

▲▲ Technical Parameters

Description	Test Item	Test Conditions	Test Result
Adhesive Performance	Tensile Strength (MPa)	ASTM D638	55
	Tensile Elastic Modulus (MPa)		4500
	Elongation at Break (%)		1.5
	Flexural Strength (MPa)	ASTM D790	70
	Compressive Strength (MPa)	ASTM D695	100
Bonding Performance	Steel-steel Shear Bonding Strength (MPa)	(23±2) °C , (50±5) % RH	≥ 15
	Steel-steel Normal Bonding Strength (MPa)	Under (23±2) °C , (50±5) % RH conditions, testing as the inspection standard loading speed	≥ 33
	Steel-steel T Impact Stripping Length (mm)		≤ 25
	Steel-C45 Pulling Bonding Strength (MPa)		≥ 2.5, concrete cohesive failure
HDT(Heat Deflection Temperature) (°C)	Use 0.45MPa option B of bending stress		≥ 65
	Nonvolatile matter Content (%)	(105±2) °C , (180±5) min	≥ 99

Model	HM-120 Steel Bonding Adhesive	
Performance	Part A: Grey Paste	
	Part B: Brown Paste	
Operable Time (25°C, min)	< 40	
Density (g/cm ³)	1.8±0.1	
Mix Ratio (By Weight)	A:B=2:1	
Thixotropic Index	≥ 4.0	
25°C Sagging Mobility (mm)	≤ 2.0	
Pot Life (min)	Spring&Autumn (23°C)	≤ 60
	Summer (30°C)	≤ 50
	Winter (10°C)	≤ 190
Shelf Life (month)	12	

Test Item		Test Conditions	Qualified Standard (GB50728-2011)
Conditions Resistance	Wet And Heat Ageing Resistance	Under 50°C、95% RH conditions, ageing 90days, testing at ambient temperature by steel-steel tensile shear strength	Compared with the short-term results at roomtemperature, shear strength loss: $\leq 12\%$
	Heat Aging Resistance	Under (80 ± 2) °C conditions, ageing 30day, testing as the same temperature by steel-steel tensile shear strength	Compared with the short-term results at same temperature 10min, shear strength loss: $\leq 5\%$
	Freezing And Thawing Resistance	Under -25°C-35°C freezing circulating temperature, circulate 8h every time, after 50 times, testing at ambient temperature by steel-steel tensile shear strength	Compared with room temperature, short-term results, shear strength loss is not greater than 5%
Stress Resistance	Performance Under Sustained Load	Under (23 ± 2) °C, (50 ± 5) % RH conditions, undertake 4.0MPa shear strength continuous to 210d	Steel - steel tensile shear specimens does not fail, and creep deformation value is less than 0.4 mm
	Fatigue Performance	Under ambient temperature, as frequency 5Hz, stress ratio 5:1.5, max stress 4.0MPa fatigue load testing by steel-steel tensile shear strength	After 2×10^6 times continuous sine wave fatigue loads, specimen does not fail

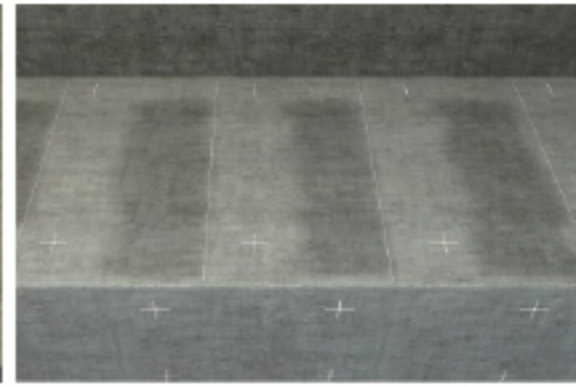


▲▲ Operation Process

To watch 3D video, please scan the QR Code



surface treatment



setting out



anchoring

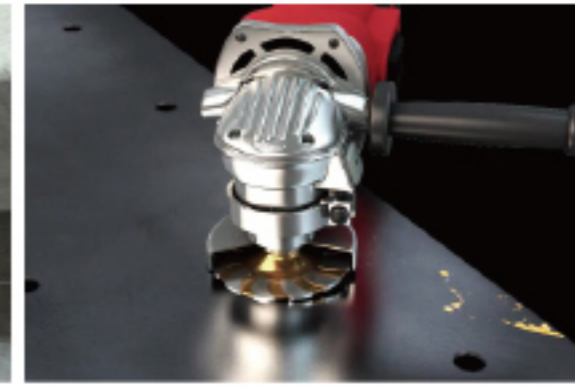


plate surface preparing



pasting plates



maintainance



inspection



protection coating

▲▲ Transportation and Storage

- This product should be sealed and stored in dry and clean space at ambient temperature $-5\text{ }^{\circ}\text{C} \sim 40\text{ }^{\circ}\text{C}$, do not pile up in open air under direct sunlight and/or rain.
- A and B components should be kept separate to avoid accidental mixing up. Shelf life is limited to 12 months at room temperature ($25\text{ }^{\circ}\text{C}$).
- This product is not inflammable, explosive, toxic, or dangerous product. It can be transported with general transportation products. The package should not be damaged, exposed to rain, stored tilted or upside-down during transportation.

▲▲ Package

The A and B components of this product are all packed in containers. Component A is 20kg/container and Component B is 10kg/container.

▲▲ Points for Attention

- Mix as the quantity requested, use up within pot-life period.
- Un-used portions of each component should be stored in sealed containers. Do not expose to air for a long period of time.

▲▲ Safety Measures

- Construction personnel should take safety protection measures (such as wearing masks, gloves, goggles, etc.), on-site attention to fire prevention measures, and maintenance well-ventilated work space.
- If accidentally got in touch with skin or clothing, immediately wipe clean with acetone and rinse with a large amount of water.
- If accidentally swallowed or splashed onto eye, please seek immediate medical attention.



Steel Jacketing Structural Adhesive

HM-120M Steel jacketing structural adhesive is new-type of modified epoxy resin structural adhesive, specifically designed for bonding steel jackets to existing structural members. Structural steel jackets made up of steel plates, strips, angles, or combination of different steel elements could easily be bonded to existing members using HM-120M. It can bond steel jackets to various substrates e.g. concrete, masonry, etc. HM-120M has several superb properties such as high bonding strength, excellent toughness and shear strength, acid-alkali resistance, and excellent durability.

▲▲ Advantages

- Low density, low initial viscosity, high flowability, and ease of injection on construction sites.
- Unique structure toughening system, superior bond strength, good fatigue resistance.
Advanced formula that ensures coupling reaction between the adhesive and different base material.
It has at least 18% higher bonding strength, better durability than other products.
- Moderate curing time, longer application time, no need to rush application.
- Special formula that quickly eliminates the bubbles in the mixing process, which results in a denser adhesive after curing, an efficient way for improving the bonding strength and compressive strength.
- HM-120M passed several tests, including but not limited to safety tests, non-toxic tests, horizontal firing test, non-ethanediamine test, and acute oral toxicity test.

▲▲ Product Characteristics

- Using modified epoxy resin without any solvent, resulting in a safe and non-toxic adhesive.
- Strong bond to substrates, high compression and tensile strengths.
- Construction in wide range of temperatures, no dripping, easy to apply, and good versatile application process.
- Good acid-alkali resistance and high durability, low sensitivity to moisture, and very minimal shrinkage.
- Suitable for almost all building substrates.

▲▲ Application Range

- Advanced flowable adhesive for strengthening concrete structures with steel jackets, e.g. steel plates, steel skeleton jackets, steel strips and angles, etc.
- Grouting with advanced structural adhesive ensure high bond strength with steel jacket and concrete substrate, which leads to better structural performance.
- Ideal for filling concrete cracks and holes, where strength across the crack must be restored.
- Bonding other structural steel elements to existing building components for improved strength and ductility in seismic regions.

▲▲ Technical Parameters

Physical Properties

Model	HM-120M Steel Jacketing Structural Adhesive	
Performance	Part A: White Liquid	
	Part B: Brown Liquid	
Operable Time (25°C, min)	< 130	
Density (g/cm ³)	1.1 ± 0.1	
Mix Ratio (By Weight)	A:B=2:1	
Viscosity (mPa · s)	≤ 1000	
Pot Life (min)	Spring&Autumn (23°C)	≤ 50
	Summer (30°C)	≤ 40
	Winter (10°C)	≤ 220
Shelf Life (month)	12	

Performance Parameter

Description	Test Item	Test Conditions	Test Result
Adhesive Performance	Tensile Strength (MPa)	ASTM D638	55
	Tensile Elastic Modulus (MPa)		2700
	Elongation at Break (%)		5
	Flexural Strength (MPa)	ASTM D790	90
	Compressive Strength (MPa)	ASTM D695	80
Bonding Performance	Steel-steel Shear Bonding Strength (MPa)	(23±2) °C , (50±5) % RH	≥ 15
	Steel-steel Normal Bonding Strength (MPa)	Under (23±2) °C , (50±5) % RH conditions, testing as the inspection standard loading speed	≥ 33
	Steel-steel T Impact Stripping Length (mm)		≤ 25
	Steel-C45 Pulling Bonding Strength (MPa)		≥ 2.5, concrete cohesive failure
HDT(Heat Deflection Temperature) (°C)		Use 0.45MPa option B of bending stress	≥ 65
Nonvolatile matter Content (%)		(105±2) °C , (180±5) min	≥ 99

Test Item		Test Conditions	Qualified Standard (GB50728-2011)
Conditions Resistance	Wet And Heat Ageing Resistance	Under 50℃、95% RH conditions, ageing 90days, testing at ambient temperature by steel-steel tensile shear strength	Compared with the short-term results at roomtemperature, shear strength loss: ≤12%
	Heat Aging Resistance	Under (80±2) °C conditions, ageing 30day, testing as the same temperature by steel-steel tensile shear strength	Compared with the short-term results at same temperature 10min, shear strength loss: ≤5%
	Freezing And Thawing Resistance	Under-25℃-35℃ freezing circulating temperature, circulate 8h every time, after 50 times, testing at ambient temperature by steel-steel tensile shear strength	Compared with room temperature, short-term results, shear strength loss is not greater than 5%
Stress Resistance	Performance Under Sustained Load	Under (23±2) °C, (50±5) % RH conditions, undertake 4.0MPa shear strength continuous to 210d	Steel - steel tensile shear specimens does not fail, and creep deformation value is less than 0.4 mm
	Fatigue Performance	Under ambient temperature, as frequency 5Hz, stress ratio 5:1.5, max stress 4.0MPa fatigue load testing by steel-steel tensile shear strength	After 2×10 ⁶ times continuous sine wave fatigue loads, specimen does not fail

▲▲ Application Process

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polishing



setting out



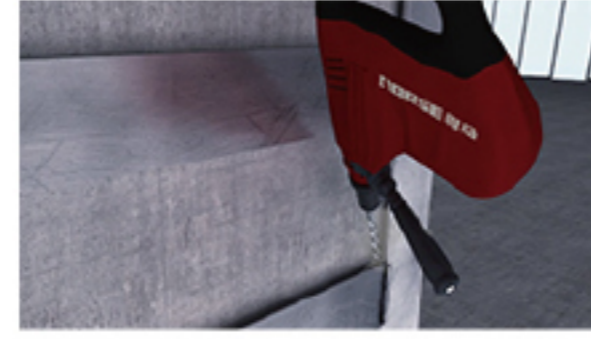
surface treatment



assembling



welding



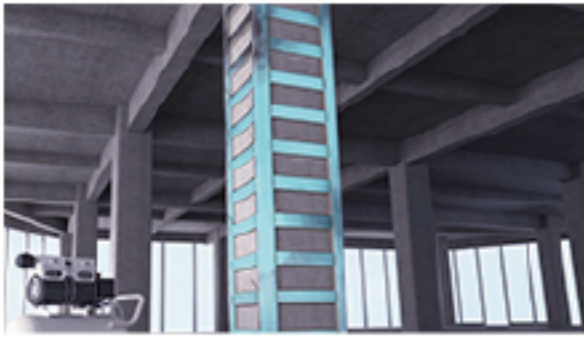
drilling



installing nozzles



sealing



injecting



curing



inspecting



protecting

▲▲ Transportation and Storage

- This product should be kept sealed and stored in a dry and clean storage space of ambient temperature between -5 °C and 40 °C. In order to prevent damage, do not store outdoor under direct sunlight or under direct rain.
- A & B components should be kept separately. Shelf life is 12 months at room temperature (25 °C). Product should be tested if exceeded the shelf life. If the physical and mechanical properties after 12 months meet the standard requirements, then it could be used.
- These products are not inflammable, explosive, toxic, or dangerous cargoes. They could be transported with general transportation cargo. The epoxy containers should not be damaged, exposed to direct sunlight or rain, and should not be tilted or stored upside-down during transportation.

▲▲ Package

The A and B components of this product are packed in separate containers. Component A is 20kg/container and Component B is 10kg/container.

▲▲ Points for Attention

- Mix quantities as needed, and use up the mixed adhesive within the specified pot life.
- Unused A & B components of the adhesive, please seal the containers well, don't expose to air for a long period of time.

▲▲ Safety Measures

- Construction personnel should take safety protection measures (such as wearing masks, gloves, goggles, etc.). on-site attention to fire prevention measures, and maintenance well-ventilated work space.
- If accidentally got in touch with skin or clothing, immediately wipe clean with acetone and rinse with a large amount of water.
- If accidentally swallowed or splashed onto eye, please seek immediate medical attention.