HP ANCHOR GEL

Epoxy Acrylate Anchor Bolt Adhesive

PRODUCT DESCRIPTION

Five Star HP Anchor Gel is a 100% solids, all weather, solvent-free structural epoxy acrylate anchoring adhesive. Using the latest technology, Five Star HP Anchor Gel has been engineered to gun down to -15°F (–26° C) , set up quickly in damp and water-filled holes and attain high early strength. Five Star HP Anchor Gel meets the performance requirements of ASTM-C-881, Types I, II*, IV & V*, Classes A, B & C, Grade 3 (*with exception of gel time).

ADVANTAGES

- Sets up in water-filled holes
- Bonds to smooth diamond core drilled holes
- Cold weather installation down to -15°F (-26°C)
- Styrene free formulation

USES

- Heavy duty anchoring of rebar, threaded rods and epoxy-coated smooth dowels in concrete, brick or stone masonry
- Horizontal and vertical installation
- Grouting bolts, dowels, or pins (horizontal or vertical) , where extremely rapid setting and fast turn-around times are needed
- Performs in damp or water-filled holes

PACKAGING AND YIELD

Five Star HP Anchor Gel is available in 750 ml x 75 ml cartridges yielding approximately 28 oz. (50 cu. in.) of material.

SHELF LIFE

One year in original unopened container when stored in dry conditions at 40°F to 80°F (4°C to 27°C).

TYPICAL PROPERTIES 70°F (21°C)	
Mix Ratio	10:1 by volume
Color	Gray
Compressive Strength, ASTM D 695	10,000 psi (72.4 MPa)
Compressive Modulus, ASTM D 695	2.65 X 10^5 psi (1828 MPa)
Concrete Bond Strength, ASTM C 882	2800 psi (19.3 MPa) (2 days)
Concrete Bond Strength, ASTM C 882	3200 psi (22.1 MPa)(14 days)
Absorption, ASTM D-570	0.08%
Heat Deflection, ASTM D-648	144° F
Elongation at break, ASTM D-638	1.3%
Gel Time, ASTM C-881	10 - 15 minutes

The data shown above reflects typical results based on laboratory testing under controlled conditions. Reasonable variations from the data shown may result. Test methods are modified where applicable.

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PLACEMENT GUIDELINES:

1. **SURFACE PREPARATION:** Minimum age of concrete must be three to seven days depending on curing and drying conditions.

   Anchoring Bolts, Dowels and Pins: Drill holes to proper diameter and length. Annular space should not exceed 1/8 inch (3.2 mm). Consult tables in this document for embedment depths and loads. Anchor holes or other surfaces in contact with Five Star HP Anchor Gel should be free of oil, grease, dust or other contaminants. Clean holes with a nylon brush. Blow concrete dust from hole with oil-free compressed air from bottom up.

2. **MIXING:**
   a. Remove D plugs from small end of cartridge.
   b. Slide retaining nut over static mixer. Secure static mixer to cartridge by screwing retaining nut onto cartridge.
   c. Place assembled cartridge into pneumatic or hand gun. Hand guns are recommended only for temperatures above 20°F (-7°C). Pneumatic guns provide efficiency and are essential for product installation temperatures below 20°F (-7°C).
   d. Extrude material until uniform color is achieved. Discard all material that is not of uniform color.

3. **PLACEMENT:**

   Anchoring Bolts, Dowels and Pins: Static mixer should be placed in back of hole. Fill hole while pulling static mixer out, using constant, uniform pressure, filling hole approximately half full. When using hand gun release pressure from gun by pressing thumb button at every pause in dispensing. Re-establish uniform mix color before continuing. Rotate the bolt as it is inserted to the back of the hole.

4. **CLEAN-UP:** Uncured material can be removed with a suitable solvent. Cured material can only be removed mechanically.

NOTE: PRIOR TO APPLICATION, READ ALL PRODUCT PACKAGING THOROUGHLY. *For more detailed placement procedures, refer to Design-A-Spec™ installation guidelines or call the Five Star Engineering and Technical Service Center at (800) 243-2206.*

CONSIDERATIONS

- Concrete or masonry surface must be frost-free.
- Do not thin. Solvents will prevent proper cure.
- Do not store at temperatures above 80°F (25°C).

CAUTION

Irritant to skin and eyes. Use of safety goggles and chemical-resistant gloves are recommended. Use of a NIOSH/MSHA organic vapor respirator is recommended if ventilation is inadequate. EYE CONTACT: Flush immediately with water for at least 15 minutes. Contact physician immediately. RESPIRATORY CONTACT: Remove person to fresh air. SKIN CONTACT: Remove any contaminated clothing. Remove epoxy immediately with a dry cloth or paper towel. Solvents should not be used as they carry the irritant into the skin. Wash skin thoroughly with soap and water. Do not take internally. Keep product out of reach of children. **PRIOR TO USE, REFER TO MATERIAL SAFETY DATA SHEET.**

For worldwide availability, additional product information and technical support, contact your local Five Star distributor, local sales representative, or you may call Five Star's Engineering and Technical Service Center at (800) 243-2206.

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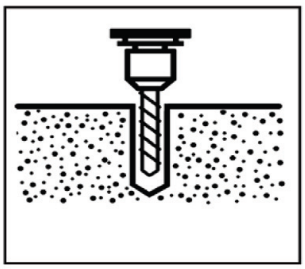
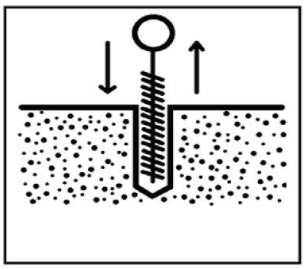
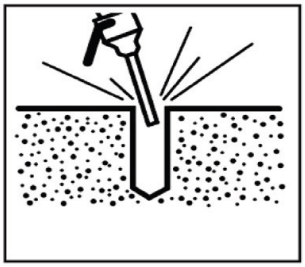
Anchoring Diagram



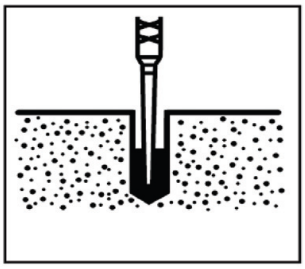
1. Drill holes to proper diameter and length.
   Note: Annular space should not exceed 1/8 inch.
   Example: A 3/4 inch bolt requires a 7/8 inch diameter hole.



2. **Clean holes** with a nylon brush.



3. Blow concrete dust from hole with oil-free compressed air from back forward.



4. After uniform color is achieved in the mixing tube, static mixer should be placed in back of hole. Start extruding epoxy while pulling static mixer out, filling hole 1/2 full. Rotate the anchor slightly as it is inserted to the back of the hole.

Table 2: ESTIMATING GUIDE FOR NUMBER OF HOLES PER 28 oz. CARTRIDGE

Threaded Rod in Concrete		Embedment Depth (inches)																		
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Rod Size	Hole Size																			
(inches)	(inches)	Number of Holes per 28 oz. Cartridge																		
3/8	7/16	244	163	122	98	81	70	61	55	50	45	41	38	36	33	31	29	28	27	25
1/2	9/16	173	116	87	70	59	50	43	37	36	32	29	27	24	23	22	20	19	19	18
5/8	3/4	89	60	45	36	31	25	23	20	18	17	15	14	13	13	11	11	10	10	9
3/4	7/8	71	47	36	29	24	20	18	17	14	13	13	11	10	10	9	9	9	8	8
7/8	1	60	39	31	24	20	15	15	14	13	11	10	10	9	9	8	8	8	6	6
1	1-1/8	48	33	24	20	17	14	13	11	10	9	9	8	8	6	6	6	6	5	5
1-1/8	1-1/4	43	29	22	18	15	13	11	10	9	9	8	8	6	6	6	5	5	5	5
1-1/4	1-3/8	37	25	19	15	13	11	10	9	8	8	6	6	6	5	5	5	5	4	4
1-1/2	1-5/8	29	20	15	13	10	9	8	6	6	6	5	5	5	4	4	4	4	4	4

Table 3: ULTIMATE TENSION VALUES FOR THREADED ROD IN CONCRETE

Anchor Diameter (inches)	Bit Diameter (inches)	Embedment (inches)	Critical Edge Distance (inches)	Min. Edge Distance (inches)	Ultimate Bond Strength Concrete 2300 psi	Ultimate Bond Strength Concrete 4300 psi	Allowable Steel Strength (lbs) A36/A307	Allowable Steel Strength (lbs) A193B7	Allowable Steel Strength (lbs) 300 Series Stainless
3/8	7/16	1 11/16	4 1/2	1 1/2	3,520	5,330	2,110	4,550	3,630
3/8	7/16	3 3/8	4 1/2	1 1/2	10,685	10,785	2,110	4,550	3,630
1/2	9/16	2 1/4	6	2	6,435	9,780	3,750	8,100	6,470
1/2	9/16	4 1/2	6	2	15,405	19,985	3,750	8,100	6,470
5/8	3/4	2 13/16	7 1/2	2 1/2	10,600	17,315	5,870	12,655	10,130
5/8	3/4	5 5/8	7 1/2	2 1/2	29,465	32,730	5,870	12,655	10,130
3/4	7/8	3 3/8	9	3	15,780	24,285	8,460	18,220	12,400
3/4	7/8	6 3/4	9	3	28,995	43,460	8,460	18,220	12,400
7/8	1	3 15/16	10 1/2	3 1/2	17,425	31,795	11,500	24,800	16,860
7/8	1	7 7/8	10 1/2	3 1/2	40,235	56,865	11,500	24,800	16,860
1	1 1/8	4 1/2	12	4	22,980	35,400	15,020	32,400	22,020
1	1 1/8	9	12	4	54,715	54,945	15,020	32,400	22,020
1 1/4	1 3/8	5 5/8	13 1/2	5	33,220	54,230	23,480	50,160	34,420
1 1/4	1 3/8	11 1/4	13 1/2	5	74,125	80,180	23,480	50,160	34,420

Table 4: ALLOWABLE SHEAR VALUES FOR THREADED ROD IN 2000 PSI CONCRETE

Anchor Diameter (inches)	Bit Diameter (inches)	Embedment Depth (inches)	Critical Edge Distance (inches)	Strength (lbs)	A36/A307	A193 B7	300 Series Stainless
3/8	7/16	3 3/8	1 3/4	1,100	1,080	2,345	1,870
1/2	9/16	4 1/2	1 3/4	1,425	1,930	4,170	3,330
5/8	3/4	5 5/8	1 3/4	2,175	3,030	6,520	5,220
3/4	7/8	6 3/4	1 3/4	2,535	4,360	9,390	6,390
7/8	1	7 7/8			5,930	12,780	8,680
1	1 1/8	9			7,740	16,690	11,340
1 1/4	1 3/8	11 1/4			12,100	26,070	17,730