

PILGRIM

AA 52

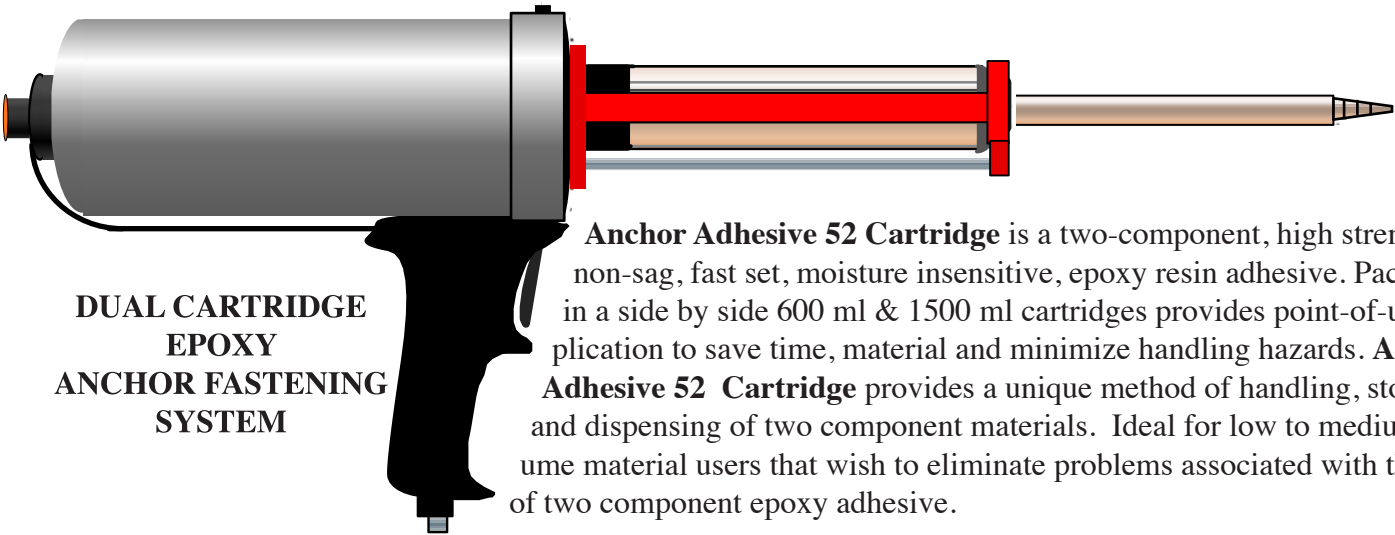
High Strength Epoxy Anchoring System



PILGRIM PERMOCOAT, INC.

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**DUAL CARTRIDGE
EPOXY
ANCHOR FASTENING
SYSTEM**

Anchor Adhesive 52 Cartridge is a two-component, high strength, non-sag, fast set, moisture insensitive, epoxy resin adhesive. Packaged in a side by side 600 ml & 1500 ml cartridges provides point-of-use application to save time, material and minimize handling hazards. **Anchor Adhesive 52 Cartridge** provides a unique method of handling, storing and dispensing of two component materials. Ideal for low to medium volume material users that wish to eliminate problems associated with the use of two component epoxy adhesive.

USES:

Specifically designed for the anchoring of dowels and rebar, **Anchor Adhesive 52's** ability to rapidly set and quickly gain high physical properties, affords the contractor maximum efficiency. It is a non-sag adhesive which allows for vertical and horizontal bonding; bonding hardened concrete and other materials to concrete, steel or wood.

Anchor Adhesive 52 is not recommended for overhead anchoring.

BENEFITS

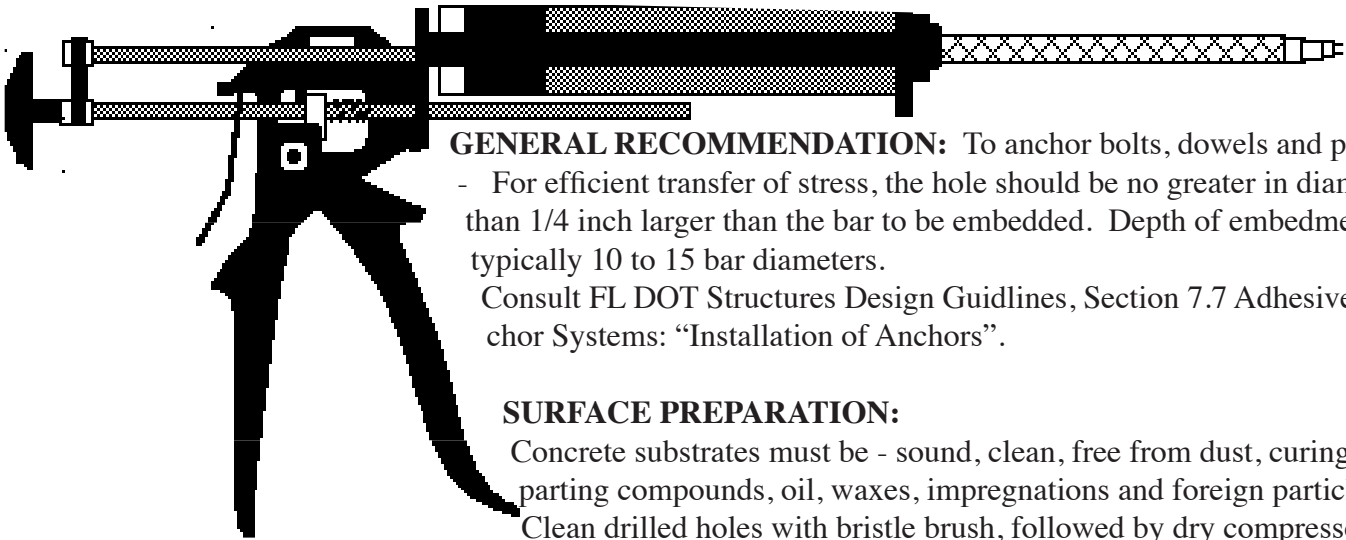
- No large capital expense
- Eliminates material waste
- Designed for plural component equipment
- Quick set
- Rapid physical properties development
- Eliminates aerated mix
- No clean up solvent needed
- Reduces health hazards
- Little operator skill needed
- Low maintenance
- Increased productivity
- Unlimited, low cost dispense points

TYPICAL PROPERTIES:

Gel Time@ 25°C	23 min.
Loading Time:	4-24 hours
Full-Cure Time:	24 hours
Consistency:	Gel
Water absorption:	0.2%
Tensile Strength ASTM D638	8500 psi
Slant Shear ASTM C881	6365 psi
Compressive Strength ASTM D695	8320 psi

QUALIFICATIONS

Louisiana DOT QPL 52
ASTM C881, I, II,IV,V Grade 3,
Class A,B & C



GENERAL RECOMMENDATION: To anchor bolts, dowels and pins.
- For efficient transfer of stress, the hole should be no greater in diameter than 1/4 inch larger than the bar to be embedded. Depth of embedment is typically 10 to 15 bar diameters.
Consult FL DOT Structures Design Guidelines, Section 7.7 Adhesive Anchor Systems: "Installation of Anchors".

SURFACE PREPARATION:

Concrete substrates must be - sound, clean, free from dust, curing or parting compounds, oil, waxes, impregnations and foreign particles.
Clean drilled holes with bristle brush, followed by dry compressed air to remove dust and debris. Repeat cleaning procedure. Substrate temperature must not be below 40°F. Condition **Anchor Adhesive 52** cartridges to 75° - 80°F before dispensing.

DISPENSE INSTRUCTIONS (Pneumatic Gun)

see also: data sheet "Manual Gun Application for AA 52 Cartridges"

1. Load cartridge into air gun.
2. Regulate supply pressure to 100 psi.
3. Remove D caps from cartridge nose.
4. Depress trigger to equalize pistons.
Allow product to flow from each cartridge.
5. Attach Static mixer and nut.
6. Depress trigger to dispense material.
7. Leave mixer on cartridge for storage. Install new static mixer when dispensing remainder of cartridge.

Either air powered or manual, trigger-operated guns are available, specifically designed for use with the **Anchor Adhesive 52 Cartridge System**. Note: Air powered is recommended when dispensing large volumes.

PACKAGING:

12 ea. 22oz. cartridges/carton

12 ea. 1/2" diameter 24 element mixer with retaining collar/cartridge.

Protective nose cap installed on each cartridge.

Available in 10 gallon units for use with plural component meter mix equipment.

CAUTION: Contains epoxy resins, organic amines. Toxic before cure. Avoid vapor inhalation, contact with skin, eyes. Consult **Material Safety Data Sheets** for complete information on safety and handling. Improper cartridge pressure may force material out of rear of cartridge!

Use safety eye wear!

Allowable Shear Values for Threaded Rod in 2000 psi Concrete*					
			ALLOWABLE STEEL STRENGTH (lbs)		
ANCHOR DIAM. (inches)	BIT DIAM. (inches)	EMBED-MENT (inches)	A36 /A307	A193 B7	300 SS
3/8	7/16	3 3/8	1080	2345	1870
1/2	9/16	4 1/2	1930	4170	3330
5/8	3/4	5 5/8	3030	6520	5220
3/4	7/8	6 3/4	4360	9390	6390
7/8	1	7 7/8	5930	12780	8680
1	1 1/8	9	7740	16690	11340
1-1/4	1 3/8	11 1/4	12100	26070	17730

Cure Times for Adhesive Anchors*		
Minimum substrate temp.	Cure Time	Minimum Cure Time
40°F	48 hrs	48 hrs
65°F	36 hrs	12 hrs
70°F	24 hrs	8 hrs
80°F	12 hrs	6 hrs
100°F	6 hrs	3 hrs

* Cure Time is time required before epoxy reaches ultimate strength. Minimum Cure Time is minimum time required before the design or allowable load may be applied. Anchors are to be undisturbed during the minimum cure time.

Allowable Anchor Spacing and Edge Distance*			
	FULL ANCHOR CAPACITY Critical Distance (C _{Cr})	REDUCED ANCHOR CAPACITY Distance (C _{min})	REDUCTION FACTOR
SPACING BETWEEN ANCHORS	24 D	8 D	.90
EDGE DISTANCE: TENSION LOADS	12 D	see following chart	see following chart
SHEAR - LOADS - THREADED ROD	12 D	4 D	.21
SHEAR LOADS - SMOOTH DOWELS	12 D	4 D	.21
SHEAR LOADS - REBAR	16 D	4 D	.15

Edge Distance for Tension Values for Anchors in Concrete*		
STUD SIZE (inches)	MINIMUM EDGE DISTANCE	REDUCTION FACTOR
3/8	1-1/2	.70
1/2	1-3/4	.66
5/8	1-3/4	.70
3/4	1-3/4	.70
7/8	3-1/2	.70
1	4	.70
1-1/4	5	.70

* The listed values are the minimum distances required to obtain the load values in the tables above and to the left. D= anchor diameter. When adjacent anchors are different sizes or embedments, use the largest value for D.

The listed values are the minimum distances at which the anchor can be installed when load values are adjusted in accordance with reduction factor.

Load values in the table are multiplied by the reduction factor when anchors are installed at the minimum spacing listed. Use linear interpolation for spacing between critical and minimum distances. Multiple reduction factors for more than one spacing or edge distance are calculated separately and multiplied.

Shear and Tension Values for Reinforcing Steel*							
ANCHOR DIAM. (inches)	BIT DIAM. (inches)	EMBEDMENT (inches)	TENSION ULTIMATE BOND STRENGTH (lbs)			ALLOWABLE STEEL STRENGTH	
			CONCRETE STRENGTH (f' _c)			TENSION OR SHEAR (lbs)	
			2500 psi	4000 psi	5500 psi	Grade 40	Grade 60
#3	1/2	3 3/8	7080	9050	11020	2200	2640
#4	5/8	4 1/2	12300	14730	17160	4000	4800
#5	3/4	5 5/8	16000	18810	21620	6200	7440
#6	1	6 3/4	39035	39000	39000	8800	10560
#7	1 1/8	7 7/8	36740	36750	36750	12000	14400
#8	1 1/4	9	42670	42670	42670	15600	18720
#9	1 3/8	11 1/4		60340	60340		24000

Ultimate Tension Values for Threaded Rod in Concrete*

ANCHOR DIA. (inches)	BIT DIA. (inches)	EMBEDMENT (inches)	ULTIMATE BOND STRENGTH IN CONCRETE (f'_c)				ALLOWABLE STEEL STRENGTH (lbs)		
			2500 psi	3000 psi	4000 psi	5500 psi	A36/A307	A193 B7	300 SS
3/8	7/16	1-11/19		5450			2100	4550	3630
3/8	7/16	3-3/8	7300		8250	9200	2110	4550	3630
3/8	9/16	3-3/8	9560				2110	4550	3630
3/8	7/16	5-8/8	10980		11360	11740	2110	4550	3630
1/2	9/16	2-1/4		7495			3750	8100	6470
1/2	9/16	4-1/2	10540		11730	12920	3750	8100	6470
1/2	11/16	4-1/2	14640				3750	8100	6470
1/2	9/16	7-1/2	14660		17010	19360	3750	8100	6470
5/8	3/4	2-13/16		13665			5870	12655	10130
5/8	3/4	5-5/8	14800		18870	22940	5870	12655	10130
5/8	7/8	5-5/8	23340				5870	12655	10130
5/8	3/4	9-3/8	21560		26260	30960	5870	12655	10130
3/4	7/8	3-3/8		17825			8460	18220	12400
3/4	7/8	6-3/4	22380		25870	29360	8460	18220	12400
3/4	1	6-3/4	29850				8460	18220	12400
3/4	7/8	11-1/4	30320		34340	38360	8460	18220	12400
7/8	1	3-15/16		21390			11500	24800	16860
7/8	1	7-7/8	43280				11500	24800	16860
1	1-1/8	4-1/2		27419			15020	32400	22020
1	1-1/8	9	55650				15020	32400	22020
1-1/4	1-3/8	11-1/4	77860				23480	50610	34420

Shear and Tension Values for Smooth Dowels*

DOWEL DIAMETER (inches)	BIT DIAMETER (inches)	EMBEDMENT (inches)	ULTIMATE BOND STRENGTH (lbs)		ALLOWABLE STEEL STRENGTH	
			TENSION	SHEAR	TENSION	SHEAR
			3000 psi	2500 psi	3000 psi	2500 psi
1/2	9/16	4 1/2	6040	8560	3750	1930
5/8	3/4	5 5/8	6760	13140	5880	3030
3/4	7/8	6 3/4	12000	18920	8460	4360
7/8	1	7 7/8	14220	25720	11500	5930
1	1 1/8	9	23280	33600	15020	7740

*

The tabulated shear and tension values are for anchors installed in nominal weight concrete having reached the designed ultimate compressive strength at the time of installation. Linear interpolation may be used for concrete strengths between those listed.

Spacing and edge distance shall be in accordance with appropriate table.

Allowable load must be lesser of the allowable steel strength and that allowable bond strength. Typically, allowable bond strength is equal to the ultimate bond strength divided by the safety factor of 4.

Allowable loads may be increased by 33-1/3% for short term loading due to earthquakes or wind.

AA 52 is recommended for damp holes, for use in locations subject to severe exterior weathering and for resisting tension and shear loads due to earthquake and wind.

AA 52 is not recommended for overhead anchoring.

“Structures Design Guidelines”
 Florida DOT Section 937
 625-020-152a

Bar # Deformed	Embedment Depth*	Thread Rod		Threaded Rod	
		Fu= 90,000 ksi	Embedment Depth*	Grade B7	Embedment Depth*
		Fy= 60,000 ksi		ASTM A193M	
3	07.56	3/8"	05.71	3/8"	09.49
4	10.12	1/2"	07.60	1/2"	12.64
5	12.68	5/8"	09.49	5/8"	15.79
6	15.20	3/4"	11.38	3/4"	18.94
7	17.72	7/8"	13.31	7/8"	22.13
8	20.28	1"	15.20	1"	25.28
9	22.87	1 1/8"	17.13	1 1/8"	28.46
10	25.75	1 1/4"	19.02	1 1/4"	31.61
11	28.58	1 3/8"	20.91	1 3/8"	34.80
12	30.43	1 1/2"	22.80	1 1/2"	37.91
13	33.46	1 5/8"	24.72	1 5/8"	41.10
14	34.33	1 3/4"	26.61	1 3/4"	44.25
18	45.79				

t' = 7.5 MPa

*The Embedment depth is designed for ductile failure. Ductile failure requires embedment sufficient to ensure that failure will occur by yielding or fracture of the steel.

ANCHORS PER CARTRIDGE ESTIMATING CHART										
Bolt Size		3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/4"	1 3/8"
Hole Size		1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"
Cartridge Size		22 oz.	22 oz.	22 oz.	22 oz.	22 oz.	22 oz.	22 oz.	22 oz.	22 oz.
	1"	465	296	250	217	217	191	171	155	142
	2"	233	148	125	108	108	96	86	78	71
	3"	155	99	84	72	72	63	57	52	47
	4"	116	74	63	54	54	50	43	39	35
HOLE	5"	93	59	50	43	43	38	34	31	28
	6"	77	49	42	36	36	32	29	26	24
DEPTH	7"	66	42	36	31	31	27	25	22	20
	8"	58	37	31	27	27	23	21	19	18
IN	9"	51	33	28	24	24	21	19	17	16
	10"	47	30	25	22	22	19	17	16	14
INCHES	11"	42	27	23	20	20	17	16	14	13
	12"	39	25	21	18	18	16	14	13	12
	13"	34	23	19	17	17	15	13	12	11
	14"	33	21	18	15	15	14	12	11	10
	15"	31	20	17	14	14	13	11	10	9
	16"	29	19	16	13	13	12	11	10	9
	17"	27	17	15	12	12	11	10	9	8
	18"	26	16	14	12	12	11	10	9	8
	19"	24	16	13	11	11	10	9	8	7
	20"	23	15	13	10	10	10	9	8	7

The number of Anchors per cartridge is based on exact volumetric calculations.
 There is no allowance for bolt or hole deformation, waste or varied drill bit sizes.