



ANCHORS & FASTENERS

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Pure220+™ Adhesive Anchoring System with Smooth Dowel Bars

ACI 318 (-19 or -14), Chapter 17 (and by reference to 2024 IBC and 2021 IBC | 2018 IBC and 2015 IBC, respectively) requires that adhesive anchors for concrete be tested and qualified with specifications for each anchor diameter. The requirements also include specifications for the type and grade of steel element used with the adhesive. Typical steel elements include but are not limited to threaded rods and deformed reinforcing bars. The influence of the steel element type, material, shape, coating, etc. can have a significant effect on the bond strength of installed adhesive anchors.

There are cases where an allowance for consideration of anchoring smooth dowel bars is desirable (e.g. slab on grade connections for shear load transfer). DEWALT has conducted supplemental laboratory tension testing on Pure220+ adhesive anchors into drilled holes with smooth dowel bars:

Pure220+ Adhesive		Smooth Dowel Bar Size		
		3/4"	1 1/4"	1 1/2"
Nominal smooth dowel bar diameter (in.)		0.75	1.25	1.50
Nominal drill bit size (in.)		7/8	1 3/8	1 5/8
Minimum embedment (in.)		9	9	9
Ultimate bond capacity (lbs)	3,000 psi concrete	23,780	70,345	90,850
	4,000 psi concrete	25,260	74,725	96,505
	6,000 psi concrete	25,985	76,980	99,470

- Results shown are based on tension tests conducted with smooth dowel bars (Grade 60) in accordance with ACI 355.4/ASTM E488 in dry uncracked normal weight concrete.
- The smooth dowel bars used in tests were epoxy coated.
- Ultimate load capacities must be reduced by a minimum safety factor of 4.0 or greater to determine allowable working loads.
- Anchoring of smooth dowel bars with Pure220+ adhesive is applicable for short-term tension loading only. This information supplements all other relevant design considerations for the specific application.
- Holes were drilled with a hammer drill and standard carbide drill bit and cleaned following published instructions for the Pure220+ adhesive anchor system. Hollow drill bits (DustX+ System) may be considered for use, as applicable.
- Standard carbide drill bits and hollow drill bits must meet the requirements of ANSI B212.15; ANSI compliance for hole drilling is required by ICC-ES [ESR-5144](https://www.icc-es.org/Evaluation-Report/ESR-5144).
- See published literature for the specific adhesive anchor system for additional design and installation information which is available at anchors.DEWALT.com.

Pure220+ adhesive anchors will achieve the allowable design strengths for short-term loading conditions when the product is properly installed into holes drilled in dry concrete. The adhesive anchors must be installed in accordance with all other printed installation instructions specific to the application.

