



April 17, 2012

Supersedes October 19, 2011

POLYMER GROUTS AND ADHESIVE ANCHORS

GENERAL

Polymer grouts shall and adhesive anchors meet the requirements of applicable Iowa Department of Transportation Specifications. Approval of polymer grouts may be withdrawn because of deficient monitor test results; product changes made after original approval, or unsatisfactory field performance.

ACCEPTANCE

Acceptance of polymer grouts for use on Department of Transportation projects will be on the basis of manufacturer and brand name approval.

Approved manufacturers and brand names for different types of applications are listed in [Appendixes A, B, C, D, and E](#). The ASTM C 881 requirements outlined below are applied to the epoxy-based adhesives. Other type adhesives will be evaluated and approved based on the equivalent performance.

MANUFACTURER & BRAND NAME APPROVAL

To obtain approval for polymer grouts under [Appendixes A, B, C, D or E](#) the manufacturer shall submit the following items to the Office of Materials in Ames, Iowa:

1. Product identification including brand name and product number
2. Complete manufacturer recommendations for usage
3. A current Material Safety Data Sheet (MSDS)
4. A sample consisting of enough material for three pullout tests

APPROVAL FOR [APPENDIXES A AND B](#)

Appendix A contains pourable polymer grouts intended for vertical installations or angled installations less than 45° from vertical. Mechanical mixing is required to blend the material to uniform consistency. The adhesives listed on [Appendix A](#) shall also be compliant with ASTM C881, Type IV or V.

Appendix B lists viscous polymer grouts intended for horizontal installations. Mechanical mixing is required to blend the material to uniform consistency. The adhesives listed on [Appendix B](#) shall also meet the requirements of ASTM C881, Type IV or V, Grade 2 or 3 (except gel time).

The laboratory evaluation for both [Appendix A](#) and [B](#) will consist of bonding a No. 5 reinforcing bar in a 4-inch deep, 3/4-inch diameter hole in a concrete specimen and performing a pullout load test. After a seven-day cure at laboratory temperature, the test specimen shall have a 9,000-pound minimum load. The reported pullout load shall be the average of two tests.

APPROVAL FOR APPENDIX C

[Appendix C](#) contains polymer grouts for dowel bar installation. Either an encapsulated chemical anchor system or a pressure-injectable system with mechanical proportioning and mixing shall be required to blend the material to uniform consistency.

To obtain approval for products under [Appendix C](#), the laboratory evaluation will consist of bonding a No. 5 reinforcing bar in a 4-inch deep 3/4-inch diameter hole in a concrete specimen and performing a pullout load test. The test specimen shall develop a 40-pound minimum pullout load in one hour and a 24-hour pullout load at a minimum of 10,000 pounds. The specimen will be kept at laboratory temperature. Two specimens are needed to obtain the average of each pullout load. Products meeting the requirements for [Appendix C](#) will also be placed on [Appendixes A](#) and [B](#).

Manufacturers whose products require special equipment such as an injection or mixing equipment shall recommend which equipment can be used with their product.

APPROVAL FOR APPENDIX D

Appendix D lists approved adhesives used as chemical anchors. Allowable loads, provided by manufacturers and performed by an independent certified laboratory, shall be based on tension (pull-out) and shear tests in accordance with ASTM E488. Users shall follow manufacturers' recommendations for allowable loads used. Allowable loads shall not exceed 1/4 of ultimate loads.

To obtain the approval of adhesive chemical anchors, manufacturers shall also provide independent test results to show that their products meet the creep criteria of ICC-ES AC 58 or AC 308 (International Code Council, Evaluation Service).

The adhesive anchors listed in [Appendix D](#) shall not be used in sustained tensile-load overhead applications in highway projects.

APPROVAL FOR APPENDIX E

[Appendix E](#) lists approved adhesives used for installing anchors and dowels for traffic railings. To obtain the approval, a product shall successfully pass the laboratory evaluation as described for the [Appendix A](#) approval. The adhesives listed shall also be compliant with ASTM C881, Type IV or V, Grade 2 (medium viscosity).

CERTIFICATION

The manufacturer shall file a certification statement at the beginning of each calendar year stating that the material supplied during that year is identical with the formulation previously tested and

approved by the Office of Materials.

MONITOR SAMPLING & TESTING

The Office of Materials may sample and test polymer grouts to verify compliance with specifications.