

1731 – GROUT USED IN POST-TENSIONING

SECTION 1731

GROUT USED IN POST-TENSIONING

1731.1 DESCRIPTION

This specification covers grouts to be used to protect post-tensioning steel in haunched slab bridges.

1731.2 MATERIALS

a. Provide material that does not contain aluminum or other components which produce hydrogen, carbon dioxide or oxygen gas.

b. Provide material complying with the requirements listed in **TABLE 1731-1**. Conduct all tests with material mixed to produce the minimum time of efflux. Establish the water content to produce the minimum and maximum time of efflux.

Property	Test Method	Requirement
Total Chloride Ions, max.	ASTM C 1152	0.08% by weight
Hardened Height Change	ASTM C 1090 ^a	0.0% to +0.2%
Expansion	ASTM C 940	Max. 2.0% for up to 3 hours
Wet Density	ASTM C 188	Max. and min. obtained test value, lb/ft ³
Compressive Strength	ASTM C 942	Min. 7,000 psi
Initial Set Time, min.	ASTM C 953	3 hours
Initial Set Time, max.	ASTM C 953	12 hours
Time of efflux, immediately after mixing ^b	ASTM C 939	Min. 20 seconds Max. 30 seconds
	ASTM C 939 ^c	Min. 9 seconds Max. 20 seconds
Time of efflux, 30 minutes after mixing with remixing for 30 seconds ^b	ASTM C 939	Max. 30 seconds
	ASTM C 939 ^c	Max. 30 seconds
Permeability @ 28 days	ASTM C 1202	Max. 2,500 coulombs

^a Modify ASTM C 1090 to include verification at both 24 hours and 28 days.

^b Must meet one of the two sets of requirements shown.

^c Modify the ASTM C 939 test by filling the cone to the top instead of to the standard level.

1731.3 TEST METHODS

Test in accordance with the requirements stated in **subsection 1731.2**.

1731.4 PREQUALIFICATION

a. Each grout intended for use under this specification must be prequalified before use. Submit a written request to be evaluated for prequalification to the Chief of Materials and Research. Provide the following for the material to be evaluated:

(1) Name, address and telephone number of the manufacturer. Include the name of the preferred contact person.

(2) Brand name of the grout.

(3) A complete description, literature, and set of instructions.

(4) Material Safety Data Sheets.

(5) A copy of test results performed as outlined in **subsection 1731.2b** from a recognized laboratory. Include evidence that the laboratory is regularly inspected regularly. A recognized laboratory is one operated by any State Transportation Agency, the Federal Highway Administration, or other cement and concrete laboratory regularly

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inspected by the Cement & Concrete Reference Laboratory (CCRL) of the National Institute of Standards and Technology. Test results are to be no more than 24 months out of date.

(6) An infra-red spectrum of the grout which was used in the laboratory tests.

b. Forward a one gallon sample from production of each grout being submitted for prequalification to the Engineer of Tests.

c. The information, test reports and test results obtained at the Materials and Research Center on samples submitted, will be reviewed by the Chief of Materials and Research. The manufacturer will be advised of the results.

d. The Bureau of Materials and Research will maintain a list of prequalified products. Products that have been prequalified will remain prequalified as long as the formulation and manufacturing processes remain unchanged, and field experience indicates that the grout functions appropriately. Changes in formulation or manufacturing processes will require new prequalification testing.

Failure of the material to function appropriately in the field will be cause for removal of the product from prequalified status. Products removed from prequalified status will be considered for requalification if the manufacturer can provide evidence that the cause of failure has been positively identified, and necessary formulation changes and/or quality control measures have been implemented to eliminate that cause. Complete prequalification testing may be required for products that have been removed from prequalified status.

1731.5 BASIS OF ACCEPTANCE

Prequalification as specified in **subsection 1731.4**.

Receipt and approval of a Type C certification as specified in **DIVISION 2600**.