
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
NASA-03525 (June 2004)
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SECTION 03525

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06/04

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SECTION 03525

INSULATING CONCRETE DECKS
06/04

NOTE: Delete, revise, or add to the text in this section to cover project requirements. Notes are for designer information and will not appear in the final project specification.

This section covers insulating concrete for roof decks.

Drawings must indicate the areas of application.

PART 1 GENERAL

1.1 REFERENCES

NOTE: The following references should not be manually edited except to add new references. References not used in the text will automatically be deleted from this section of the project specification.

The publications listed below form a part of this section to the extent referenced:

ASTM INTERNATIONAL (ASTM)

- | | |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ASTM C 150 | (2002ae1) Standard Specification for Portland Cement |
| ASTM C 332 | (1999) Standard Specification for Lightweight Aggregates for Insulating Concrete |
| ASTM C 450 | (2002) Standard Practice for Prefabrication and Field Fabrication of Thermal Insulating Fitting Covers for NPS Piping, Vessel Lagging, and Dished Head Segments |
| ASTM C 513 | (1989; R 1995) Standard Test Method for Obtaining and Testing Specimens of Hardened Lightweight Insulating Concrete for Compressive Strength |

ASTM C 595	(2003) Standard Specification for Blended Hydraulic Cements
ASTM C 612	(2000a) Standard Specification for Mineral Fiber Block and Board Thermal Insulation
ASTM C 618	(2003) Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 921	(2003a) Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation
ASTM C 989	(2004) Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
ASTM F 683	(2003a) Standard Practice for Selection and Application of Thermal Insulation for Piping and Machinery

1.2 SUBMITTALS

NOTE: Review submittal description (SD) definitions in Section 01330, "Submittal Procedures," and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.

The following shall be submitted in accordance with Section 01330, "Submittal Procedures," in sufficient detail to show full compliance with the specification:

SD-03 Product Data

Manufacturer's catalog data shall be submitted for the following items:

- Aggregate
- Cement
- Control Joint Material

SD-06 Test Reports

Test reports on insulation shall be in accordance with paragraph entitled, "Testing," of this section, for Compressive Strength.

SD-07 Certificates

Certificates shall be submitted for Portland Cement.

SD-08 Manufacturer's Instructions

Contractor shall submit the aggregate manufacturer's written instructions for Insulating Concrete.

1.3 STORAGE

Packaged materials shall be stored in their original, unbroken packages or containers in a weathertight and dry place until needed for installation.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

2.1.1 AGGREGATE

Aggregate shall be perlite or vermiculite conforming to ASTM C 332, Group I.

2.1.2 Admixtures

[Admixtures shall be as recommended by the concrete manufacturer.]

[Fly ash [is required] [used] as an admixture [and] shall conform to ASTM C 618, Class [C or F] with 4 percent maximum loss on ignition and between 15 to 35 percent maximum cement replacement by weight.]

NOTE: Ground granulated blast furnace slag and fly ash is one of the materials listed in the EPA's Comprehensive Procurement Guidelines (CPG) (<http://www.epa.gov/cpg/>). If the Architect/Engineer determines that use of certain materials meeting the CPG content standards and guidelines would result in inadequate competition, do not meet quality/ performance specifications, are available at an unreasonable price or are not available within a reasonable time frame, the Architect/Engineer may submit written justification and supporting documentation for not procuring designated items containing recovered material. Written justification may be submitted on a Request for Waiver Form to the NASA Environmental Program Manager for approval. The Request for Waiver Form is located in the NASA Procedures and Guidelines (NPG 8830.1) (<http://nodis3.gsfc.nasa.gov>).

[Ground granulated blast furnace slag [is required] [used] as an admixture [and] shall conform to ASTM C 989, Grade [120] with between 25 to 50 percent maximum cement replacement by weight.]

2.1.3 CEMENT

One brand of cement shall be used. Cement reclaimed from cleaning bags or leaking containers shall not be used. [Portland Cement shall conform to ASTM C 150, Type [I] [II].] [Blended hydraulic cement shall conform to ASTM C 595, Type [____].] Cement not used within 6 months of certificate date shall be retested.

2.1.4 WATER

Water shall be potable.

2.2 CONTROL JOINT MATERIAL

Control joint material shall be in accordance with ASTM C 450, ASTM C 921, ASTM F 683 and ASTM C 612, Category 1, Type 1, semirigid modified for maximum density of 6.0 pounds per cubic foot 96 kilogram per cubic meter.

PART 3 EXECUTION

3.1 GENERAL

Mixing and application of Insulating Concrete shall be in conformance with the aggregate manufacturer's approved written instructions.

3.2 MIXING AND PLACING PROCEDURE

Insulating Concrete shall be mixed and placed by technically qualified personnel to obtain the following physical properties and a finished roof deck surface suitable for application of the roofing membrane:

Compressive strength: minimum of 130 to 180 pounds per square inch 900 to 1250 kilopascal at 28 calendar days.

Unit weight: [_____]

3.3 CONTROL JOINT

A 1-inch 25 millimeter, highly compressible, control joint shall be provided to separate insulating concrete from walls, vents, and other projections.

3.4 CURING

Insulating concrete shall be protected against construction traffic and rapid drying for at least 3 calendar days before roofing or thermal insulation is applied. If rain occurs at the end of the curing period, additional days will be required before roofing or insulation is applied.

3.5 PATCHING

Portions of the insulating concrete deck with scaling of more than 1/4-inch 6 millimeter depth shall be removed to sound concrete. Surfaces shall be coated with portland cement concrete slurry and patched with a rich mixture of insulating concrete.

3.6 TESTING

During progress of the work, insulating concrete specimens shall be taken for laboratory testing in the presence of the Contracting Officer. Contracting Officer shall be notified 1 day prior to the date of taking specimens. A minimum of four test specimens shall be taken for each day's concreting, with at least one test specimen required for each 75 cubic yards 70 cubic meter of insulating concrete. Specimens shall be labeled to indicate the location of the concrete batch from which they were taken. Specimens, until ready for testing, shall be stored in an undisturbed place that will not be exposed to extreme changes of temperature and humidity.

If the specified unit weight and compressive strength requirements are not met by testing the batch specimens , the insulating concrete shall be field tested for unit weight and Compressive Strength in accordance with ASTM C 513.

Insulating concrete that does not meet the requirements specified shall be removed and replaced with new insulating concrete roof deck materials.

-- End of Section --