

SECTION 03540 CEMENTITIOUS UNDERLAYMENT

This guide specification has been prepared by Dayton Superior Corporation to assist design professionals in the preparation of a specification section covering cementitious underlayments and toppings for leveling interior concrete, tile, and terrazzo surfaces.

This specification may be used as the basis for developing either a project specification or an officemaster specification. Since it has been prepared according to the principles established in the Manual of Practice published by The Construction Specifications Institute (CSI), it may be used in conjunction with most commercially available master specifications systems with minor editing.

The following should be noted in using this guide specification:

Editing notes to assist users are included within bordered boxes. Delete these notes prior to final printing.

Optional text requiring a selection by the user is enclosed within brackets, e.g.:
Section [01330] [_____]."

Items requiring user input are enclosed within brackets, e.g.: Section [_____ - _____]."

Optional paragraphs are separated by an "OR" statement, e.g.:

**** OR ****

Metric equivalents to inch-pound units follow the inch-pound units and are contained within parenthesis. Metric measurements are rationalized units based on the SI system of measurement. Delete either the inch-pound or metric units of measure depending on project requirements; do not include both units in a project specification, as conflicting requirements could result.

This guide specification is available in both hard copy and a variety of electronic formats to suit most popular word processing programs and operating platforms. Please contact Dayton Superior Corporation at (800) 745-3707 for additional copies or for information on available electronic formats.

1 GENERAL

1.1 SUMMARY

Edit the following to suit project requirements.

A. Section Includes:

1. Cementitious [underlayments] [and] [toppings] for leveling interior [concrete] [tile] [terrazzo] surfaces.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

- 1 C 191 - Test Method for Time of Setting of Hydraulic Cement by Vicat Needle.
- 2 C 348 - Test Method for Flexural Strength of Hydraulic Cement.
- 3 C 944 - Standard Test Method for Abrasion Resistance of Concrete or Mortar Surfaces by the Rotary-Cutter Method.

1.3 SUBMITTALS

Edit the following paragraph to indicate the correct Division 1 section.

A. Submit under provisions of Section [01330] [_____]:

- 1 Product Data: Include manufacturer's specifications, surface preparation and application instructions, and protection of adjacent surfaces.
- 2 Test Data: Confirm compliance with specified requirements.

1.4 DELIVERY, STORAGE AND HANDLING

Edit the following paragraph to indicate the correct Division 1 section.

A. Deliver, store, and handle products under provisions of Section [01600] [_____].

B. Store materials in a dry area at a temperature between 30 and 100 degrees F (minus 1 and plus 38 degrees C). Provide adequate ventilation and keep away from ignition sources.

1.5 PROJECT CONDITIONS

A. Environmental Requirements: Do not apply bonding agents or underlayments at temperatures below 40 degrees F (4 degrees C).

2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Dayton Superior Corporation, 402 South First Street, Oregon, IL 61061, (800) 745-3707.

Edit the following paragraph to indicate whether substitutions will be permitted; indicate the correct Division 1 section.

B. Substitutions: [Not permitted.] [Under provisions of Section [01630] [_____].]

2.2 MATERIALS

A. Primer:

- 1 Product: LeveLayer Bonding Agent (J-42).
- 2 Description: Reemulsifiable emulsion bonding agent.
- 3 VOC compliant.
Include the following for a premium self-leveling underlayment for use over new or existing concrete, ceramic tile, or terrazzo.

B. Cementitious Underlayment:

- 1 Product: LeveLayer I.
- 2 Description: Premium grade, cement based, non-shrinking, self-leveling floor underlayment.
- 3 Approved by Ceramic Tile Institute.
- 4 Compressive strength: Tested per ASTM C 109 with following results: Days Compressive Strength
psi (MPa)
1 1800 (12.4)
3 2200 (15.2)
7 2800 (19.3)
28 4200 (28.9)
- 5 Flexural strength: Tested per ASTM C 348 with following results: Days Flexural Strength - psi (MPa)
1 495 (3.4)
3 630 (4.3)
7 800 (5.5)
28 1000 (6.9)
- 6 Initial set: 90 minutes, tested per ASTM C 191.
- 7 Final set: 150 minutes, tested per ASTM C 191.
- 8 Self-leveling working time: 20 minutes at 68 degrees F (20 degrees C).
**** OR ****
Include the following for a standard grade self-leveling underlayment for use over new or existing concrete, ceramic tile, or terrazzo.

C. Cementitious Underlayment:

- 1 Product: LeveLayer II.

2 Description: Cement based, non-shrinking, self-leveling floor underlayment.
3 Compressive strength: Tested per ASTM C 109 with following results: Days Compressive Strength
psi (MPa)
1 1300 (9.0)
3 1600 (11.0)
7 2200 (15.2)
28 3400 (23.4)

4 Flexural strength: Tested per ASTM C 348 with following results: Days Flexural Strength - psi (MPa)
3 420 (2.9)
7 720 (5.0)
28 1000 (6.9)

5 Initial set: 75 minutes, tested per ASTM C 191.

6 Final set: 90 minutes, tested per ASTM C 191.

7 Self-leveling working time: 20 minutes at 70 degrees F (21 degrees C).

**** OR ****

Include the following for a heavy duty, self-leveling floor topping for use over new or existing concrete designed to take direct traffic.

D. Cementitious Floor Topping:

1 Product: LeveLayer III.

2 Description: Cement based, non-shrinking, self-leveling floor topping designed to accept traffic.

3 Compressive strength: Tested per ASTM C 109 with following results: Days Compressive Strength
psi (MPa)
1 2700 (18.6)
3 3400 (23.4)
7 4200 (28.9)
28 5700 (39.3)

4 Flexural strength: Tested per ASTM C 348 with following results: Days Flexural Strength - psi (MPa)
1 600 (4.1)
3 700 (4.8)
7 800 (5.5)
28 1000 (6.9)

5 Abrasion resistance: Average weight loss of 8.3 g, tested per ASTM C 944 with 20 Kfg load.

- 6 Initial set: 65 minutes, tested per ASTM C 191.
- 7 Final set: 90 minutes, tested per ASTM C 191.
- 8 Self-leveling working time: 15 minutes at 68 degrees F (20 degrees C).

2.3 ACCESSORIES

Include the following for applications where thickness of underlayment will exceed 1/2 inch (13 mm).

- A. Sand: Clean, coarse, well graded natural sand.

2.4 MIXING

- A. Mix materials in accordance with manufacturer's instructions.
Include the following for applications where thickness of underlayment will exceed 1/2 inch (13 mm).
- B. Add sand at rate of 15 pounds (0.7 kg) per 50 pound (23 kg) bag.
- C. Do not over-water or retemper mix.

3 EXECUTION

3.1 PREPARATION

- A. Clean surfaces to remove loose and foreign matter that could interfere with adhesion. Allow surfaces to dry completely before beginning application.
- B. Protect adjacent surfaces.

3.2 INSTALLATION

- A. Follow manufacturer's instructions.
- B. Apply primer with brush or broom at rate recommended by manufacturer. Allow to dry to touch before proceeding, but do not wait longer than 72 hours.
- C. Apply cementitious underlayment by pouring or pumping. Spread with long handled spreader.

END OF SECTION