

GUIDE SPECIFICATION FOR MULTI-PURPOSE EXPANSION/CONTRACTION JOINT FILLER: NOMAFLEX®

SECTION 03 15 00 – CONCRETE ACCESSORIES

EXPANSION/CONTRACTION JOINT FILLER

Specifier Notes: This guide specification is written according to the Construction Specifications Institute (CSI) format. The section must be carefully reviewed and edited by the architect or engineer to meet the requirements of the project. Coordinate this section with other specification sections and the drawings.

Specifier Notes: Nomaco NOMAFLEX® is a closed-cell polypropylene foam expansion joint filler /form used in concrete construction such as sidewalks, driveways, curbs and gutters, medians, and roadways. NOMAFLEX® has been engineered for use with or without sealants. It is light weight, forms to curves and radii while maintaining rigidity, and has less than 1% water absorption. NOMAFLEX® maintains a minimum compression recovery rate of > 80%, is resistant to chemicals, and is 100% recyclable. NOMAFLEX® is compatible with typical polyurethane, silicone, and hot-pour joint sealant and will not impede typical sealant cure times.

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Application of expansion/contraction joint filler.

1.02 RELATED SECTIONS

Specifier Notes: Edit the list of related sections as required for the project. List other sections dealing with work directly related to this section.

- A. Section 03 00 00 - Concrete.
- B. Section 32 13 73.16 – Field-Molded Concrete Paving Joint Sealants.

1.03 REFERENCES

- A. AASHTO M 213 - Standard Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
- B. ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
- C. AASHTO M 153 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Filler for Concrete Paving and Structural Construction
- D. ASTM D 1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Filler for Concrete Paving and Structural Construction
- E. AASHTO T 42 - Standard Test Methods for Preformed Expansion Joint Fillers for Concrete Construction (Nonextruding and Resilient Types)
- F. ASTM D 545 - Standard Test Methods for Preformed Expansion Joint Fillers for Concrete Construction (Nonextruding and Resilient Types)
- G. ASTM D 5249 - Standard Specification for Backer Material for Use with Cold- and Hot -Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joint

1.04 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Submit manufacturer's product data and application instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in a clean, dry area in accordance with manufacturer's instructions.
- C. Protect materials during handling and application to prevent damage.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Nomaco, 501 NMC Drive, Zebulon, NC 27597. Phone (877) 291-1157. Fax (919) 269-7936. Website: www.nomacoefs.com.

2.02 MATERIALS

- A. Performance-Based Specification: Resilient, flexible, non-extruding, expansion-contraction joint filler.
 - a. Water Absorption < 1.0% per ASTM D 545 or AASHTO T 42
 - b. Compression recovery > 80% per ASTM D 545 or AASHTO T 42
 - c. Extrusion < 0.1 in. per ASTM D 545 or AASHTO T 42
 - d. Density >3.5 lbs./cu.ft. per ASTM D 545 or AASHTO T 42
 - e. Heat Resistance °F 392°F± 5°F per ASTM D 5249

Specifier Notes: Specify the thickness of the expansion-contraction joint filler.

- f. Thickness: [Typical 1/2 inch] ([13 mm]).
- B. Proprietary Based Specification: NOMAFLEX® by Nomaco.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive expansion/contraction joint filler. Notify architect if areas are not acceptable. Do not begin application until unacceptable conditions have been corrected.

3.02 APPLICATION

- A. Install expansion-contraction joint filler in accordance with manufacturer's instructions.
- B. Position joint filler against forms, at interrupting objects or columns, and against abutting structures before concrete placement.
- C. When used with sealant, Install joint filler 1/2 inch (13 mm) below concrete surface.
- D. Prior to sealing, slide expansion joint cap over the expansion joint.

- E. Place concrete and screed to finish grade.
- F. Allow concrete to cure.
- G. Insert screwdriver through the top of expansion joint cap, pull free and discard.
- H. Seal with pavement joint sealant.

3.04 PROTECTION

- A. Protect pavement joint sealant from traffic until fully cured.

END OF SECTION

Standard Specification for Preformed Closed-Cell Polypropylene Expansion Joint Fillers for Concrete Paving and Structural Construction

This standard is issued under the fixed designation D XXXX; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers preformed expansion joint fillers made from closed-cell polypropylene materials having suitable compressibility and nonextruding characteristics.

1.1.1 Type I, closed-cell polypropylene

1.2 These joint fillers are intended for use in concrete pavements in full-depth joints. There are several variations in size with typical thicknesses of $\frac{1}{2}$ in. (12.7 mm), $\frac{3}{4}$ in. (19.05 mm), and 1 in. (25.4 mm); typical widths of 3 $\frac{1}{2}$ in. (88.9 mm), 4 in. (101.6 mm), 5 in. (127 mm), 6 in. (152.5 mm), or 36 in. (914 mm) sheet, and typical lengths of 5 ft. (1.52 m) and 10 ft. (3.05 m).

1.3 The values stated in inch-pound units are to be regarded as the standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

D 545 Test Method of Testing Preformed Expansion Joint Fillers for Concrete Construction (Nonextruding and Resilient Types)

D 1752 Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

D 1751 Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

D 7174 Standard Specification for Preformed Closed-Cell Polyolefin Expansion Joint Fillers for Concrete Paving and Structural Construction

3. Materials and Manufacture

3.1 Type I, Closed-Cell Polypropylene – These filler shall be made from foamed polypropylene, and their preformed cross section shall be closed-cell.

4. Physical Properties

4.1 *Compressive Strength*—The load required to compress the test specimen to 50% of its original thickness before test shall not be less than 30 nor greater than 60 psi.

4.2 *Recovery*—After compressing the test specimen to 50 % of its original thickness before test, the load shall be released; and 10 min after release of the load, the specimen shall have recovered to at least 80 % of its thickness before test.

4.3 *Extrusion*—When a $\frac{1}{2}$ in. (12.7 mm) thick test specimen is compressed to 50 % of its original thickness with three of its edges restrained, the free edge shall extrude not more than 0.1 in. (2.54 mm).

4.4 *Density*—The density of air dried filler material shall not be less than 3.5 lb./cu.ft. (56.06 kg/cu.m.).

4.5 *Water Absorption*—The standard expansion joint filler test specimen with 4 square cut edges, when submerged horizontally under 1 in (25.4 mm) water at $70^{\circ} \pm 5^{\circ}$ F ($21.1^{\circ} \pm 3^{\circ}$ C) shall absorb not more than 1 % volume % in 24 hr. for nominal thickness of $\frac{1}{2}$ in. (12.7 mm).

5. Dimensions, Mass, and Permissible Variations

5.1 Expansion joint filler units shall conform to dimensions as specified:

5.1.1 *Thickness*, +10, –0 %.

5.1.2 *Width*, +0.8, –0 in. (+20.3, –0 mm).

5.1.3 *Length*, +3.0, –0 in. (+76.2, –0 mm).

6. Sampling

6.1 *Size of Samples*—Each sample shall consist of sufficient material to provide at least ten test specimens measuring 4 in. by 4 in. (101.6 mm by 101.6 mm), or as required by the user agency.

Unless otherwise specified under applicable test method, test specimens shall be the same thickness as the expansion joint filler units to be installed.

6.2 *Number of Samples*—Select one representative sample from each shipment of material capable of filling 5000 linear ft. (1524 m) of expansion joint filler.

¹ This specification is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.34 on Preformed Joint Fillers, Sealers and Sealing Systems.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.

7. Test Methods

7.1 *Scope*—Determine the physical requirements prescribed in this specification in accordance with Test Method **D 545**.

8. Inspection

8.1 Inspection of the material and selection of sample or samples to be tested may be made either at the point of shipment or at the point of delivery, as agreed upon.

9. Rejection and Rehearing

9.1 If a selected sample fails to conform to any of the requirements of this specification, select two additional samples from the same lot and test. Both retest samples shall meet the requirements of this specification or the lot will be rejected.

10. Keywords

10.1 cellular plastic; closed-cell; expansion joint; filler; joint; polypropylene; preformed

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Comparison of Nomaflex® and Asphalt-Impregnated Fiberboard

Referenced Standard Test Methods: ASTM D 545 and AASHTO T 42

Referenced Standard Specifications: ASTM D 1751 and AASHTO M 213

Physical Properties	Nomaflex®	Asphalt-Impregnated Fiberboard	Added Value of Nomaflex®
Water absorption	< 1.0% by volume: Does not swell or absorb any practical amount of water	Absorbs water up to 15% by volume in 24 hours, then swells and separates	Nomaflex® will last longer in the presence of moisture and ongoing precipitation
Compression (to 50%)	Minimum > 30 psi, Maximum < 60 psi	Minimum > 100 psi, Maximum < 750 psi	Nomaflex® withstands concrete expansion / contraction with no impact on structural integrity
Recovery (from 50%)	> 80% Compression Recovery	> 70% Compression Recovery	Nomaflex® stays in place and keeps the joint free of debris with or without a sealant
Extrusion (at 50%)	< 0.1 in. movement	< 0.25 in. movement, (frequently misses this test approval due to variance in product composition)	Nomaflex® offers more consistency and stability due to its polypropylene composition
Expansion in boiling water	No expansion after immersion in boiling water for 1 hr.	No published test results to this standard	Nomaflex® shows superior performance (both structurally and for moisture resistance) with this extreme test
Disintegration in boiling hydrochloric acid (HCl)	No disintegration after immersion in boiling hydrochloric acid (HCl) for 1 hr.	No published test results to this standard	Nomaflex® shows superior performance (both structurally and with chemical resistance) with this extreme test
Density	> 3.5 lbs./cu.ft.	> 18 lbs./cu.ft.	Nomaflex® is light weight and easier to handle, and its polypropylene composition provides rigidity with superior resistance to breakage
Sealant compatibility	Compatible with all known concrete joint sealants	Not always compatible with polyurethane or silicone based sealants as indicated by the sealant manufacturers	Nomaflex® allows for a superior bond between the concrete and sealant without 3-sided adhesion or impacting cure times, nor will it discolor the sealant as seen with asphalt-impregnated fiberboard due to asphalt leaching
UV resistance	Excellent UV resistance	Good UV resistance	Nomaflex® is made with UV inhibitors for extended life with or without joint sealant
Chemical Resistance	Excellent chemical resistance (polypropylene is a chemically inert compound)	Fair chemical resistance (fibers come apart in the presence of various chemical)	Nomaflex® is chemically inert. Asphalt-impregnated fiberboard is not. Nomaflex® will not react with salts, gasoline products, motor oils, acetone and countless chemicals used on and around concrete structures