

Grove Products, Inc.
PO Box 240
17 Marguerite Avenue
Leominster, Massachusetts 01453
Toll Free 800-724-7683
Phone 978-534-5188
Fax 978-840-4130
Website www.groveshims.com
Email sales@groveproductsinc.com

Guide Specification

Specifier Notes: This guide specification is written in Construction Specifications Institute (CSI) 3-Part Format in accordance with *The CSI Construction Specifications Practice Guide, MasterFormat, SectionFormat, and PageFormat.*

This Section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the Project and local building code. Coordinate this Section with Conditions of the Contract, Division 01, other specification sections, and the Drawings. Delete all Specifier Notes after editing this Section.

Replace the “XX” in the section number with the two-digit division number from *MasterFormat 2016 Edition* that corresponds with the primary use of the plastic structural shims. For example, if the primary use of the plastic structural shims is to level precast concrete wall panels, replace the “XX” with “03” (for Division 03 – Concrete) in the section number.

SECTION XX 05 00

PLASTIC STRUCTURAL SHIMS

Specifier Notes: This Section covers Grove Products, Inc. plastic structural shims. Consult Grove Products, Inc. for assistance in editing this Section as required for the Project.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Plastic structural shims.

1.2 REFERENCE STANDARDS

Specifier Notes: List reference standards used elsewhere in this Section, complete with designations and titles. Delete reference standards from the following list not used in the edited Section.

- A. ASTM International (ASTM) (www.astm.org):
 - 1. ASTM D 256 – Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
 - 2. ASTM D 638 – Standard Test Method for Tensile Properties of Plastics.
 - 3. ASTM D 695 – Standard Test Method for Compressive Properties of Rigid Plastics.
 - 4. ASTM D 785 – Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials.
 - 5. ASTM D 790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

Specifier Notes: Delete the following ASTM standard if fire-safe shims are not specified.

- 6. ASTM D 1238 – Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer.
- 7. ASTM D 2240 – Standard Test Method for Rubber Property—Durometer Hardness.

Specifier Notes: Delete the following ASTM standard if fire-safe shims are not specified.

- 8. ASTM E 136 – Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.

Specifier Notes: Delete the following UL standard if fire-safe shims are not specified.

- B. UL (www.ul.com):
 - 1. UL 94 – Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.

1.3 SUBMITTALS

Specifier Notes: Edit the Submittals article as required for the Project. Delete submittals not required.

- A. Submittals: Comply with Division 01.
- B. Product Data: Submit manufacturer's product data.
- C. Manufacturer's Certification: Submit manufacturer's certification that plastic structural shims comply with specified requirements and are suitable for intended application.

Specifier Notes: Delete the following paragraph if test reports of material properties of plastic structural shims are not required.

- D. Test Reports: Submit manufacturer's test reports of material properties of plastic structural shims from testing performed by qualified, independent testing laboratories.
- E. Manufacturer's Project References: Submit manufacturer's list of 10 successfully completed plastic structural shim projects of similar size and scope to this Project, including project name and location, name of architect, and type and quantity of plastic structural shims furnished.
- F. Warranty Documentation: Submit manufacturer's standard warranty.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer regularly engaged in the manufacturing of plastic structural shims of similar type to that specified for a minimum of 10 years.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials in accordance with manufacturer's instructions.
 - 2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
 - 3. Store materials in clean, dry area indoors.
 - 4. Do not store materials directly on floor or ground.
 - 5. Store materials out of direct sunlight.
 - 6. Keep materials from freezing.
 - 7. Protect materials during storage, handling, and installation to prevent damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Grove Products, Inc., PO Box 240, 17 Marguerite Avenue, Leominster, Massachusetts 01453. Toll Free 800-724-7683. Phone 978-534-5188. Fax 978-840-4130. www.groveproductsinc.com. sales@groveproductsinc.com.

Specifier Notes: Specify if substitutions will be permitted.

- B. Substitutions: [Not permitted] [Comply with Division 01].
- C. Single Source: Provide plastic structural shims from single manufacturer.

2.2 PLASTIC STRUCTURAL SHIMS

- A. Plastic Structural Shims:
 - 1. Solid plastic, without hollow voids.
 - 2. Manufactured in United States.

- B. Plastic Structural Shim Types:

Specifier Notes: Specify plastic structural shim types and materials required for the Project. Delete shim types and materials not required. Consult Grove Products, Inc. for recommendations of shim types and materials for the specific applications.

- 1. Stackable Shims: Hi-impact polystyrene.
- 2. Horseshoe Shims, 3 inches by 4 inches: [Polypropylene] [Hi-impact polystyrene] [ABS].
- 3. Horseshoe Shims, 4 Inches by 6 Inches: [Hi-impact polystyrene] [ABS].
- 4. U-Shaped Shims: [Polypropylene] [Hi-impact polystyrene] [ABS].
- 5. Tapered-Wedge Shims: [Polypropylene] [Hi-impact polystyrene] [ABS].
- 6. Snap-Apart Tapered-Wedge Shims: [Hi-impact polystyrene] [ABS].
- 7. Key-Slot Shims: [Polypropylene] [Hi-impact polystyrene].
- 8. Flat-Plate Shims: [Hi-impact polystyrene] [ABS].
- 9. Rugged Construction Shims: [Hi-impact polystyrene] [ABS].
- 10. Scored Construction Shims: [Hi-impact polystyrene] [ABS].
- 11. Micro-Gridded Flat-Plate Shims: [Hi-impact polystyrene] [ABS].
- 12. Raised-Rib Shimpack: [Hi-impact polystyrene] [ABS].
- 13. Modular Shims: [Hi-impact polystyrene] [ABS].

Specifier Notes: Grove Products plastic structural shims can be furnished in fire-retardant materials. Consult Grove Products, Inc. for information.

- 14. Fire-Safe Shims: [Polypropylene] [ABS].
 - a. Melting Point, ASTM D 1238: Not less than 170 degrees F.
 - b. Noncombustibility, ASTM E 136: Pass/fail.

Specifier Notes: The following UL test is normally used for computer components. The test is available for special requirements. Consult Grove Products, Inc. for information.

- c. Flammability, UL 94: V-0.

Specifier Notes: Consult Grove Products, Inc. for information regarding custom plastic structural shims.

- 15. Custom Shims: [Polypropylene] [Hi-impact polystyrene] [ABS].

Specifier Notes: Specify material properties for the shim materials required for the Project. Delete material properties for shim materials not required.

- C. Material Properties – Polypropylene:

1. Tensile Strength at Break, ASTM D 638: 4,500 to 6,000 psi.
2. Elongation at Break, ASTM D 638: 100 to 600 percent.
3. Tensile Yield Strength, ASTM D 638: 4,500 to 5,400 psi.
4. Compressive Strength, Rupture or Yield, ASTM D 695: 5,500 to 8,000 psi.
5. Flexural Strength, Rupture or Yield, ASTM D 790: 6,000 to 8,000 psi.
6. Tensile Modulus, ASTM D 638: 165 to 225 x 10³ psi.
7. Compressive Modulus, ASTM D 695: 150 to 300 x 10³ psi.
8. Flexural Modulus, ASTM D 790:
 - a. 73 Degrees F: 170 to 250 x 10³ psi.
 - b. 200 Degrees F: 50 x 10³ psi.
 - c. 250 Degrees F: 35 x 10³ psi.
9. Izod Impact, 1/8-Inch Specimen, ASTM D 256: 0.4 to 1.2 ft-lbs/in of notch.
10. Rockwell Hardness, ASTM D 785: R80 to 102.
11. Durometer Hardness, ASTM D 2240: 88.

D. Material Properties – Hi-Impact Polystyrene:

1. Tensile Strength at Break, ASTM D 638: 5,200 to 7,500 psi.
2. Elongation at Break, ASTM D 638: 1.2 to 2.5 percent.
3. Tensile Yield Strength, ASTM D 638: 3,100 to 4,400 psi.
4. Compressive Strength, Rupture or Yield, ASTM D 695: 6,000 to 8,000 psi.
5. Flexural Strength, Rupture or Yield, ASTM D 790: 10,000 to 14,600 psi.
6. Tensile Modulus, ASTM D 638: 330 to 475 x 10³ psi.
7. Compressive Modulus, ASTM D 695: 480 to 490 x 10³ psi.
8. Flexural Modulus, ASTM D 790: 380 to 490 x 10³ psi.
9. Izod Impact, 1/8-Inch Specimen, ASTM D 256: 0.35 to 0.45 ft-lbs/in of notch.
10. Rockwell Hardness, ASTM D 785: M60 to 75.
11. Durometer Hardness, ASTM D 2240: 94.

E. Material Properties – ABS:

1. Tensile Strength at Break, ASTM D 638: 3,500 to 8,000 psi.
2. Elongation at Break, ASTM D 638: 1.5 to 2.5 percent.
3. Tensile Yield Strength, ASTM D 638: 5,700 psi.
4. Compressive Strength, Rupture or Yield, ASTM D 695: 6,500 to 7,500 psi.
5. Flexural Strength, Rupture or Yield, ASTM D 790: 10,500 psi.
6. Tensile Modulus, ASTM D 638: 375 x 10³ psi.
7. Compressive Modulus, ASTM D 695: 130 to 310 x 10³ psi.
8. Flexural Modulus, ASTM D 790: 380 x 10³ psi.
9. Izod Impact, 1/8-Inch Specimen, ASTM D 256: 2.00 ft-lbs/in of notch.
10. Rockwell Hardness, ASTM D 785: 112.
11. Durometer Hardness, ASTM D 2240: 80.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to receive plastic structural shims.
- B. Verify surfaces to support plastic structural shims are clean, dry, flat, and sound.

- C. Notify Architect of conditions that would adversely affect installation.
- D. Do not begin installation until unacceptable conditions are corrected.

3.2 INSTALLATION

Specifier Notes: Plastic structural shims have many uses. Include paragraphs below as required for the Project. Delete paragraphs not required. Consult Grove Products, Inc. for more information regarding the installation of plastic structural shims required for the Project.

- A. General: Install plastic structural shims in accordance with manufacturer's instructions at locations indicated on the Drawings to level, align, separate, and adjust spacing between materials.
- B. Size: Size permanent, plastic structural shims to fit entirely within joints, behind finish materials, and without interfering with joint sealants.

Specifier Notes: Edit the following paragraph as required for the Project.

- C. Maximum Height: Do not shim [secondary structural members] [wall cladding members] [_____] with plastic structural shims more than [1/2 inch] [_____inch] without written approval of [Architect] [Engineer].
- D. Exposure: Do not allow installed plastic structural shims to be permanently exposed to view, sun, or weather.

Specifier Notes: Shimpacks for tilt-up precast concrete panels are generally no higher than 1 inch.

- E. Precast Concrete Panels: Install plastic structural shims to align panels vertically and horizontally and to maintain joint spacing before final attachment of panels.
- F. Mortar or Grout Joints: Hold plastic structural shims back from face of panels a minimum of 2 times joint width.
- G. Stone Masonry: Install plastic structural shims for temporary and permanent joint spacing.
- H. Stone Panel Cladding: Install plastic structural shims to align panels vertically and horizontally and to relieve stress while mortar sets.
- I. Dissimilar Metals: Install plastic structural shims to separate dissimilar metals.
- J. Thermal Break: Install plastic structural shims to provide thermal break between conductive materials.
- K. Wall Cladding, Outside Weather Barrier:
 - 1. Install plastic structural shims to shed water.
 - 2. Install horseshoe and keyslot shim openings face down.

- L. Sealant Joints: Do not allow plastic structural shims to intrude into depth required for backer rod and joint sealants.
 - M. Entrances, Storefronts, Curtain Walls, and Glazed Assemblies: Install plastic structural shims to align members or panels, vertically and horizontally, and to separate glass panels [temporarily] [permanently].
 - N. Movement Joints in Stone Flooring: Remove plastic structural shims progressively as joint sealant is installed.
 - O. Equipment: Install plastic structural shims to level and align equipment [temporarily] before being permanently fixed into place.
- 3.3 PROTECTION**
- A. Protect installed plastic structural shims from damage during construction.

END OF SECTION