

SPECIFICATION FOR SEGMENTED HONEYCOMB MEDIA

I. NOMENCLATURE

Lantec Segmented Honeycomb line of product is designated SHC - xx, where the xx refers to the cell size. Lantec offers SHC-25, SHC-40, SHC-43 and SHC-50

II. PHYSICO-CHEMICAL PROPERTIES OF MATERIAL USED TO MANUFACTURE SEGEMENTED HONEYCOMB MEDIA

IIA. Chemical Composition of Ceramic Material

	% by weight
SiO ₂	65.0 – 75.0
Al ₂ O ₃	22.0 – 28.0
K ₂ O + Na ₂ O	≤ 4.0
Fe ₂ O ₃	≤ 1.5

IIIB. Physical Properties of Ceramic Material

Density	2.2 - 2.5 g/cm ³
Average Thermal Expansion (20 – 1000 °C)	4.0 – 4.5 10 ⁻⁶ /°C
Heat Capacity	950 – 1100 J/kg K
Thermal Conductivity (20-1000°C)	2.0 – 2.5 W/m K
Maximum Operating Temperature	1180 °C

III. DIMENSIONAL TOLERANCES OF INDIVIDUAL SEGEMENT

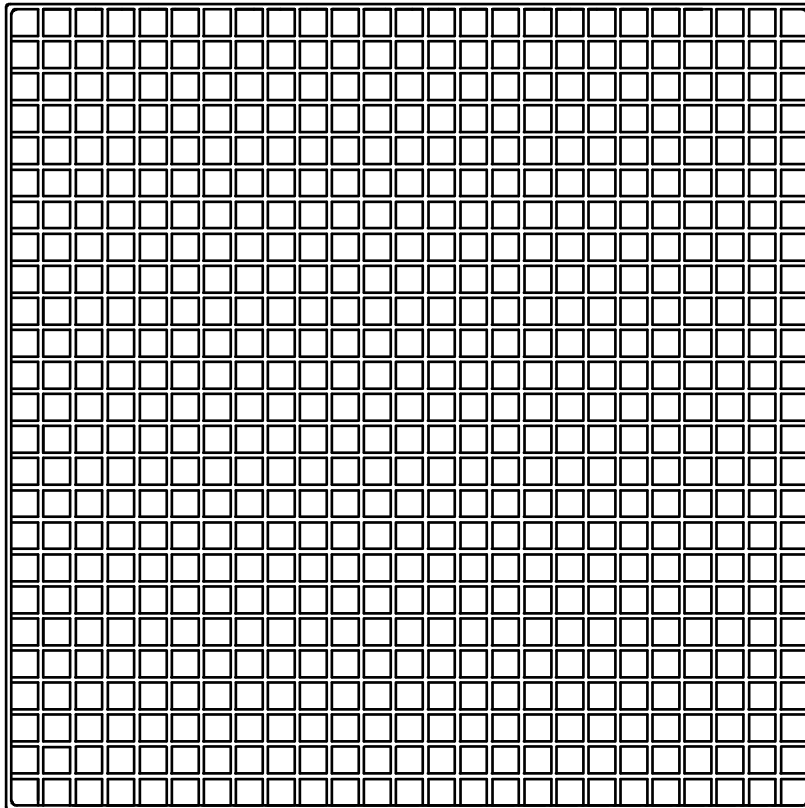
IIIA. Segment Dimensional Tolerances:

Length x Width x Height = 150 ± 2.0 x 150 ± 2.0 x 35.0 ± 0.5 (mm)

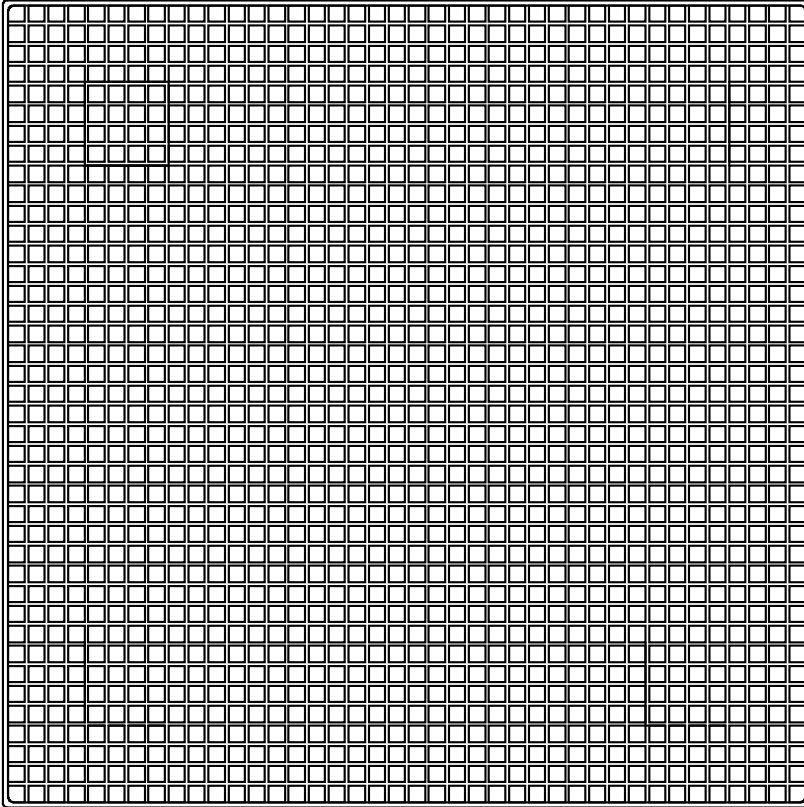
Model	Wall Thickness		Open Cell Dimension
	Outer Wall	Inside Wall	
SHC-25	1.2 ± 0.1 mm	1.0 ± 0.1 mm	4.94 ± 0.1 mm
SHC-40	1.0 ± 0.1 mm	0.70 ± 0.1 mm	3.02 ± 0.1 mm
SHC-43	0.95 ± 0.1 mm	0.65 ± 0.1 mm	2.81 ± 0.1 mm
SHC-50	0.90 ± 0.1 mm	0.60 ± 0.1 mm	2.38 ± 0.1 mm

IIIB. Cross-Sectional Dimensions (SHC-43 shown here)

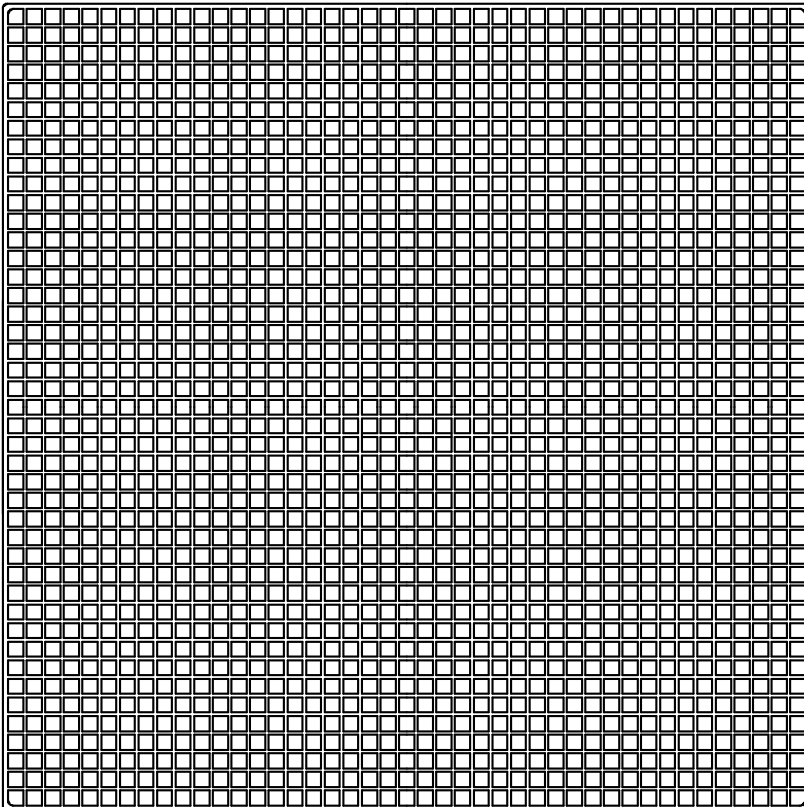
SHC-25



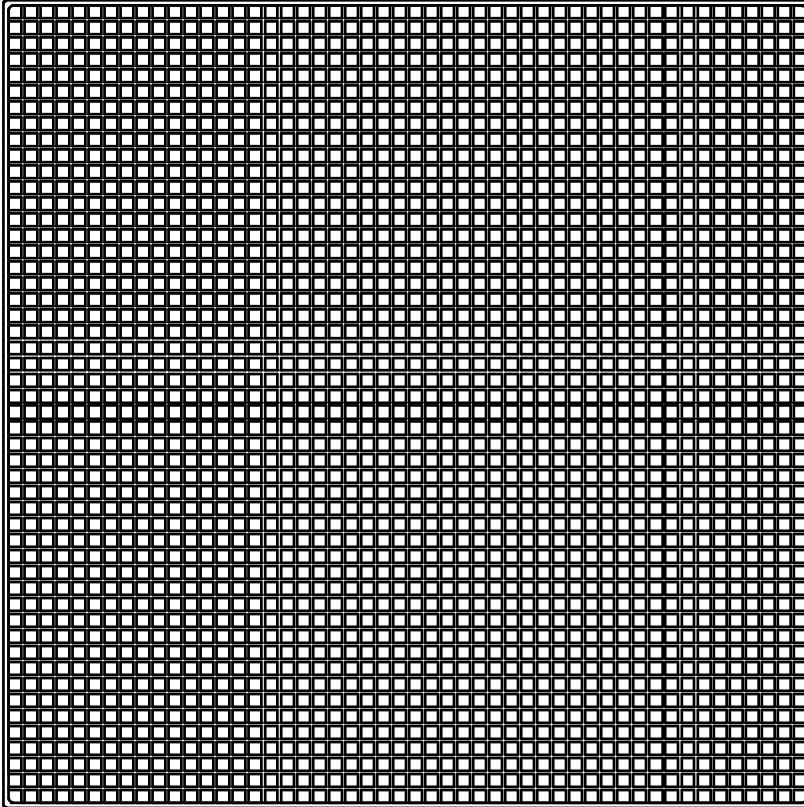
SHC-40



SHC-43



SHC-50



III.C. Spacer Specifications

Four (4) spacers shall be installed between segments. The spacer and adhesive shall occupy a surface area of less than 12mm x 12mm with 3 x 3 openings and shall be approximately 2.0 mm tall. The spacers shall be 3 cells width from side walls and will be in the same spot for each module. There are no spacers on top or bottom of the assembled module.

IV. TOLERANCES OF ASSEMBLED MODULE

IVA. Module Dimensional Tolerances:

Module Height	Length	Width	Height	Flatness	Perpendicularity
75 mm	150 ± 2.0	150 ± 2.0	75 ± 1.5	≤ 2.0	$90^\circ \pm 1.5$
150 mm			150 ± 2.0	≤ 3.0	

IVB. Module Properties

Module Weights:

Module Type	Number of Segments	SHC-25	SHC-40	SHC-43	SHC-50
75mm	2	1.04 ~ 1.18	1.13 ~ 1.27	1.13 ~ 1.27	1.18 ~ 1.32
150mm	4	2.08 ~ 2.36	2.26 ~ 2.54	2.26 ~ 2.54	2.36 ~ 2.64

Note: weights shown in kg.

SPECIFICATION (Supplemental) FOR Segmented Honeycomb **Quality Control Criteria**

V. APPEARANCE

VA. Exterior and Interior Surfaces

1. Product exterior should be uniform. Each batch of product should have even, uniform color of grey, white or light yellow.
2. Surface defects
 - a. Bubbles: Visible bubble less than 2 mm, height less than 2 mm is acceptable. No more than 2 bubbles per module.
 - b. Holes: Visible holes less than 2mm, depth less than 2 mm is acceptable. No more than 2 holes per module.
 - c. Spots: No spots larger than 5 mm in diameter.
3. Surface crack
 - a. Perpendicular cracks: Visible cracks perpendicular to the direction of the extrusion no longer than 30 mm is acceptable. No more than two perpendicular cracks per module.
 - b. Parallel cracks: Visible cracks parallel to the direction of the extrusion no longer than 30 mm is acceptable. No more than two perpendicular cracks per module.
4. Periphery and corner defects
 - a. Chip on periphery: Visible chip less than 10 mm in length, width and depth are acceptable. No missing fragment should be bigger than 10 mm in length, width or depth.
 - b. Chipped corner: Visible chip less than 10 mm in length, width and depth are acceptable. No missing fragment should be bigger than 10 mm in length, width or depth.
5. Burn mark: No burn mark or visible signs showing overheating oven allowed.

VI. QUALITY CONTROL METHOD

1. Exterior uniformity should be examined visually
2. Size of surface defects such as bubbles, holes or spots are determined by using caliper
3. Size of surface crack are to be determined by using caliper
4. Size of periphery and corner surface defects are determined by using caliper
5. Burn marks are visually inspected
6. Product length, width, and height are measured by caliper
7. Wall thickness is measured by a caliper
8. Planess: Module is placed on a flat surface, a 2 mm standard ruler shall be inserted into the largest opening between the side wall and the flat surface. All four surfaces are tested to make sure the ruler cannot fit into any of the gaps.

9. Perpendicularity: Module is placed on a flat surface. A square ruler is placed on the corner. A 4 mm standard ruler will be inserted into the largest opening between the ruler and the module. All four corners will be tested to make sure the ruler cannot fit into any of the gaps.
10. Cell uniformity will be determined by using a caliper. The widest cell is first identified visually and then measured.

VII. SAMPLING METHOD

1. Each purchase order is considered one lot. The sampling size will proceed according to the following chart:

Lot Size	Sample Size	Pass Criteria	Fail Criteria
≤ 150	8	≤ 1	≥ 2
151 ~ 280	13	≤ 2	≥ 3
281 ~ 500	20	≤ 3	≥ 4
501 ~ 1200	32	≤ 5	≥ 6
1201 ~ 3200	50	≤ 7	≥ 8
3201 ~ 10000	80	≤ 10	≥ 11

2. Product testing: samples modules should pass all criteria listed in Section V. APPEARANCE before shipping.
3. Production testing: the production line will be tested under the following conditions:
 - a. Start of initial production
 - b. Change in raw material, technology, or method of production
 - c. Start of production after 6 months down time
 - d. Request for testing by national standard compliance office
4. During production testing, if product falls outside of standard listed in Section V, sampling size should be doubled and retested. If sampling are still outside of the standards, the whole lot will be considered out of compliance.

VIII. LABELING, PACKAGING, AND TRANSPORTATION

1. Every lot of product will have instruction manual and quality control certificate. The certificate will state:
 - a. Factory name
 - b. Product name, size and quantity
 - c. Name of inspector
 - d. Standard by which the tests are performed
 - e. Production date and shipment number
2. The standard packaging method is to use wooden crates and other material that will ensure safe shipping.
3. The packaging will contain warning labels such as “fragile”, “ceramic products”, etc.
4. The packaging will ensure that the products will not be damaged during normal transportation

5. During transportation, the products should be handled carefully. Tossing or throwing the product is strictly forbidden.
6. The packaging is designed for indoor storage. If the product is to be stored outdoors, adequate weather-proofing must be provided.