



# GRAFTech

*International*

## PRODUCT DEFINITIONS SPECIALTY GRAPHITE SHAPES

GrafTech specialty graphites are manufactured using quality policies and procedures to assure that products conform to all specified and implied standards of performance, reliability, consistency and quality. These procedures start from raw materials and are carried through manufacturing to packaging and shipping.

Product grades are defined on the basis of specific raw material selection, and processing instructions which use statistical process control techniques to reduce product variation. These techniques are employed at each processing step in the manufacture of specialty graphites.

The products are characterized by physical and chemical testing which commonly include bulk density, crushing strength, and ash content. These properties are known as the essential properties for specialty graphite refractory products. Other property testing is done periodically for informational purposes. These include, thermal conductivity, porosity, iron content, and flexural strength (modulus of rupture).

Further acceptance/rejection criteria covered in this product description are specifications for dimensional conformity, workmanship, and dry assembly inspection (optional). Packaging methods are also included.

**GRAFTech**  
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GrafTech International Holdings Inc.

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**TECHNICAL INFORMATION**  
**RPD-08 JANUARY, 2008**

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## PRODUCT DEFINITIONS SPECIALTY GRAPHITE SHAPES

### A. Properties (Physical & Chemical)

Essential and informational properties are attached in the product definitions. The description, Properties and test methods are described.

### B. Dimensional Conformity

#### 1. Graphite Shapes general

- a. Length, thickness, width, height, parallelism, and squareness.
- b. Method of measurement - Vernier, metal rule, micrometer, feeler gauge, and machinist square.
- c. Acceptance/Rejection Criteria

##### 1. "As Extruded"

- Length - Nominal +5" -0" (+125 - 0 mm)
- Width - Nominal +2" -0" (+125 - 0 mm)
- Thickness - Nominal +2" -0" (+50 - 0 mm)

##### 2. Standard Machining

- Length - +/- 1/16" (1.6 mm)
- Width - +/- 1/16" (1.6 mm)
- Thickness - +/- 1/16" (1.6 mm)
- Parallelism - +/- 3/32" (2.4 mm)

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### 3. Close Tolerance Machining

Length - +/- 0.008" (0.2 mm)

Width - +/- 0.008" (0.2 mm)

Thickness - +/- 0.008" (0.2 mm)

Squareness - +/- 0.012" (0.3 mm)

Between all sides of mating parts\*

Parallelism - +/- 0.012" (0.3 mm)

Between all sides of mating parts\*

\* Length Dependent

### C. Workmanship - Graphite Shapes -- General

1. Edge and corner chips on butt and outside ends.

2. Method of measurement - Tape or steel rules.

3. Acceptance/Rejection Criteria

a. Edge chips - maximum of four chips allowed with sum of depth and width not to exceed 3/16" (4.8 mm). Maximum length is 1" (25.4 mm). Two chips of this type on same edge are not permitted.

b. Corner chips on butt end - maximum of four chips allowed with the sum of depth and width not to exceed 3/16" (4.8 mm). Maximum length is 3/4" (19 mm).

c. Corner chips on outside end - same as for corner chips on butt end except that maximum length is 1" (25.4 mm).

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D. Dry Assembly Inspection (optional)

Dry assembly prior to shipment is optional. If this is required by customer, then assembly procedures and specifications can be discussed as part of the order entry process.

E. Standard Packaging:

Domestic:

1. Pallet - Two way entry, having stringer bracing spaced for cable pickup. Material to be of sound, square edged hard wood fastened with staples and/or nails.
2. Covering - Weather resistant, double wall, corugated wax coated board/box and/or shrink wrapped with edge protection, which totally encloses contents with visible product identification.
3. Strapping - 1/2, 3/4, 1-1/4" Standard Steel Banding.

F. Export:

1. Pallet & Strapping - Same as for domestic.
2. Covering - Plywood, compressed board, or softwood construction which totally encloses contents. Sound designed construction, fastened with nails and/or heavy staples. Wooden or cardboard corner protection must be used on all top and side corners (either inside or outside the wooden covering. Plastic shrink wrap covered on five sides with visible product contents identification.



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