



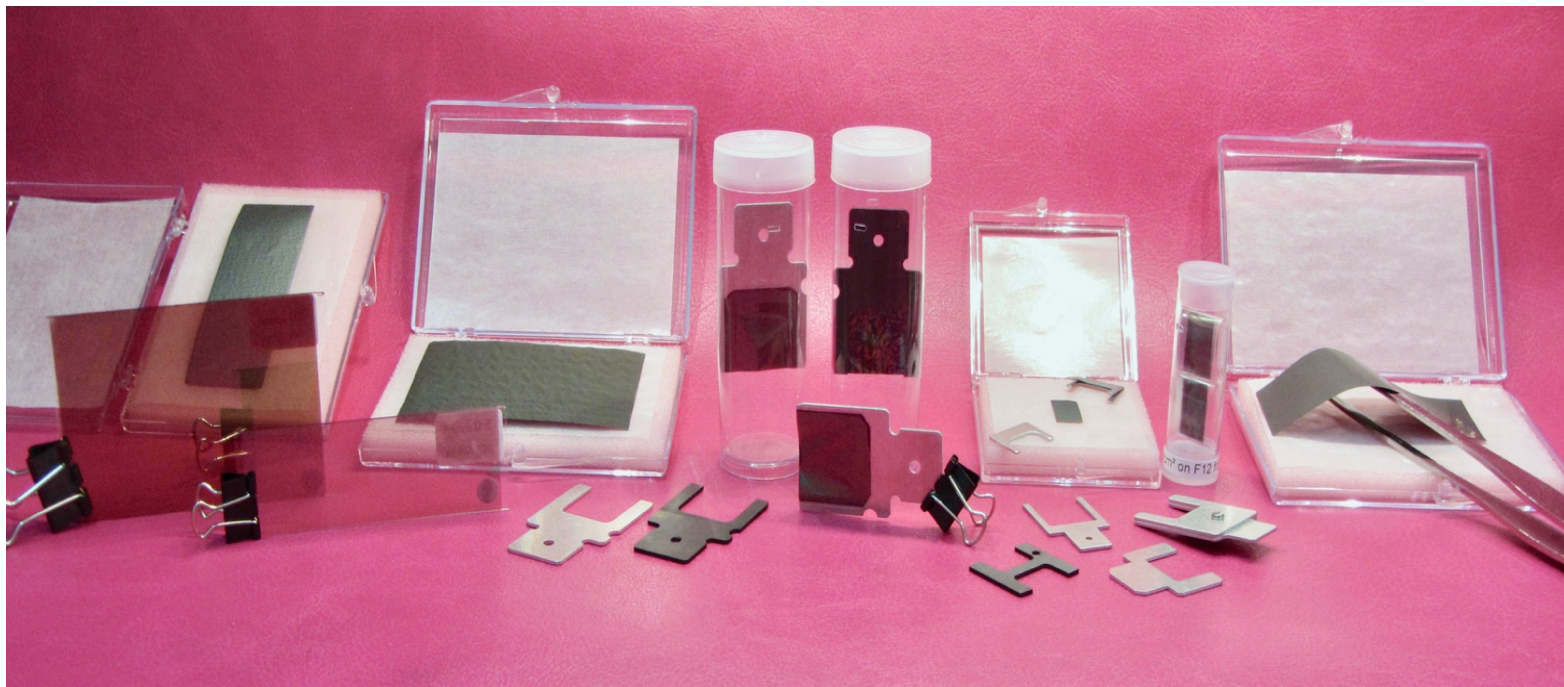
ACF-Metals

The Arizona Carbon Foil Co., Inc.

Carbon Foils accurately characterized in any thickness you need.

Price List effective January 1st, 2024

All prices are subject to change without notice. Updated 1/1/2024



For Technical Information see ACF-Metals' Product Information at ACF-Metals.com or upon request.

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The Arizona Carbon Foil Co., Inc.

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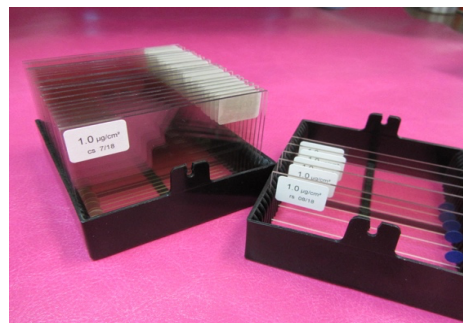
Arc-Evaporated Carbon Foils (ACF and XCF)

Most commonly used as stripper foils, charge changing foils, or targets in nuclear accelerators. Nearly amorphous, natural isotopic composition (98.9% ^{12}C , 1.1% ^{13}C), mass density of foils 2.0g/cc. All our standard thicknesses (see chart below) are kept in stock. Most items can ship anywhere in the world within 24-48 hours.

Besides our standard sizes we provide foils with custom areal density, tolerances, sizes, shapes, and even mounted on frames for your specific application (p.6-7). Alternatively, we can provide multi-layer foils which have virtually no pinholes, stronger than single layer foils, and longer in-beam lifetimes. Multi-layer foils are excellent for use on cyclotron forks particularly in the range of 50-200 $\mu\text{g}/\text{cm}^2$.

Upon request tolerances can be set to tighter range specifications as well. Actual foil thicknesses are typically within 10% tolerance. Foils above 500 $\mu\text{g}/\text{cm}^2$ may have 15% range, please specify if you have a preference.

Do you need further technical data? We have information regarding flatness, smoothness, and light-tightness in our ACF-Metals Product Information Document available upon request or at ACF-Metals.com. Please note due to the nature of Carbon foils, tiny imperfections may be present



despite the utmost of care in our production and handling processes. Trying to determine the ***ideal areal density*** for your application? Contact us for further recommendations based on your beam energy specifics.

We offer Quantity discounts on orders of 100 or more of the same item. Additional discounts are available at higher volume. We have a minimum order of \$300 USD. For International orders there is a \$50 USD handling charge. Foils with areal density 0.1 to 44 $\mu\text{g}/\text{cm}^2$ are not annealed; 45 $\mu\text{g}/\text{cm}^2$ and above are annealed. Customer may specify

otherwise. Special orders may include cutting foils to your specifications or having foils scribed while still on the substrate, please inquire.

Collodion coating on foils is available. On foils under 50 $\mu\text{g}/\text{cm}^2$ the cost is an additional \$3.00 on the ACF size, and an additional \$5.00 on the XCF size. Areal density greater than 50 $\mu\text{g}/\text{cm}^2$ foils with collodion are available by quote. We **package** foils 0.5 to 89 $\mu\text{g}/\text{cm}^2$ in slide boxes as they are still on their glass substrate. Foils 90-189 $\mu\text{g}/\text{cm}^2$ are not packaged in the slide box as they may begin to release from the substrate in transit. To avoid any potential for damage we use "Packaging Option A". Please examine our Packing Options (p.16) if you prefer different packaging.

Arc-Evaporated Carbon Foils (ACF) PRICE LIST - p.1

Areal Density or Range	Catalog Name(s)	ACF Price per foil	DESCRIPTION: Arc evaporated carbon foils <i>*Note foils with asterisks may require longer lead time.</i>
0.1 µg/cm ² to 12 µg/cm ²	ACF-0.1, ACF-0.2, ACF-5, ACF-10, ...	\$33.00	On glass substrate w/ parting agent. 25mm x 70mm nominal size. Not annealed. Standard tolerance +/-10% or better.
*0.5 µg/cm ²	*ACF-0.5-040100- <i>Custom</i>	\$530.00	On custom size glass substrate w/ parting agent. Not annealed. Standard tolerance +/-0.2 or better. See Custom Foils on page #7.
14 µg/cm ² to 44 µg/cm ²	ACF-14, ACF-15, ACF-20, ACF-30, ...	\$38.00	On glass substrate w/ parting agent. 25mm x 70mm nominal size. Not annealed. Standard tolerance +/-10% or better.
<i>Foils below this line are annealed. For foils NOT annealed please inquire.</i>			
45 µg/cm ² to 60 µg/cm ²	ACF-45, ACF-50, ...	\$40.00	On glass substrate w/parting agent. 25mm x 70mm nominal size. Annealed. Standard tolerance +/-15% or better.
61 µg/cm ² to 89 µg/cm ²	ACF-61, ACF-70, ...	\$48.00	On glass substrate w/parting agent. 25mm x 70mm nominal size. Annealed. Standard tolerance +/-15% or better.
90 µg/cm ² to 115 µg/cm ²	ACF-90, ACF-100, ...	\$68.00	On glass substrate w/parting agent. 25mm x 70mm nominal size. Annealed. Standard tolerance +/-15% or better. Confirm packaging option A or S.
*90 µg/cm ² to 115 µg/cm ²	*ACF-100-024068 <i>Custom</i>	\$640.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better. Particularly fragile foils being the thinnest free-standing available.
*90 µg/cm ² to 115 µg/cm ²	*ACF-100-010015	\$130.00	Free-standing. Individually packaged. 10 mm x 15 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*90 µg/cm ² to 115 µg/cm ²	*ACF-100-024025	\$130.00	Free-standing. Individually packaged. 24 mm x 25 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*90 µg/cm ² to 115 µg/cm ²	*ML-ACF-100-022024	\$148.00	Free-standing. Multi-layer foil. Individually packaged. 22 mm x 24 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
116 µg/cm ² to 179 µg/cm ²	ACF-120, ACF-130, ACF-150, ...	\$75.00	On glass substrate w/parting agent. 25mm x 70mm nominal size. Annealed. Standard tolerance +/-15% or better. Confirm packaging option A or S.
*115µg/cm ² to 145µg/cm ²	*ACF-130-024068- <i>Custom</i>	\$405.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better. Particularly fragile foils being the among the thinnest free-standing available.
*135µg/cm ² to 165µg/cm ²	*ACF-150-024068- <i>Custom</i>	\$405.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better. Particularly fragile foils being the among the thinnest free-standing available.
*135µg/cm ² to 165µg/cm ²	*ML-ACF-150-022024	\$148.00	Free-standing. Multi-layer foil. Individually packaged. 22 mm x 24 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*145µg/cm ² to 175µg/cm ²	*ML-ACF-160-022024	\$148.00	Free-standing. Multi-layer foil. Individually packaged. 22 mm x 24 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*180 µg/cm ² to 230 µg/cm ²	*ACF-200-024068 <i>Custom</i>	\$640.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better. Particularly fragile foils being among the thinnest free-standing available.
*180 µg/cm ² to 230 µg/cm ²	*ACF-200-008014	\$38.00	Free-standing. Individually packaged. 8 mm x 14 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*180 µg/cm ² to 230 µg/cm ²	*ACF-200-010030	\$45.00	Free-standing. Individually packaged. 10 mm x 30 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*180 µg/cm ² to 230 µg/cm ²	*ACF-200-011015	\$45.00	Free-standing. Individually packaged. 11 mm x 15 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*180 µg/cm ² to 230 µg/cm ²	*ACF-200-012015	\$45.00	Free-standing. Individually packaged. 12 mm x 15 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*180 µg/cm ² to 230 µg/cm ²	*ACF-200-016017	\$55.00	Free-standing. Individually packaged. 16 mm x 17 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*180 µg/cm ² to 230 µg/cm ²	*ACF-200-01830199	\$55.00	Free-standing. Individually packaged. 18.3 mm x 19.9 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*180 µg/cm ² to 230 µg/cm ²	*ML-ACF-200-022024	\$148.00	Free-standing. Multi-layer foil. Individually packaged. 22 mm x 24 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*180 µg/cm ² to 230 µg/cm ²	*ACF-200-024034	\$65.00	Free-standing. Individually packaged. 24 mm x 34 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
231 µg/cm ² to 359 µg/cm ²	ACF-231-024068, ACF-300-024068, ...	\$327.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
*225 µg/cm ² to 275 µg/cm ²	*ACF-250-024034	\$55.00	Free-standing. Individually packaged. 24 mm x 34 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*270 µg/cm ² to 330 µg/cm ²	*ACF-300-024034	\$55.00	Free-standing. Individually packaged. 24 mm x 34 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
360 µg/cm ² to 450 µg/cm ²	ACF-400-024068	\$264.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
*360 µg/cm ² to 450 µg/cm ²	*ACF-400-014017	\$55.00	Free-standing. Individually packaged. 14 mm x 17 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
450 µg/cm ² to 550 µg/cm ²	ACF-500-024068	\$264.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.

Arc-Evaporated Carbon Foils (ACF) PRICE LIST - p.2

Areal Density or Range	Catalog Name(s)	ACF Price per foil	DESCRIPTION: Arc evaporated carbon foils
*450 µg/cm ² to 550 µg/cm ²	*ACF-500-008014	\$55.00	<i>*Note foils with asterisks may require longer lead time.</i> Free-standing. Individually packaged. 8mm x 14 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
551 µg/cm ² to 650 µg/cm ²	ACF-600-024068	\$304.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
651 µg/cm ² to 750 µg/cm ²	ACF-700-024068	\$304.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
*651 µg/cm ² to 750 µg/cm ²	*ACF-700-024025	\$143.00	Free-standing. Individually packaged. 24mm x 25 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
751 µg/cm ² to 850 µg/cm ²	ACF-800-024068	\$446.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
851 µg/cm ² to 950 µg/cm ²	ACF-900-024068	\$488.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
951 µg/cm ² to 1050 µg/cm ²	ACF-1000-024068	\$650.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
*951 µg/cm ² to 1050 µg/cm ²	*ACF-1000-015015	\$142.00	Free-standing. Individually packaged. 15mm x 15 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*951 µg/cm ² to 1050 µg/cm ²	*ACF-1000-017024	\$258.00	Free-standing. Individually packaged. 17mm x 24 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
1051 µg/cm ² to 1200µg/cm ²	ACF-1100-024068	\$700.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
1201 µg/cm ² to 1400µg/cm ²	ACF-1300-024068	\$918.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
1401 µg/cm ² to 1600 µg/cm ²	ACF-1500-024068	\$1180.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
1601 µg/cm ² to 2000 µg/cm ²	ACF-1800-024068, ACF-2000-024068, ...	\$1505.00	Free-standing. Individually packaged. 24 mm x 68 mm nominal size. Standard tolerance +/-10% or better.

To place an order or if you have any questions, please email Contact@ACF-Metals.com.

Arc-Evaporated Carbon Foils (XCF) PRICE LIST

Areal Density or Range	Catalog Name(s)	XCF Price per foil	DESCRIPTION: Arc evaporated carbon foils <i>*Note foils with asterisks may require longer lead time.</i>
0.1 µg/cm ² to 12 µg/cm ²	XCF-0.1, XCF-0.2, XCF-5, XCF-10, ...	\$66.00	On glass substrate w/ parting agent. 50mm x 70mm nominal size. Not annealed. Standard tolerance +/-10% or better.
*0.5 µg/cm ²	*ACF-0.5-070100- <i>Custom</i>	\$530.00	On custom size glass substrate w/ parting agent. Not annealed. Standard tolerance +/-0.2 or better. See Custom Foils on page #6-7.
14 µg/cm ² to 44 µg/cm ²	XCF-14, XCF-15, XCF-20, XCF-30, ...	\$76.00	On glass substrate w/ parting agent. 50mm x 70mm nominal size. Not annealed. Standard tolerance +/-10% or better.
<i>Foils below this line are annealed. For foils NOT annealed please inquire.</i>			
45 µg/cm ² to 60 µg/cm ²	XCF-45, XCF-50, ...	\$80.00	On glass substrate w/parting agent. 50mm x 70mm nominal size. Annealed. Standard tolerance +/-15% or better.
61 µg/cm ² to 89 µg/cm ²	XCF-61, XCF-70, ...	\$96.00	On glass substrate w/parting agent. 50mm x 70mm nominal size. Annealed. Standard tolerance +/-15% or better.
90 µg/cm ² to 115 µg/cm ²	XCF-90, XCF-100, ...	\$142.00	On glass substrate w/parting agent. 50mm x 70mm nominal size. Annealed. Standard tolerance +/-15% or better. Confirm packaging option A or S.
*90 µg/cm ² to 115 µg/cm ²	*XCF-100-048068 <i>Custom</i>	\$1254.00	Free-standing. Individually packaged. 48mm x 68 mm nominal size. Standard tolerance +/-10% or better. Particularly fragile foils being the thinnest free-standing available.
*90 µg/cm ² to 115 µg/cm ²	*XCF-100-025025	\$280.00	Free-standing. Individually packaged. 25 mm x 25 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*90 µg/cm ² to 115 µg/cm ²	*ML-XCF-100-025045	\$482.00	Free-standing. Multi-layer foil. Individually packaged. 25 mm x 45 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
116 µg/cm ² to 179 µg/cm ²	XCF-120, XCF-130, XCF- 150, ...	\$155.00	On glass substrate w/parting agent. 50mm x 70mm nominal size. Annealed. Standard tolerance +/-15% or better. Confirm packaging option A or S.
*115µg/cm ² to 145µg/cm ²	*XCF-130-048068- <i>Custom</i>	\$805.00	Free-standing. Individually packaged. 48 mm x 68 mm nominal size. Standard tolerance +/-10% or better. Particularly fragile foils being the among the thinnest free-standing available.
*135µg/cm ² to 165µg/cm ²	*XCF-150-048068- <i>Custom</i>	\$805.00	Free-standing. Individually packaged. 48 mm x 68 mm nominal size. Standard tolerance +/-10% or better. Particularly fragile foils being the among the thinnest free-standing available.
*135µg/cm ² to 165µg/cm ²	*ML-XCF-150-025045	\$482.00	Free-standing. Multi-layer foil. Individually packaged. 25 mm x 45 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*180 µg/cm ² to 230 µg/cm ²	*XCF-200-048068 <i>Custom</i>	\$1254.00	Free-standing. Individually packaged. 48 mm x 68 mm nominal size. Standard tolerance +/-10% or better. Particularly fragile foils being among the thinnest free-standing available.
*180 µg/cm ² to 230 µg/cm ²	*XCF-200-032034	\$254.00	Free-standing. Individually packaged. 32 mm x 34 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*180 µg/cm ² to 230 µg/cm ²	*XCF-200-032068	\$655.00	Free-standing. Individually packaged. 32 mm x 68 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*180 µg/cm ² to 230 µg/cm ²	*ML-XCF-200-025045	\$1254.00	Free-standing. Multi-layer foil. Individually packaged. 25 mm x 45 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
231 µg/cm ² to 359 µg/cm ²	XCF-231-048068, XCF-300-048068, ...	\$654.00	Free-standing. Individually packaged. 48 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
*225 µg/cm ² to 275 µg/cm ²	*XCF-250-027034	\$185.00	Free-standing. Individually packaged. 27 mm x 34 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
*270 µg/cm ² to 330 µg/cm ²	*XCF-300-027034	\$185.00	Free-standing. Individually packaged. 27 mm x 34 mm(+1/-0.5mm) nominal size. Standard tolerance +/-10% or better.
360 µg/cm ² to 450 µg/cm ²	XCF-400-048068	\$528.00	Free-standing. Individually packaged. 48 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
450 µg/cm ² to 550 µg/cm ²	XCF-500-048068	\$528.00	Free-standing. Individually packaged. 48 mm x 68 mm nominal size. Standard tolerance +/-10% or better.
951 µg/cm ² to 1050 µg/cm ²	XCF-1000-048068	\$1383.00	Free-standing. Individually packaged. 48 mm x 68 mm nominal size. Standard tolerance +/-10% or better.

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Custom Specifications and Services

Besides our standard sizes we provide foils with custom areal density, tolerances, sizes, shapes, and even mounted on frames for your specific application. When needed, ACF-Metals will send a skilled technician to your location for those jobs that require the floating and mounting of foils that cannot be shipped safely.

Specifications on Custom Areal Density: The standard carbon foil is measured optically at the center point of the foil and this is what the specific individual label identifies. **Custom Specification on Areal Density** specifies that the center measurement is exactly what the Customer requires. For example: **Custom $1\mu\text{g}/\text{cm}^2$ ($\pm 0.0\mu\text{g}/\text{cm}^2$)** indicates that each foil center measurement would be $1.0\mu\text{g}/\text{cm}^2$. The rest of the foil area may vary within the standard tolerances or Custom Tolerances agreed upon and required by the Customer.

Custom Tolerances: ACF-Metals will measure optically at the center point of the foil and in addition to that depending on the size of the foil, a number of additional measurements would be taken to ensure the Customers specific tolerance requirements are met. The **Custom Tolerance** requested by the Customer would be indicated in the description on quotes/invoices and would indicate that the foil was measured in multiple locations and found to be within necessary specifications based off multiple readings.

Custom Sizes & Shapes: ACF-Metals has made carbon foils as large as 1 meter diameter, and every size imaginable smaller. Most common are sizes around 3" x 4" and 3" x 6". Often these are on glass substrates and the foil can be scribed (or cut) to size on the glass substrate and then floated off.

Custom Production Runs: When needed a Customer may request that foils being ordered are not taken from stock, but are produced within a specific time frame needed. This is most common with foils under $2\mu\text{g}/\text{cm}^2$ and at larger Custom sizes. We can analyze our production schedule and accommodate most of these special considerations within reasonable time frames.

Custom Mounted Foils and Mounted with Mesh Support: Customers may provide specific holders or ACF can manufacture holders for Custom projects that need a carbon foil mounted with or without mesh. This type of project takes detailed discussion and we encourage you to contact us to discuss your project more in depth.

On-Site Services: Some projects are too delicate to be shipped successfully. ACF-Metals has skilled professionals available to assist at your location, anywhere in the world, to get these most delicate jobs done. Most commonly we are able to view a Customer set up by video and photos, but in some instances it has been found to be very helpful to be on-site and provide the floating and mounting skills needed.



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Arc Evaporated Custom Foils

Besides our standard sizes we provide foils with custom areal density, tolerances, sizes, shapes, and even mounted on frames for your specific application. When needed, ACF-Metals will send a skilled technician to your location for those jobs that require the floating and mounting of foils that cannot be shipped safely.

The information provided below has listed some of the Custom foils that have been provided for Customers. *Please note, the prices are provided as a guide in that the specifics for these customized foils are not fully listed. Your specifications may result in a different price.*

Areal Density	Substrate Size	Foil Size	Price	Custom Specification	Foil Type
0.1 $\mu\text{g}/\text{cm}^2$	Mounted on Custom frame	46mm diameter	\$2300.00	Custom Mount w/mesh	C
0.25 $\mu\text{g}/\text{cm}^2$	25mm x 75mm	25mm x 70mm	\$98.00	Custom Tolerance	C
0.5 $\mu\text{g}/\text{cm}^2$	Mounted on Custom frame	32mm diameter	\$1600.00	Custom Mount w/mesh	C
0.5 $\mu\text{g}/\text{cm}^2$	76mm x 102mm	70mm x 102mm	\$530.00	Size only	C
0.75 $\mu\text{g}/\text{cm}^2$	25mm x 75mm	25mm x 70mm	\$98.00	Custom Tolerance	C
1.0 $\mu\text{g}/\text{cm}^2$	50mm x 75mm	48mm x 70mm	\$98.00	Custom Areal Density	C
1.0 $\mu\text{g}/\text{cm}^2$	50mm x 75mm	48mm x 70mm	\$108.00	Custom Tolerance	C
1.0 $\mu\text{g}/\text{cm}^2$	76mm x 102mm	40mm x 100mm	\$524.00	Size only	C
2.0 $\mu\text{g}/\text{cm}^2$	76mm x 102mm	40mm x 100mm	\$524.00	Size only	C
2.0 $\mu\text{g}/\text{cm}^2$	50mm x 75mm	48mm x 70mm	\$98.00	Custom Areal Density	C
5 $\mu\text{g}/\text{cm}^2$	Mounted on Custom Holder	n/a	\$582.00	Custom Mount w/mesh	C
20 $\mu\text{g}/\text{cm}^2$	Mounted on 20mm diameter aperture	n/a	\$847.00	Custom Mount, no mesh	C

If you have questions or a project that you would like to discuss, please email us at Contact@ACF-Metals.com.



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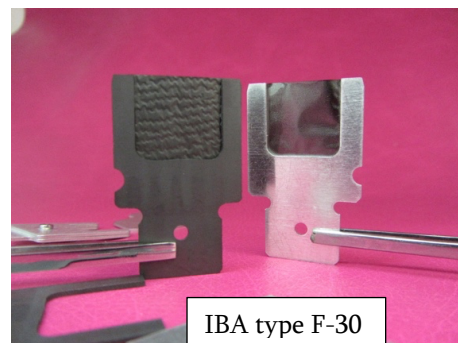
Fax: (520) 325-9493

Foils on Cyclotron Forks

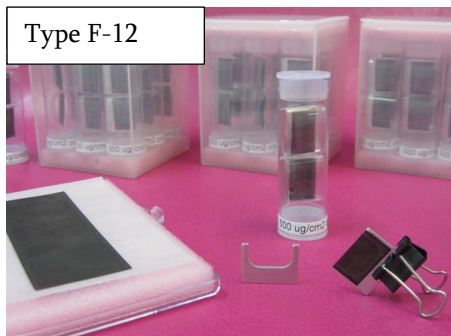
State-of-the-art carbon foils mounted on any cyclotron fork provide extended lifetimes and maximize productivity for both research and commercial applications. All standard foils are kept in stock at all times to ensure our Customers have no delay. Most items can ship anywhere in the world within 24-48 hours and are guaranteed to arrive without damage.

If your cyclotron fork is not easily identifiable on the next five pages, please contact us with your technical drawing and we will send you the pricing and information for what you need.

Ask about **multi-layer foils** which have virtually no pinholes; they are stronger than single layer foils and have longer in-beam lifetimes. Multi-layer foils are excellent foils for use on cyclotron forks particularly in the range of 50-160 $\mu\text{g}/\text{cm}^2$. Testing in progress includes 130 $\mu\text{g}/\text{cm}^2$ and 160 $\mu\text{g}/\text{cm}^2$ multi-layer foils for multiple cyclotrons, keep watching our ACF-Metals.com/forum for updates!



IBA type F-30



Type F-12

Are you trying to determine the **ideal areal density** for your application? Contact us for further recommendations based on your beam energy specifics. For additional information on purity, foil characteristics, flatness, light tightness... see our Product Information at ACF-Metals.com, or we can email you a copy.

The most common fork material is Al #6061, however many users are testing out the graphite forks for their superior handling of thermal expansion issues. If you are not getting maximum hours from your foils, it may be the fork material. We offer most forks in both Al, Graphite, even

tungsten, titanium, and molybdenum.

Each foil mounted on a fork has one free edge. The foil is fastened using special epoxy for high temperature and vacuum applications. Alternatively some customers prefer graphite paint for even less possible outgassing. The forks are packaged individually in tubes for easy access. Fork foils are shipped in a special steel acoustic box to prevent unwanted vibrations and ensure safe arrival at your destination anywhere in the world.

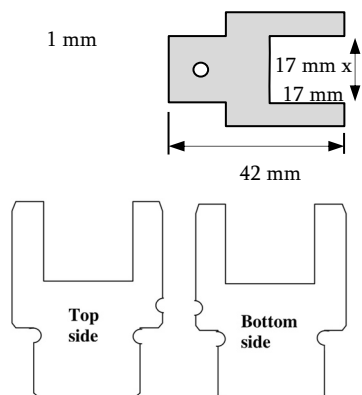
We offer **Quantity discounts** on orders of 100 or more of the same item. Additional discounts are available at higher volume. We have a minimum order of \$300 USD. For International orders there is a \$50 USD handling charge. Shipping costs may be added to the invoice or charged to customers shipping account.

F-30 Mod.2 Forks:

Areal Density and/or Catalog name	Arc Evaporated Carbon foil Price per item	Polycrystalline Graphite foil or Graphene Price per item	DESCRIPTION: Foil mounted on fork w/ vacuum safe epoxy (low v.p.) or graphite paint (G.P.). Customer specifies side of fork the foil will be applied. Areal density is +/- 10%.
ACF-50-019022M	\$243.00	n/a	50 µg/cm ² with collodion on Al F-30 fork
G-ML-ACF-70-019022M	\$125.00	n/a	Graphite F-30 fork, Multi-layer 70 µg/cm ² foil, w/Collodion
ACF-75-019022M	\$67.00	n/a	75 µg/cm ² Al F-30 fork w/low v.p. epoxy
G-ACF-75-019022M	\$99.00	n/a	75 µg/cm ² Al F-30 fork w/low v.p. epoxy or G.P.
ACF-100-019022M	\$67.00	n/a	100 µg/cm ² Al F-30 fork w/low v.p. epoxy
G-ACF-100-019022M	\$99.00	n/a	100 µg/cm ² Al F-30 fork w/low v.p. epoxy or G.P.
G-ML-ACF-100-019022M	\$125.00	n/a	Graphite F-30 fork, Multi-layer 100 µg/cm ² foil
G-ML-ACF-140-019022M	\$125.00	n/a	Graphite F-30 fork, Multi-layer 140 µg/cm ² foil
ACF-150-019022M	\$67.00	n/a	150 µg/cm ² Al F-30 fork w/low v.p. epoxy
G-ML-ACF-150-019022M	\$125.00	n/a	Graphite F-30 fork, Multi-layer 150 µg/cm ² foil
G-ACF-160-019022M	\$99.00	n/a	Graphite F-30 fork, 160 µg/cm ² foil.
G-ML-ACF-160-019022M	\$125.00	n/a	Graphite F-30 fork, Multi-layer 160 µg/cm ² foil
ACF-200-019022M	\$83.00	n/a	200 µg/cm ² Al F-30 fork w/low v.p. epoxy
PCG or ACF-400-019022M	\$93.00	\$163.00	400 µg/cm ² Al F-30 fork w/low v.p. epoxy
PCG or ACF-700-019022M	\$130.00	\$130.00	700 µg/cm ² Al F-30 fork w/low v.p. epoxy
PCG or ACF-700-019022M	\$130.00	\$130.00	700 µg/cm ² Al F-30 fork w/low v.p. epoxy
PCG or ACF-800-019022M	\$140.00	\$140.00	800 µg/cm ² Al F-30 fork w/low v.p. epoxy
PCG or ACF-1000-019022M	\$180.00	\$180.00	800 µg/cm ² Al F-30 fork w/low v.p. epoxy

We are happy to put any foil of your selection onto a fork, if you don't see the item above, please contact us for a quote. **Graphene foils 300-1000µg/cm² available by quotation.**

F-30 fork is made out of aluminum alloy #6061 or Graphite with 99.99% purity. This drawing is not to scale.



When ordering F-30 forks please check which side of the fork you want the foil to be attached. These two drawings may be used to identify and name the side you prefer. To place an order or if you have any questions, please email Contact@ACF-Metals.com.

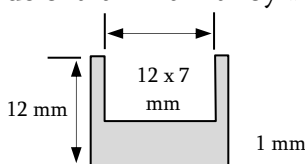
F-30 Fork Only without foil	Price each in quantities 1-49	Price each in quantities 50 or more	DESCRIPTION:
ACF-F-30 Mod.2	\$4.40	\$4.00	Aluminum alloy #6061
G-ACF-F-30 Mod.2	\$24.00	\$18.00	Graphite purity 99.999%

F-12 Mod.2 Forks:

Areal Density and/or Catalog name	Arc Evaporated Carbon foil on F-12 Al fork. Price per item	Polycrystalline Graphite foil or Graphene foil on F-12 Al fork. Price per item	DESCRIPTION: Foil mounted on fork w/ vacuum safe epoxy (low v.p.) or graphite paint (G.P.). Areal density is +/- 10%.
ACF-200-008014S	\$123.00	n/a	200 µg/cm ² Al F-12 fork w/low v.p. epoxy
PCG or ACF-450-008014S	\$123.00	\$157.00	450 µg/cm ² Al F-12 fork w/low v.p. epoxy
PCG or ACF-500-008014S	\$123.00	\$157.00	500 µg/cm ² Al F-12 fork w/low v.p. epoxy
G-ACF-500-008014S	\$143.00	\$167.00	Graphite Fork, 500µg/cm ² foil
PCG or ACF-600-008014S	\$133.00	\$157.00	600 µg/cm ² Al F-12 fork w/low v.p. epoxy
PCG or ACF-700-008014S	\$143.00	\$157.00	700 µg/cm ² Al F-12 fork w/low v.p. epoxy
PCG or ACF-1000-008014S	\$163.00	\$157.00	1000 µg/cm ² Al F-12 fork w/low v.p. epoxy

We are happy to put any foil of your selection onto a fork, if you don't see the item above, please contact us for a quote. **Graphene foils 300-1000µg/cm² available by quotation.**

F-12 fork is made of aluminum alloy #6061 or Graphite with 99.999% purity.



Drawing is not to scale.



When ordering F-12 forks, please note that there are *two* types of F-12 fork. Depicted in the photo are single forks with the foil glued in place. Some users prefer the **F-12 FoldOver fork**. This fork sandwiches the foil in between two pieces. The fork is crimped down and holds the foil with no epoxy. We offer both styles of fork.

Areal Density and/or Catalog name	Arc Evaporated Carbon foil on FoldOver F-12 Al fork. Price per item	Polycrystalline Graphite foil or Graphene foil on FoldOver F-12 Al fork. Price per item	DESCRIPTION: Foil mounted on FOLDOVER fork. No epoxy is used with this style fork. Areal density is +/- 10%.
FO-ACF-200-008014S	\$123.00	n/a	200 µg/cm ² Al F-12 FoldOver fork
FO-PCG or ACF-500-008014S	\$125.00	\$157.00	500 µg/cm ² Al F-12 FoldOver fork
FO-ACF-700-008014S	\$143.00	\$157.00	700 µg/cm ² Al F-12 FoldOver fork

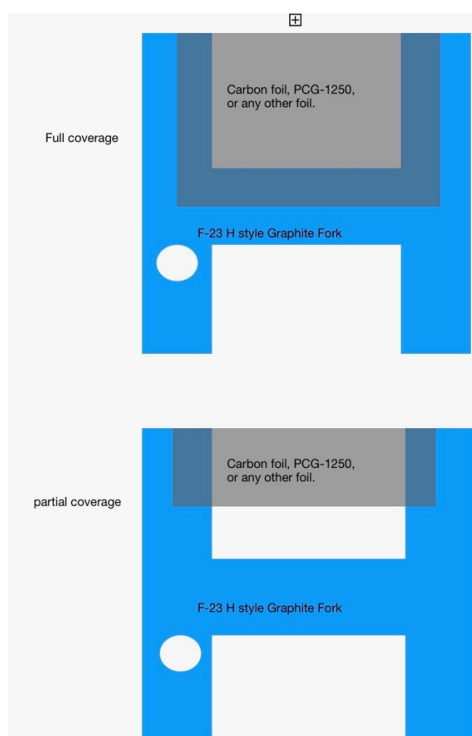
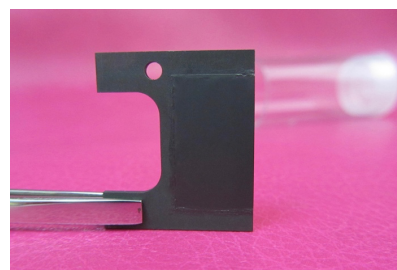
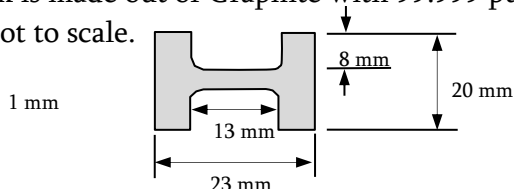
F-12 Fork Only without foil	Price each in quantities 1-199	Price each in quantities 200 to 499	Price each in quantities of 500 to 999	Price each in quantities of 1000+	DESCRIPTION:
ACF-F-12 Mod.2	\$4.40	\$4.10	\$3.90		Aluminum alloy #6061
G-ACF-F-12 Mod.2	\$24.00	\$18.00	\$11.00	\$9.00	Graphite purity 99.999%
FO-ACF-F-12 Mod.2	\$12.15	\$9.97	\$6.00		FoldOver fork to sandwich the foil. Aluminum alloy #6061

F-23 (H type) Forks:

Areal Density and/or Catalog name	Arc Evaporated Carbon foil on F-23 Graphite fork. Price per item	Polycrystalline Graphite foil or Graphene on F-23 Graphite fork. Price per item	DESCRIPTION: Foil mounted on fork w/ low v.p. epoxy or graphite paint (G.P.). Areal density is +/- 10%.
G-ACF-200-009017-F23	\$120.00	n/a	Graphite F-23 (H type) fork w/ 200 $\mu\text{g}/\text{cm}^2$ foil fastened w/low v.p. epoxy
G-(PCG or ACF)-500-009017-F23	\$109.00	\$129.00	Graphite F-23 (H type) fork w/ 500 $\mu\text{g}/\text{cm}^2$ foil fastened w/low v.p. epoxy
G-(PCG or ACF)-500-009017-F23(x2) F-23 Double layer fork	\$124.00	\$144.00	(2) Graphite F-23 (H type) fork w/ 500 $\mu\text{g}/\text{cm}^2$ foil fastened w/low v.p. epoxy
G-PCG+GR-500-009017-F23(x2) F-23 Double layer fork	\$124.00	\$182.00	(2) Graphite F-23 (H type) fork w/ 500 $\mu\text{g}/\text{cm}^2$ foil fastened w/low v.p. epoxy
G-(PCG or ACF)-1000-009017-F23	\$109.00	\$139.00	Graphite F-23 (H type) fork w/ 1000 $\mu\text{g}/\text{cm}^2$ foil fastened w/low v.p. epoxy
G-ACF-F-23	\$32.00		Graphite fork, NO FOIL.

Ask about QUANTITY DISCOUNTS! We are happy to put any foil of your selection onto a fork, if you don't see the item you want above, please contact us for a quote.

F-23 (H type) fork is made out of Graphite with 99.999 purity.
This drawing is not to scale.



When ordering F-23 (H type) forks, please note that there are *two* types of F-23 (H type) fork. Depicted in the photo are single forks with the foil glued in place. Some users prefer the **F-23 Double layer fork** that sandwiches the foil in between two pieces. The two pieces are glued together with low v.p. epoxy. We offer both styles of fork. The cost for the F-23 Double layer fork is an additional \$15.00 USD each. This configuration is 2 mm thick.

This drawing to the left demonstrates another option for the user, to have the “Full coverage” or “Partial coverage”. There is no difference in cost. Please specify your preference when ordering otherwise we will use full coverage.

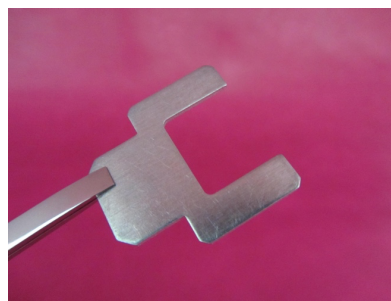
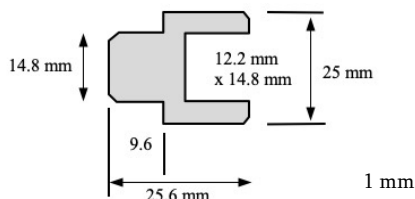
To place an order or if you have any questions, please email Contact@ACF-Metals.com.

F-11 Forks:

Areal Density and/or Catalog name	Arc Evaporated Carbon foil on F-11 Al fork. Price per item	Polycrystalline Graphite or Graphene foil on F-11 Al fork. Price per item	DESCRIPTION: Foil mounted on fork w/ low v.p. epoxy or graphite paint (G.P.). Areal density is +/- 10%.
ACF-200-014017-F11	\$110.00	n/a	200 $\mu\text{g}/\text{cm}^2$ Al F-11 fork w/low v.p. epoxy
PCG or ACF-400-014017-F11	\$110.00	\$157.00	400 $\mu\text{g}/\text{cm}^2$ Al F-11 fork w/low v.p. epoxy
PCG or ACF-500-014017-F11	\$110.00	\$157.00	500 $\mu\text{g}/\text{cm}^2$ Al F-11 fork w/low v.p. epoxy
PCG or ACF-1000-014017-F11	\$298.00	\$176.00	1000 $\mu\text{g}/\text{cm}^2$ Al F-11 fork w/low v.p. epoxy

We are happy to put any foil of your selection onto a fork, if you don't see the item above, please contact us for a quote. Please ask about QUANTITY DISCOUNTS!

F-11 fork is made out of aluminum alloy #6061.
This drawing is not to scale.

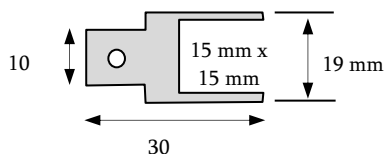


F-19, F-25, and F-45-13 Forks:

These forks are made out of aluminum alloy #6061, and are available by quote.

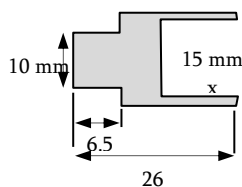
F-19

Drawing is not to scale.



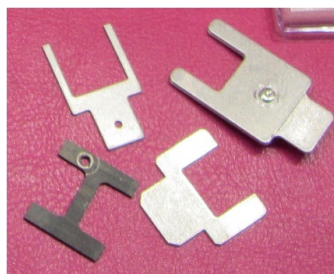
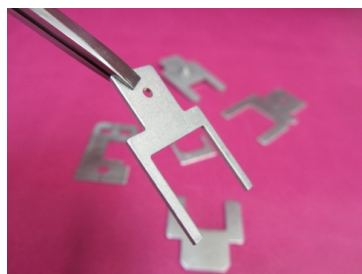
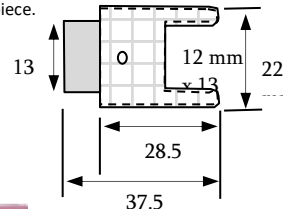
F-45-13

Drawing is not to scale.



F-25 Clamp-Style Fork

Drawing is not to scale.
Top piece clamps foil to full-sized bottom piece.



To place an order or if you have any questions, please email Contact@ACF-Metals.com.

K-1200 “Moly” Forks:

Areal Density and/or Catalog name	Arc Evaporated Carbon foil Price per item	Polycrystalline Graphite foil Price per item	DESCRIPTION: Foil mounted on Customer supplied fork w/ vacuum safe epoxy (low v.p.) or graphite paint (G.P.). Areal density is +/- 10%.
ACF-50-009014K	\$263.00	n/a	50 µg/cm ² with collodion on K-1200 fork
ACF-75-009014K	\$203.00	n/a	75 µg/cm ² with collodion on K-1200 fork
ACF-100-009014K	\$153.00	n/a	100 µg/cm ² on K-1200 fork
ACF-200-009014K	\$153.00	n/a	200 µg/cm ² on K-1200 fork
ACF-300-009014K	\$123.00	n/a	300 µg/cm ² on K-1200 fork
PCG or ACF-400-009014K	\$114.00	n/a	400 µg/cm ² on K-1200 fork
PCG or ACF-500-009014K	\$111.00	n/a	500 µg/cm ² on K-1200 fork
PCG or ACF-600-009014K	\$109.00	n/a	600 µg/cm ² on K-1200 fork
PCG or ACF-700-009014K	\$111.00	n/a	700 µg/cm ² on K-1200 fork
PCG or ACF-800-009014K	\$114.00	n/a	800 µg/cm ² on K-1200 fork
PCG or ACF-1000-009014K	\$123.00	n/a	1000 µg/cm ² on K-1200 fork

We are happy to put any foil of your selection onto a fork, if you don't see the item above, please contact us for a quote.



Other Foils Available Upon Request

Catalog name	Thickness in mm and/or microns	DESCRIPTION: These foils are custom and may require lead time. Do you need different specifications? Let us know and we will customize for you.	PRICE each in USD
Havar Foil	35 microns thick, 0.035 mm	30 mm diameter round, +/- 0.5 mm, Non magnetic alloy, rolled, packaged individually. This material is light tight.	\$142
Ti Foil	12.5 microns thick, 0.0125 mm	99.6+% purity, annealed, rolled. 23.5 mm diameter round, +/- 0.5 mm, packaged individually. This material is light tight.	\$190

Don't see what you're looking for? Contact@ACF-Metals.com and we will be happy to quote on your specific item.



The Arizona Carbon Foil Co., Inc.

1700 East River Road, Unit 66001

Tucson, AZ 85728. U.S.A.

Contact@ACF-Metals.com Web: www.ACF-Metals.com

Phone: (520) 325-9557

Fax: (520) 325-9493

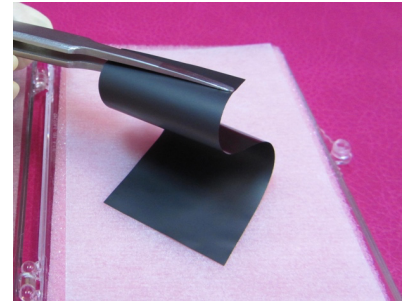
Polycrystalline Graphite Foils (PCG), Graphene (GBEF)

Most commonly used as stripper/extractor foils, charge changing foils in nuclear accelerators. These flexible foils are as efficient as amorphous carbon foils of the same areal density, easy to handle, and have in-beam lifetimes competitive to arc-evaporated foils. Nominal mass density $1.0 \pm 0.1 \text{ g/cc}$. All our standard thicknesses (see chart below) are kept in stock at all times. Most items can ship anywhere in the world within 24-48 hours.

Besides our standard sizes we provide foils with custom areal density, tolerances, sizes, shapes, and even mounted on frames for your specific application. Special order foils are cut to your specifications and packaged individually for easy handling.

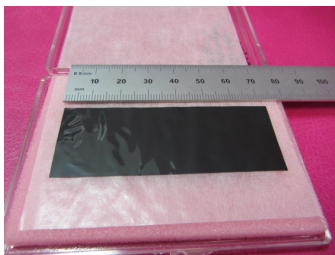
Actual foil thicknesses are typically within 10% tolerance. Foils above $1000 \mu\text{g/cm}^2$ may have 15% tolerance, please specify if you have a preference. These foils are composed of graphite microcrystals having a natural isotopic composition and aligned primarily with their c-axes parallel to the foils' normal.

Ask about Graphene foils, available from $300\text{--}1000 \mu\text{g/cm}^2$!



Are you available to test foils? Let us know!

Do you need further technical data? We have information regarding flatness, smoothness, and light-tightness in our ACF-Metals Product Information Document available upon request or at ACF-Metals.com. Please note tiny imperfections may be present despite the utmost of care in our production and handling processes.



We offer **Quantity discounts** on orders of 100 or more of the same item. Additional discounts are available at higher volume. We have a minimum order of \$300 USD. For International orders there is a \$50 USD handling charge.

Having trouble deciding which foil is better for your application? [Why not try a sample and test it?](#)

Trying to determine the **ideal areal density** for your application? Contact us for further recommendations based on your beam energy specifics. Provide us with your machine type, current foil usage information in μAh , beam in μA , and we will do our best to help determine the areal density and type of foil for your application based on our data from users around the world.

Also check out our ACF-Metals.com/forum to ask and answer questions directly to other users.

To place an order or if you have any questions, please email Contact@ACF-Metals.com.

Polycrystalline Graphite Foils (PCG) PRICE LIST

Areal Density and/or Catalog name	PCG 25mm x 60mm Nominal size. Price per foil	DESCRIPTION:
		Polycrystalline Graphite Foils *Note foils with asterisks or alternate size specifications are not standard products and may require 2 weeks lead time. Cut sizes are +1/- 0.5 mm nominally.
PCG-400	\$432.00	400 µg/cm², Free standing, Packaged Individually.
*PCG-400-019025	\$105.00	400 µg/cm ² , 19 mm x 25 mm, Free standing, Packaged Individually.
*PCG or PCG+G-400-035070	\$532.00	400 µg/cm ² , 35 mm x 70 mm, Free standing, Packaged Individually.
*PCG or PCG+G-400-014060	\$287.00	400 µg/cm ² , 14 mm x 60 mm (+1/-0 mm) Packaged Individually.
*PCG or PCG+G-400-018072	\$362.00	400 µg/cm ² , 18 mm x 72 mm (+1/-1 mm) Packaged Individually.
*PCG-400-100100	\$5020.00	400 µg/cm ² , 100 mm x 100 mm (+2/-2 mm) Packaged Individually.
PCG-500	\$432.00	500 µg/cm², Free standing, Packaged Individually.
*PCG-500-008014	\$47.00	500 µg/cm ² , 8 mm x 14 mm, Free standing, Packaged Individually.
*PCG-500-014060	\$249.00	500 µg/cm ² , 14 mm x 60 mm, Free standing, Packaged Individually.
*PCG-500-050075	\$593.00	500 µg/cm ² , 50 mm x 75 mm, Free standing, Packaged Individually.
*PCG-500-060090	\$855.00	500 µg/cm ² , 60 mm x 90 mm, Free standing, Packaged Individually.
*PCG-500-019080	\$498.00	500 µg/cm ² , 19 mm x 80 mm, Free standing, Packaged Individually.
*PCG-500-019100	\$498.00	500 µg/cm ² , 19 mm x 100 mm, Free standing, Packaged Individually.
*PCG-500-019120	\$498.00	500 µg/cm ² , 19 mm x 120 mm, Free standing, Packaged Individually.
PCG-600	\$324.00	600 µg/cm², Free standing, Packaged Individually.
PCG-700	\$324.00	700 µg/cm², Free standing, Packaged Individually.
PCG-800	\$324.00	800 µg/cm², Free standing, Packaged Individually.
PCG-1000	\$336.00	1,000 µg/cm², Free standing, Packaged Individually.
*PCG-1000-005023	\$51.00	1,000 µg/cm ² , 5 mm x 23 mm, Free standing, Packaged Individually.
*PCG-1000-006016	\$47.00	1,000 µg/cm ² , 6 mm x 16 mm, Free standing, Packaged Individually.
*PCG-1000-008014	\$47.00	1,000 µg/cm ² , 8 mm x 14 mm, Free standing, Packaged Individually.
*PCG+G-1000-008014	\$87.00	1,000 µg/cm ² , 8 mm x 14 mm, Free standing, Graphene based
*PCG-1000-008017	\$47.00	1,000 µg/cm ² , 8 mm x 17 mm, Free standing, Packaged Individually.
*PCG-1000-012015	\$51.00	1,000 µg/cm ² , 12 mm x 15 mm, Free standing, Packaged Individually.
*PCG-1000-100100	\$3600.00	1,000 µg/cm ² , 100 mm x 100 mm, Free standing, Packaged Individually.
PCG-1200	\$346.00	1,200 µg/cm², Free standing, Packaged Individually.
PCG-1500	\$346.00	1,500 µg/cm², Free standing, Packaged Individually.
PCG-2000	\$376.00	2,000 µg/cm², Free standing, Packaged Individually.
*PCG-2000-008014	\$47.00	2,000 µg/cm ² , 8 mm x 14 mm, Free standing, Packaged Individually.
*PCG-2000-100100	\$3800.00	2,000 µg/cm ² , 100 mm x 100 mm, Free standing, Packaged Individually.
*PCG-2000-125125	\$5009.00	2,000 µg/cm ² , 125 mm x 125 mm, Free standing, Packaged Individually.
PCG-2500	\$386.00	2,500 µg/cm², Free standing, Packaged Individually.
PCG-3000	\$386.00	3,000 µg/cm², Free standing, Packaged Individually.
PCG-4000	\$386.00	4,000 µg/cm², Free standing, Packaged Individually.
PCG-5000	\$474.00	5,000 µg/cm², Free standing, Packaged Individually.
*PCG-5000-060060	\$3060.00	5,000 µg/cm ² , 60 mm x 60 mm, Free standing, Packaged Individually.
*PCG-5000-100100	\$3360.00	5,000 µg/cm ² , 100 mm x 100 mm, Free standing, Packaged Individually.
PCG-6000	\$474.00	6,000 µg/cm², Free standing, Packaged Individually.
PCG-7000	\$514.00	7,000 µg/cm², Free standing, Packaged Individually.
PCG-8000	\$552.00	8,000 µg/cm², Free standing, Packaged Individually.
PCG-9000	\$594.00	9,000 µg/cm², Free standing, Packaged Individually.
PCG-10000	\$634.00	1,000 µg/cm², Free standing, Packaged Individually.
PCG-12000	\$705.00	12,000 µg/cm², Free standing, Packaged Individually.
PCG-15000	\$777.00	15,000 µg/cm², Free standing, Packaged Individually.
PCG-17500	\$842.00	17,500 µg/cm², Free standing, Packaged Individually.
PCG-20000	\$907.00	20,000 µg/cm², Free standing, Packaged Individually.

Packaging Options

Packaging options and technical details are available in full at ACF-Metals.com or upon request.

Arc-Evaporated Carbon Foils (ACF & XCF)

0.1 to 89 µg/sq.cm	Option S	This is our standard packaging and is used unless alternate packaging is specified. Carbon foils are on glass substrate packaged in a rigid plastic box. Each box may contain up to 25 foils. Foils are guaranteed against damage during shipping and storage.
	Option T	ACF only. These carbon foils are on their glass substrate, packaged individually in a convenient semi-rigid plastic tube. Customer must specify this packaging option, for which there is an additional \$0.50 charge per foil for this packaging option. There is no guarantee against damage during shipping or removal from packaging.
90 to 179 µg/sq.cm	Option A	This is our standard packaging and is used unless alternate packaging is specified. The glass substrate supporting the foil is fastened permanently onto one half of the transparent packaging box. Each foil is removed from the substrate by slowly immersing that half of the plastic box into water, allowing the foil to float free from the glass. Further description available in our Product Information. Foils are guaranteed against damage during shipping and storage.
	Option SX	Carbon foils are on their glass substrates packaged in rigid plastic boxes. Each box may contain up to 25 foils. Note: Both annealed and non-annealed foils at this areal density may loosen from their substrate during shipping. There is no guarantee against damage in shipping or storage. Further description available in our Product Information.
	Option N	Carbon foils are on their glass substrates, individually packaged in padded transparent plastic boxes, between paper sheets. Note: Some damage may occur from contact between the foil and paper sheets. There is no guarantee against damage during shipping or removal from the box. Further description available in our Product Information.
ACF-100, ACF-150	Option R	Carbon foil is FREE-STANDING, no longer on the glass substrate. Packaged in a padded transparent plastic box, between paper sheets. These foils are very fragile and require very delicate handling. No guarantee against damage caused by removal of the foil from its packaging.
180 to 2000 µg/sq.cm	Option SF	This is our standard packaging and is used unless alternate packaging is specified. These foils have been annealed, removed from their glass substrate, packaged in a padded transparent plastic box, between paper sheets. Foils are guaranteed against damage during shipping and storage.

Carbon Foils on Cyclotron Forks

Carbon foils mounted on cyclotron forks are individually packaged in plastic tubes, clearly labeled with the areal density of the foil, foil type, and fork style.
Cyclotron forks with foils are shipped anywhere in the world without damage!

Polycrystalline Graphite Foils

PCG foils are packaged individually in a padded transparent plastic box, between paper sheets. Foils are guaranteed against damage during shipping and storage.

ACF-Metals, The Arizona Carbon Foil Co., Inc.

1700 East River Road, Unit # 66001 Tucson, AZ 85728 USA
Email: Contact@ACF-Metals.com Website: ACF-Metals.com
Phone: +1-520-325-9557 Fax: +1-520-325-9493



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Tucson, AZ 85728. U.S.A.

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Web: www.acf-metals.com

Fax: (520) 325-9493

ACF-Metals Terms & Conditions of Sale (p.1 of 3)

Please keep a copy of this ACF-Metals Terms and Conditions ("ACF-Metals Terms and Conditions") on file for reference; prices and terms may change without notice. ACF-Metals makes every effort to ensure our customers are satisfied with our products. These terms are intended to communicate protocol and eliminate any potential conflict. In the event of a conflict between the Customers' Terms of Purchase and ACF-Metals' Terms and Conditions of Sale, the latter shall take precedence. Customer must notify ACF-Metals of any request for an amendment to the ACF-Metals' Terms and Conditions, by email or fax, within 24 hours of their order being confirmed. Customer's request may be considered, but unless agreed upon in writing via fax or email, it will not be applied. In all cases, acceptance of merchandise implies acceptance of ACF-Metals' Terms and Conditions of Sale. ACF-Metals Terms & Conditions are an essential component of Quotations and Invoices and are put into effect upon receipt of Quote either informal or formal, Purchase Order, Confirmation of PO, receipt of Invoice, receipt of Merchandise, and payment of the Invoice. ACF-Metals Terms and Conditions are in no way dismissed by the acceptance and fulfillment of an order.

1. Every order must be presented in hardcopy by the customer (by e-mail, letter, or fax), including the terms, quantities, prices, and shipping preferences.
2. ACF-Metals minimum purchase order is \$300.00 USD. All prices are f.o.b. Tucson Arizona USA.
3. Orders are confirmed and invoiced via email.
4. Each order is shipped "Prepaid" or "Net 30" (Net 30 days after receipt of Invoice). Customers with "Net 30" terms that become delinquent will be charged 1.5% per month finance charge, or legal maximum if smaller.
5. Payment for orders within the USA is by USD check, electronic interbank transfer, or credit card. International customers may pay with EBT or credit card. ACF-Metals does not accept letters of credit.
6. You acknowledge and agree to pay any applicable bank fees, service charges, or other charges associated with completing your payment to ACF-Metals.
7. Stock items are shipped within 48 hours to 2 weeks after receipt of payment, unless otherwise specified in the Confirmation or Invoice. Custom items or quantities above 100, will have a specified shipping date (usually within 2-4 weeks) clearly stated on the Invoice.
8. More rapid shipment options are available upon request; rush charges may apply according to the situation, value, and availability and will be noted on the Invoice.
9. Expected Shipping Date: ACF-Metals makes every effort to ship in time to meet Customer delivery dates. Customer is advised to add the amount of time in transport to the shipping date to obtain expected date of delivery.
10. Ordering and use of ACF-Metals' products implies customer's understanding of all potential hazards therein. ACF-Metals accepts no responsibility for direct, incidental, indirect or consequential damages arising from customer's ordering, receipt, use or misuse of ACF-Metals' products. Customer accepts responsibility for safe storage, handling and disposal of products acquired from ACF-Metals.
11. Each order that is shipped by ACF-Metals is insured for replacement value; this insurance cost is included in the Shipping and Handling Charges and is the responsibility of the Customer.
12. Shipping costs may include specialized packaging needed for particularly fragile and/or high value items with an additional cost clearly noted on the invoice.
13. There is a \$50.00 International Handling charge added to International orders. Customer/Consignee pays for all shipping charges plus any applicable duties, V.A.T. and other taxes. Customer/Consignee is responsible for providing shipper account # and/or V.A.T. tax number for customs charges.

ACF-Metals Terms & Conditions Continued (p.2 of 3)

14. One Packing list is provided inside the shipping box with merchandise and one copy is fastened to the exterior of the shipping box except as required on Customer's purchase order and on ACF-Metals' invoice.
15. Shipping is via Federal Express (FedEx), United Parcel Service (UPS), DHL with Customers Account number, or USPS
16. Taxes: If taxes on an order must be collected by or charged by ACF-Metals because of purchaser's State or local requirements, purchaser must notify ACF-Metals of this in the purchase order, and must specify in that purchase order the exact amount to be collected, the name and address of the collecting authority, and the account number to which taxes must be credited.
17. Subject to paragraph 18, cancellations of order or changes to an order must be submitted in writing via fax or email by the Customer, and acknowledged by ACF-Metals in writing, prior to shipment.
18. Returns must be requested in writing, and approved by ACF-Metals in writing with instructions on how to proceed. Damage claims must be in original packaging, unopened, and may require photographic evidence of said damage. Customer pays shipping charges for any/all returns unless agreed upon in writing otherwise.
19. Custom orders will be identified on the Invoice as 'Custom'. After receipt of payment, all Custom orders are non-cancelable and not eligible for return. If Customer is supplying parts to be coated or mounted, it is at Customer's sole expense and risk.
20. Warranty on all products is limited to replacement or refund at ACF-Metals' discretion. Claims must be made in writing within 14 days of receipt of said items. This warranty is your sole exclusive warranty and replace all other warranties or conditions, express, or implied, including, but not limited to, the implied warranties or conditions of merchantability and fitness for a particular purpose.
21. Tooling and processes, even those described on the invoice as line items, or on the purchase order as line items, developed by ACF-Metals, remain the property of ACF-Metals, unless ACF-Metals disclaims ownership in writing.
22. ACF-Metal represents and warrants that it will comply with all applicable laws and regulations. ACF-Metal further commits to remain ISO compliant during the term of this ACF-Metals Terms and Conditions.
23. No access to ACF-Metals' facilities is granted to the Customer at any time, for any reason. This applies even if the Customers' Terms and Conditions of purchase require said access. Exceptions may be made upon specific written agreement between both parties. Notwithstanding any provisions hereunder, during the term of this ACF-Metals Terms and Conditions at least, any confidential or proprietary information, or information of a completely sensitive nature, whether marked or unmarked (the "Confidential Information"), concerning the party who discloses such Confidential Information (the "Disclosing Party") shall remain the property of the Disclosing Party. For the avoidance of doubt, Confidential Information may include, without limitation, business plans, company relationships, acquisition plans, system architecture, information systems, computer programs, codes, processes, methods, operational procedures, finances, budgets, policies and procedures, product plans, projections, analyses, and, or any other information which is normally and reasonably considered confidential. Each party agrees to use Confidential Information for the sole purpose of furthering the business that is being contemplated herein and it will only disclose Confidential Information to third party on a need-to-know basis, who will be subject to the confidentiality obligations of this ACF-Metals Terms and Conditions.
24. Industrial, import, and export product categories for carbon foils: ECCN: EAR99 NAICS: 335991 SIC Code: 3497
Harmonized tariff code schedule B: 6815.10.0100 (Chap.68) and EAR-99 FSC Code: 9535 NIGP: 570-26
25. ACF-Metals' foils are manufactured in the USA, RoHS-compliant and containing no toxic materials of "very high concern" and no "conflict minerals".

ACF-Metals Terms & Conditions Continued (p.3 of 3)

26. This ACF-Metals Terms and Conditions constitutes the entire agreement, and supersedes all prior negotiations, understandings, or agreements (oral or written), between parties hereto, regarding the subject matter of this ACF-Metals Terms and Conditions and all past dealing or industry custom. Any inconsistent or additional terms on any related order, confirmation, or similar form, even if signed by both parties hereafter, shall have no effect under this ACF-Metals Terms and Conditions. In the event of any conflict between the ACF-Metals Terms and Conditions and terms of any order, confirmation, or similar form, the ACF-Metals Terms and Conditions shall control.
27. No change, consent, or waiver under this ACF-Metals Terms and Conditions will be effective unless in writing and signed by the party against which enforcement is sought. If any provision of this ACF-Metals Terms and Conditions is determined illegal or unenforceable, that provision shall be limited or eliminated to the minimum extent necessary so that this ACF-Metals Terms and Conditions will otherwise remain in full force and effect and enforceable.
28. In the event that either party is prevented from performing, or is unable to perform, any of its obligations under this ACF-Metals Terms and Conditions (except payment obligations) due to any cause beyond its reasonable control including, without in any way limiting the generality of the foregoing, fire, explosion, earthquake, storm, flood, strike, war, insurrection, riot, or act of God, the affected party's performance shall be excused or extended for the period of delay or inability to perform due to such occurrence.
29. Neither this ACF-Metals Terms and Conditions nor any other agreement(s) between parties and nothing herein will constitute either party as the employer, employee, agent, or representative of the other party, or both parties as joint venturers or partners for any purpose.