



MICROMATTER™

Self-supporting Diamond-like Carbon (DLC) Foils

Frequently Asked Questions

Q: What size of foils should I order?

A: Always order the smallest size that fits your application. For example, if your foil holder is designed for a 22mm x 25mm foil, our MICROMATTER™ DLC-11 series (25mm x 25mm) will be perfect for you.

Q: Why shouldn't I order one large sheet and cut it into small pieces that fit my frames? I will have less waste.

A: Large self-supporting foils are much more difficult to produce than small ones and are hence disproportionately more expensive. MICROMATTER™ DLC foils have excellent mechanical stability, however, handling large foils requires special precautions as they tend to flex more than small foils. Bending a carbon foil inevitably introduces microscopic cracks in its structure, which negatively affects a foil's performance and shortens its lifetime in the beam. Ultimately, you pay more because you will need many more foils.

Q: Does it matter which kind of tool I use to handle DLC foils?

A: MICROMATTER™ DLC foils should be handled with the same care as any other carbon foil. Do not touch the foil with bare hands – use steel tweezers that have no sharp points or edges. Move the foil slowly. Please see our 'Handling Instructions for Self-supporting DLC Foils'.

Q: How can I cut DLC foils?

A: If you have to trim a MICROMATTER™ DLC foil, place it on several sheets of paper. Filter paper is best suited because of its crinkly surface. Carefully place a single edge razor type blade (e.g. carbon steel blade) across the foil and push down hard. Do not move the blade sideways ('sawing'), as it will damage the foils even if you cannot see it. If you feel that cutting foils requires increasingly more force, use a new blade. Please see our 'Handling Instructions for Self-supporting DLC Foils'.

Q: Do you have any recommendations for mounting DLC foils?

A: Even the best foil won't last if it is improperly mounted. In general, MICROMATTER™ DLC foils perform best if they are mounted in a way that permits the foil to expand or contract when irradiated. Clamping the foil on all sides is usually not a good idea. Whenever possible, MICROMATTER™ DLC foils should be mounted on high density graphite holders for optimum performance. If metal frames are used, special attention should be given to the finish of the surfaces that are in contact with the foil. Small scratches or burrs can lead to rapid deterioration or instantaneous failure of the foil.



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Q: Can your DLC foils be glued onto holders?

A: Yes. We recommend high-vacuum epoxy adhesive. Do not glue the whole length of the foil. Small spots usually suffice.

Q: What about pinholes?

A: It is extremely difficult to manufacture pinhole-free carbon foils, regardless of the production method used. Pinholes may form during the deposition of the film or the subsequent annealing process. For most applications, including beam stripping, pinholes barely visible with the naked eye hardly affect the overall performance of the foil. While MICROMATTER™ DLC foils are manufactured to highest standards, we cannot entirely exclude tiny imperfections such as pinholes.

Q: Some of your foils have a pattern, some do not. Does it affect the lifetime of the foils?

A: The occurrence of patterns on MICROMATTER™ DLC foils depends on many process parameters and environmental factors. As to our knowledge, there is virtually no difference in performance. Some anecdotal evidence exists that wrinkled foils last slightly longer than smooth ones.

Q: How long can I store your foils?

A: Micromatter™ Self-supporting DLC foils can be stored for years if they are kept in a cool, dry place. Exposure to moisture or solvent vapours may lead to degradation of the foils.