

## Cutting Safety

1. Q. What safety equipment should each operator use?
- A. *The operators should wear safety glasses, shoulder, wrist, neck and hand protection as well as a leather or grommeted apron. A hard hat and safety shoes may be required for loading operations.*

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2. Q. How is a new rack with broken glass handled?
- A. *It should **not** be unwrapped. If the glass is damaged, it is very dangerous to attempt to salvage any usable sheets. Do not attempt to use this glass. Photograph the damaged pack. Notify the carrier and the glass supplier.*

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## Cutting Quality

1. Q. How long do cutting wheels last?
- A. *The life depends on the linear feet of scoring, glass type, cutting force and lubrication. The operator should not wait until it becomes difficult to breakout the glass. The cutting wheel should be changed on a regular basis and should be tracked. Cutting wheels should be changed once per day or once per shift based on the amount of linear scoring. For SS/DS glass, about 5 miles is the max life under ideal conditions.*

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2. Q. What angle cutting wheel should be used?
- A. *The correct angle cutting wheel depends upon the thickness of the glass. A 134° - 144° angle wheel works well on 2.5 to 3.0mm and is capable of working on some 5mm thick glass. A 144° - 154° angle wheel is recommended for large quantities of 5mm or thicker glass.*

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3. Q. What diameter cutting wheel should be used?
- A. Typically a 3/16" diameter wheel is typical for SS/DS glass and works well scoring arcs and shapes. A larger diameter wheel will last longer but will plow when scoring shapes, and also requires more force.

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4. Q. Is cutting fluid required?
- A. Cutting fluid is recommended to extend the life of the cutting wheels, prevent the score fissure from healing, and also to lubricate the axle.

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5. Q. What type of cutting fluid is required?
- A. Water based fluid is required. Solvent based cutting oils will leave residue on glass that cannot be fully removed in the washer, leading to spacer adhesion issues. Glass supplier should be consulted for compatibility with specific specialty glass types or coatings.

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6. Q. How much cutting fluid is required?
- A. The cutting fluid flow should be adjusted so that it has not evaporated by the time the last lite has been broken out from the sheet. No more than 1-2mm on each side of the score is needed. Glass will "heal" over time after scoring; cutting fluid gets pushed into the fissure and prevents healing. It is not possible to cleanly break out glass a long time after scoring.

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7. Q. How much cutting wheel force is required?
- A. The cutting wheel down force should be adjusted so that the lites breakout easily but do not separate during transfer to the breakout table. Use as little force as possible. Also, + speed = + force.

2.5mm = 6 lb (145°)  
3.0mm = 9 lb (145°)  
5.0mm = 14 lb (154°)  
6.0mm = 18 lb (154°)

*Spots having worn carpeting can cause differing areas of sponge and can affect resultant down force and score quality.*

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8. Q. What should the finished edge look like?

A. *The edge should be free of chips, flares, deep serration hackle and deep sharks teeth.*

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9. Q. What is the best method to breakout the lites?

A. *It is best to raise the sheet evenly at the score and break the lites apart. The operator should use care not to lift the sheet from the edges. This lifting may cause stress and damage at the score. Thick glass (>6mm may require break tools such as glass running pliers or lift bars).*

*Never use a score line that cannot be broken out with a single smooth action.  
Never use pliers to nip the glass*

*If you have a trim cut on glass sheets, use typically 8X glass thickness (but minimum 4X),*

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## Cutting Production

1. Q. How far prior to IG production do I need to cut glass?

A. *½ to 1 shift.*

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2. Q. On average, how many lites or how many square feet should I be able to cut per hour?

A. *Assuming an average lite size of 6 square feet (2' by 3') it should be possible to cut 1 batch or 400 lites every two hours. This is approximately 200 lites or 1200 square feet per hour. (Example: Using 72" x 84" sheets (42 Sq. Ft.) / 6 lites per sheet / 34 sheets per hour.*

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3. Q. Should the incoming glass be inspected?

A. *The incoming glass should be checked for type, quantity and damage. A damaged glass pallet or rack should not be unwrapped. If the glass is damaged, it is very dangerous to attempt to salvage any usable sheets. Do not attempt to use this glass. Photograph the damaged pack.*

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4. Q. Is there any problem storing glass outside?

A. *Yes. Same goes for storing near dock doors. If the interleaving powder (Lucor®) becomes wet due to water or heavy condensation (dew point exceeded), the sheets may stick. If stored in a cold environment however, glass should be allowed 72 hours to stabilize at room temperature before use.*

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5. Q. What is the best size glass to use?

A. *The "best size" glass to use is dependent upon many variables such as average unit size, cutting table size, available floor space and handling capacity. A larger sheet does not necessarily result in a higher yield. An industry "rule of thumb" is that you should achieve 7 to 9 lites per sheet.*

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6. Q. How many "harp racks" or "slot sorting racks" are required?

A. *As many as possible for your plant layout. The more racks that are configured into the optimization software, the better your glass yield.*

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7. Q. What do I do when a lite is damaged during breakout?

A. *Some systems allow for automatic remake of defective lites. It is important to keep the system running. Remake the lite using the method which causes the least interruption.*

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8. Q. How can scratching be reduced or avoided?
- A. *The cutting system surfaces should be vacuumed at least once per shift. Wood should not be used along the edges of the breakout table. The slot sorting racks should be maintained and cleaned on a regular basis. Handle only one lite at a time and put only one lite per slot in a harp rack. Don't stack multiple lites on top of each other during breakout*

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9. Q. Should a "hard edge" be used as an edge for the breakout table?
- A. *A hard edge makes it easier to breakout lites. Soft surfaces like wood can trap small pieces of glass and should be avoided. Spacers between the carpeted section of the table and the breakout edge allow small chips to fall to the floor, reducing scratches.*

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10. Q. Is there a quick method to determine cut accuracy?
- A. *A test pattern can be run on a regular basis to determine the cutting table accuracy. For larger lites, diagonal measurements can be compared.*

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11. Q. When is edge deletion required?
- A. *Certain manufacturers of coated specialty glass recommend that the coating be removed prior to assembly as an IG unit. Check with the glass supplier.*

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12. Q. Is it OK to edge delete at the washer?
- A. *This can be done but risks (1) handling damage and (2) contaminating the wash water with edge deletion dust.*

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13. Q. What happens to the deleted material (dust)?
- A. *The deleted material should be vacuumed as it is deleted. If possible, the deletion process should not be located in the IG assembly area. Edge deletion*

dust is <1 micron, so HEPA filtration (0.3 micron) is required to contain this particle size.

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14. Q. How can I tell which is the low-E side?

A. *This is not difficult for conventional soft coat low-E types with a conductivity meter or pencil reflection test. For some pyrolytic or passive low-E types it may be necessary to use a sensor; many new sophisticated devices are becoming available.*

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## Cutting System Maintenance

1. Q. Can the operator complete any preventive maintenance?

A. *The operator should be responsible for the routine housekeeping such as vacuuming the cutting & breakout surfaces after each shift. The operator may also change wheels and check lubrication reservoirs and water traps (FRL).*

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