

## ***MIRROR PRODUCT OFFERING AND SPECIFICATIONS***

### **IMPORTANT NOTE**

This document has precedence over information published in other Walker print or digital material

## STOCK SHEET AND FABRICATED MIRROR

Walker has been manufacturing premium quality mirrors for its North American customers since 1942. Mirror is a truly versatile product that reflects images and light and creates the impression of greater space in any area.

Walker's line of clear, low iron and tinted mirrors provide Interior Designers with the ability to add richness, depth and a touch of sophistication to any decor.

Simply put, the depth and breadth of our offering in terms of color, size and thickness is unbeatable. Our products are made in North America and ready to ship when you need them.

### STANDARD SIZE AVAILABILITY

Sizes	Clear Mirror							
	3mm		4mm		5mm		6mm	
	BK	CS	BK	CS	BK	CS	BK	CS
36 X 84								
36 X 96		10 days			48 hrs	✓		
36 X 100							✓	✓
36 X 120					48 hrs		✓	5 days
36 X 130					48 hrs			
36 X 144								
42 X 100							✓	5 days
42 X 120					48 hrs		✓	✓
42 X 130								
48 X 60					48 hrs			
48 X 72					48 hrs			
48 X 84		✓						
48 X 96	✓	✓/CSP			✓	5 days		
48 X 100					48 hrs		✓	✓
48 X 120					48 hrs		✓	✓
48 X 130	48 hrs						48 hrs	5 days
49 X 96			✓					
60 X 84					48 hrs	5 days	48 hrs	5 days
60 X 96					48 hrs			
60 X 100							✓	✓
60 X 120							✓	✓
65 X 72					48 hrs			
65 X 84	48 hrs				48 hrs	5 days		
65 X 96	48 hrs		48 hrs		48 hrs		48 hrs	72 hrs
72 X 96	✓	72 hrs			✓	✓		
72 X 100					✓	10 days	✓	✓
72 X 120					✓		✓	✓
72 X 130					✓	5 days		
72 X 144								
84 X 100							✓	5 days
84 X 120					✓	5 days	✓	5 days
84 X 130	✓				✓	5 days		
84 X 144								
96 X 120					✓	5 days		
96 X 130	✓	48hrs	✓		✓	48 hrs	✓	✓
96 X 144	✓		✓					
100 X 120							✓	
100 X 144					✓		✓	

  

Stock	✓
Block	BK
Case	CS
1/2 Case	CSP

  

Black Mirror	Bronze / Grey Mirror		Ultra-Clear Mirror		
6mm*	5mm	6mm *	3mm	5mm	6mm
✓	✓	✓	✓	15 days	✓
					✓

\*6mm Bronze/Grey and black are available in 1/2 block  
 Note: Other mirror tints also available on demand in full block

Above represent time to produce. Subject to order quantity and float glass availability  
 \* For products with a blank box, please contact customer service for availability

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## HOW TO GET LEED POINTS WITH WALKER MIRROR PRODUCTS

Green design not only makes a positive impact on public health and the environment, it can also reduce operating costs and enhance building spaces and surroundings.

LEED fits into this initiative by providing rating systems that are voluntary and based on generally accepted energy and environmental principles.

The LEED rating systems are developed by the U.S. Green Building Council (USGBC) committees, in adherence with USGBC policies and procedures guiding the development and maintenance of rating systems. They are applicable to new commercial construction and major renovation projects.

Under the LEED rating system, only projects are rated. There is no rating or certification system for raw materials or suppliers thereof. However, Walker Glass Company Ltd. can help users of our products, and more specifically building owners; get LEED points.

To find out which LEED credits our unetched mirror products can contribute to, please consult page 2 of the following environmental data sheet:

- Environmental Data Sheet – Acid-etched Mirror and Unetched Mirror

To request a copy of the environmental data sheet or for more information please contact your sales representative or our customer service department.



### OUR COMMITMENT TO SUSTAINABLE DESIGN - ENVIRONMENTAL PRODUCT DECLARATION

Walker Glass is proud to be the first to publish a third-party-verified environmental product declaration (EPD) on acid-etched mirror and unetched mirror.

Walker is fully committed to the diligent protection of both the environment and the health and safety of its workers and its customers' workers. This commitment is one of transparency regarding our practice and selection of materials. It is our small contribution towards building a better tomorrow for generations to come.

A copy of the EPD is available on demand. Please contact your sales representative or our customer service department.

## MIRROR SPECIFICATIONS CONFORMITY STATEMENT

Walker Glass mirrors conform to the following two recognized North American standards for mirror.

USA: **ASTM C 1503-18 (2018)** Standard Specification for Silvered Flat Glass Mirror

Canada: **CAN/CGSB – 12.5 - M86 TYPE 1B** National Standard of Canada for Mirrors, Silvered (Withdrawal May 2004)

Requirements under these standards vary according to product classifications. The following table summarizes the classification applicable to each of Walker Glass' mirror products.

USA	WALKER GLASS	ASTM C 1503-18 (2018)
	<b>SUBSTRATE</b>	<b>QUALITY CLASSIFICATION</b>
	CLEAR MIRROR – 5MM, 6MM	MIRROR SELECT QUALITY
	CLEAR MIRROR – 2,3 & 4MM	MIRROR GLAZING QUALITY
	TINTED MIRROR (INCLUDING LOW-IRON) ALL THICKNESSES	MIRROR GLAZING QUALITY
	<b>WALKER GLASS</b>	<b>ASTM C 1503-18 (2018)</b>
	<b>SIZE</b>	<b>GRADE CLASSIFICATION</b>
	STOCK SIZES LENGTH 120" TO 144"	MIRROR LEHR END GRADE
	STOCK SIZES LENGTH BELOW 120"	MIRROR STOCK SHEET GRADE
	CUT SIZES	MIRROR CUT SIZE GRADE

CANADA	WALKER GLASS	CAN/CGSB-12.5-M86
	<b>SUBSTRATE/SIZE</b>	<b>CLASSIFICATION (Withdrawal May 2004)</b>
	CLEAR MIRROR – ALL THICKNESSES & ALL SIZES	TYPE 1B – Polished plate or float glass for high-humidity use
	TINTED MIRROR (INCLUDING LOW-IRON) ALL THICKNESSES AND SIZES	Not covered under the standard

## LIMITED WARRANTY FOR SILVERED FLAT GLASS MIRROR

Walker Glass mirrors are made from selected *float* glass and conform to the following standards:

**USA: ASTM C 1503-18 (2018) Standard Specification for Silvered Flat Glass Mirror.**

**CANADA: CAN/CGSB-12.5-M86 Type 1B National Standard of Canada – Mirrors, Silvered (Withdrawal May 2004)**

Inherent in the *float* glass process are some small gaseous inclusions and minor abrasions. Occasional small “bubbles” and hairlines are, therefore, perfectly normal and acceptable under these Standards and should be virtually unnoticeable from a normal viewing distance.

During a period of ten (10) years from the date of original purchase, Walker Glass Company Limited (Walker) warrants all mirror manufactured by Walker (the Mirror), to the original purchaser, subject to the terms and conditions of this Limited Warranty (the Warranty), not to contain defects in the silver film which substantively affect the Mirror's appearance.

In the event that the Mirror contains defects in the silver film as stated above, Walker must be notified in writing at the address indicated on the original invoice. Walker reserves the right to inspect any Mirror alleged to be defective in the location and under the conditions where the defect was first detected. Liability under this Warranty is limited, at Walker's exclusive discretion, to either

- Walker replacing the defective Mirror without charge, F.O.B. Walker's plant  
or
- Walker refunding 100% of the original selling price of the mirror. Labor costs are not covered by this Warranty. This Warranty does not apply to replacement Mirror beyond the Warranty period applicable to the original Mirror.

Walker's liability shall be limited solely to its responsibilities under this Warranty. In no event shall Walker be liable to any person on entity for indirect, special incidental or consequential damages or charges for any reason.

### CONDITIONS

This Warranty is void under any of the following conditions:

- The Mirror is broken or fractured.
- The Mirror's paint coating has been damaged.
- The Mirror is installed or used in an application other than indoors.
- The Mirror is installed in high-humidity environments such as swimming pool enclosures, bath enclosures, etc.
- The Mirror has been subjected to standing water or other liquid.
- The Mirror's coating is attacked by incompatible or corrosive chemical agents such as grinding lubricants, cleaning fluids, solvents, sealants, adhesives, chemical fumes, etc.
- A non-Walker-applied film has been attached to the mirror
- The Mirror is handled, stored, fabricated, or installed contrary to Walker's written guidelines, or to standards promulgated by the National Glass Association.

EXCEPT FOR THE EXPRESS WARRANTY DESCRIBED ABOVE, WALKER NEITHER EXPRESSES NOR IMPLIES ANY OTHER WARRANTIES OF ANY KIND AND NO WARRANTY SHALL BE IMPLIED BY OPERATION OR LAW OR OTHERWISE.

No variation or change from this warranty will be binding upon Walker unless made in writing specifically referring to this Warranty and signed by an officer of Walker.

## TRANSPORTATION, RECEIVING & STORAGE GUIDELINES

- Before unloading the truck, verify the weight of the cases/stoces and confirm that the handling equipment is adequate.
- Check your shipments on arrival. If there appears to be moisture present, the sheets should be unpacked and allowed to dry using a separating technique. Do not allow sheets to remain in contact with wet protective pads.
- Be sure that your storage areas are dry and adequately ventilated. Don't store mirrors in areas of high humidity, where exposed to chemical fumes, or near high heat such as steam or water pipes. These conditions can promote staining.
- Do not store mirrors outdoors or in unheated areas.
- Sheets should be unpacked as soon as possible to allow moisture caused by condensation to dissipate, especially if the sheets have been subject to temperature changes during shipment.
- Block the cases/stoces up off the floor to prevent any water damage to the bottom of the sheets. Also, do not store crates or sheets on uneven surfaces. This can lead to stresses on the sheets which can cause cracks or breakage.
- Store mirrors vertically. Do not lay sheets flat. Even minor movements in a flat stack will cause abrasion if not breakage.
- When removing sheets from the case, separate them from the pack one at a time before removal. Never slide a sheet across the one behind it.
- Always handle sheets one at a time.
- Do not move or reship partially unpacked cases without proper repacking. Movement within the case can cause damage or breakage.
- If mirrors are transported in an open or exposed condition and become spattered or come in contact with foreign elements such as road salt, they should be washed and dried immediately.

## FABRICATION GUIDELINES

It is important to emphasize that care be taken during every step of fabrication to maintain the integrity of the back and edges of a mirror. Any major damage to these two areas will result in a useless product. Equally important however, is cleanliness in the fabrication shop. Dirt, grit, solvents and other contaminants can lead to damage not only to the surface but also to the backing.

- Always use gloves when handling mirrors. This protection works two ways. Hands are protected from sharp edges and the edges and backing of the mirror from body salts and chemicals.
- Vacuum or sweep the cutting tables with a stiff brush regularly to keep dust down and to eliminate glass grit and particles which could scratch mirrors.
- When grinding and polishing edges with a belt sander, always cool with an adequate flow of water. Grind slowly enough to keep the heat generated to a minimum.
- When machine grinding, diamond wheels should always be dressed and maintained in good cutting condition. Set wheels so as not to grind excessively on the paint side and edge grind in only one direction.
- Diamond wheels should also be used with clean water or coolant as a lubricant, in accordance with the following parameters:
  - Beveling: 2% lubricant; 98% water
  - Polishing: 1% lubricant; 99% water
  - Maintain the pH of the water between 6 and 9
- Operators of diamond grinding equipment should be familiar with the risks of thermal, mechanical and chemical aggression. See sections below for more details.
- Be sure that mirrors, especially backs and edges, are thoroughly washed and dried, no later than 8 hours after fabrication. Use only clean water for washing. If a glass washing machine is used, a recommended mild detergent may be used. No commercial glass cleaner can be recommended. Most contain ammonia or other strong chemicals which can damage the edge of the mirror.
- For mirror cutting, use an appropriate amount of evaporating cutting oil (no droppings at 5% angle).
- High polished edge (also referred to as commercial or clear polish) on a mirror is not recommended due to the risk of overheating. See more details below.

## THERMAL AGGRESSION IN EDGE GRINDING

During edge grinding, the generation of excessive friction-induced heat is a major cause of edge failure or "black edge". When heated, the silver and copper layers expand at a faster rate than the glass, eventually "detaching" from the glass. While not always immediately visible, this weakened bond will facilitate oxidation of the silver and a blackening of the mirror's edge.

Excessive heat build-up in grinding can be caused by any of the following factors:

- Low concentration of diamond in the grinding wheels.
- Excessively hard binder in the grinding wheel.
- Incorrect peripheral speed of the grinding wheel.
- Excessive grinding pressure.
- Excessive feed speed (bringing the glass to the wheel at a faster rate than the wheel can cut).
- Coolant/water too hot to cool adequately (usually resulting from too small a holding tank or too low a coolant concentration).
- Inadequate or inaccurate delivery of the coolant to the point of friction.
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## MECHANICAL AGGRESSION IN EDGE GRINDING

Other than excessive heat build-up, improper grinding techniques may result in mechanical aggression, equally dangerous to the mirror's edge. When portions of the metal layers are exposed, even in microscopic amounts, the silver begins to oxidize, initiating the gradual process of black edge "creep".

- Too coarse diamond grain. This is a common occurrence, sometimes coarse grain, rather than a higher diamond concentration, is purposely used to increase the capability of the wheel to remove stock. Coarse grain does not "cut" but rather "tears" off metals (silver and copper), thereby producing chips on the edge of the sheet.
- Imbalance of the wheel (or of the spindle). An unbalanced, untrue wheel imparts infinite incisions on the mirror edge. These repeated incisions, impacting head-on onto the superposed layers can cause the silver to become detached from the glass or the paint to become detached from the copper.
- Excessive deep groove of a peripheral wheel or improper inclination of a cup wheel. The more metal which remains unprotected, the more contact with the atmosphere will promote deterioration. In other words, the edging process should reveal the metal layers the least possible.



## CHEMICAL AGGRESSION

While today's mirror backing paints are engineered to resist many forms of chemical attack there is still a limit to what they can endure. Furthermore, it must not be forgotten that the edge itself is not protected by the backing paint.

Here are some of the more typical chemicals likely to attack mirrors:

- Grinding coolant with high pH. Ground glass raises the pH of coolant and therefore recirculated coolant should be frequently changed (pH should be maintained in a range from 6 to 9).
- Adhesives and mastics typically contain solvents most of which can harm mirror backing. Care must be taken to select adhesives with non-corrosive solvents and to apply them in such a way as to allow the solvent to escape. Refer to sections "**COMPATIBILITY OF ADHESIVES WITH OUR MIRRORS**" and "**MIRROR INSTALLATION AND CLEANING GUIDELINES**" for more details.
- Adhesives can also leach out harmful chemicals from substrates such as gypsum board and particle board. All substrates should be sealed prior to mirror installation.
- Glass cleaners may contain ammonia or other chemicals harmful to the silver so they should never be allowed to spill or run over on to the mirror's edge.
- Airborne acids, alkali and solvents are frequently present on construction sites and in factories. Care should be taken to avoid them and mirrored rooms should remain well ventilated.

## MIRROR INSTALLATION AND CLEANING GUIDELINES

The best mirror job is one that is not only striking in appearance, but one that was trouble-free during installation. Proper techniques carefully and professionally employed can virtually guarantee this kind of result.

- Always use gloves when handling any mirror to prevent damage to the face or backing from skin-borne salts or chemicals.
- Never install mirrors on new plaster, new masonry or on a freshly painted wall without proper sealing. Also, do not install in any new construction area where airborne solvents or heavy-duty cleaners or chemicals are in the air.
- **Never install mirrors outdoors** without additional engineered protection for the backing of the mirror.
- The mirrors should have breathing space behind them when installed to prevent moisture entrapment, both during and after installation.
- Never install a mirror in contact with a splash board or sink back. Insist on at least 10mm of space between the bottom edge of a mirror and other surfaces. This will prevent moisture entrapment and permit drainage.
- Whenever possible, use mechanical means of installation, such as J-moldings, clips and screws, or framing, in preference to tapes, adhesives, mastics, etc. J-moldings should have weep holes. Mirrors should always have a 3mm neoprene setting pad between the mirror and clip or molding used.
- If mechanical means are not acceptable or practical, carefully choose the adhesive system you will use. For more information, refer to the section “**COMPATIBILITY OF ADHESIVES WITH OUR MIRRORS**” below.
- Cleaning of installed mirrors is also very important. Solid soils such as paint, excess edge sealant, felt buttons, tape, or adhesives should be razor-bladed off. Cleaning solutions should be mild, and preferably not contain ammonia, vinegar, bleaches or solvents. Cleaning solutions should be used to dampen the wiping cloth. Do not spray directly on mirror. Spraying directly on a mirror can allow material to run down and provide a source of edge contamination.
- Be sure to provide cleaning instructions for the new owner or the housekeeping staff after installation.
- New owners should also be advised of the need for proper ventilation and/or air conditioning in environments of high temperature and humidity.

## COMPATIBILITY OF ADHESIVES WITH OUR MIRRORS

Walker has not directly carried out any compatibility testing for any specific adhesives. We, instead, rely on a large body of information from our customers, who regularly use adhesives to install our mirrors. The adhesives most commonly used by our customers to install our mirrors are the mirror mastics manufactured by Palmer and Gunther and the neutral-cure silicone adhesives manufactured by companies such as GE and Dow-Corning. Based on the vast quantities of Walker mirror installed with the above-mentioned adhesives over several decades, we are comfortable in calling all of these adhesives "compatible" with Walker mirrors. Compatibility notwithstanding, we feel it important to remind you that there do remain risks in applying any adhesive to a mirror backing. These risks fall into three main categories.

- 1) Chemical leaching from adhering mirrors to unsealed substrates
- 2) Incomplete solvent evaporation from solvents trapped in the center of applied adhesive
- 3) Excessive solvent quantity/concentration found in certain batches of adhesives

In order to guard against these risks, we recommend that the following important precautions always be taken when installing mirrors with adhesives.

- Never install mirrors on new plaster, new masonry or on a freshly painted wall without proper sealing. Also, do not install in any new construction area where airborne solvents or heavy-duty cleaners or chemicals are in the air.
- When adhesives are used, do not apply dollops of material. When placed against a wall they will flatten to a larger, pancake-size diameter. Perimeters or diameters will dry relatively fast. This normally causes solvent or curing additives to be trapped centrally. As well as potential chemical attack of the mirror, this can detract from overall adhesive strength.
- Adhesives should be applied in a straight line with 10mm to 12mm beads. Beads should be vertical when installed. Do not loop or criss-cross beads. Looping or criss-crossing causes entrapped areas that prevent venting. Vertical application assures that either heavier than air or lighter than air fumes can escape.
- Caulking gun application is ideal. It allows adhesive application without mechanical contact of mirror backing with trowels, putty knives, etc. This minimizes scratch potential. Powered feed guns are available for cartridges, pails, and drums of adhesives.

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