

Instruction Manual

Axygen® Horizontal Gel Boxes



Cat. Nos.

- HGB-7
- HGB-10
- HGB-15
- HGB-20



Table of Contents

Safety Information	2
Packing Contents	3
Usage Guidance and Restrictions	4
Care and Maintenance	4
Setting Up the Horizontal Gel Boxes	5
Gel Preparation	6
Gel Pouring	7
Gel Running	8
Gel Staining and Viewing	8
Horizontal Gel Boxes, Combs, and Accessories Ordering Information.....	9
Solutions	12
Equipment Disposal	12
Warranty Statement	13

Warning

When used correctly, these units pose no health risk. However, these units can deliver dangerous levels of electricity and are to be operated only by qualified personnel following the guidelines laid out in this instruction manual.

Anyone intending to use this equipment should read the complete manual thoroughly.

Safety Information



To avoid electrical shock:

The unit must never be used without the safety lid correctly in position.



To avoid electrical shock:

The unit should not be used if there is any sign of damage to the external tank or lid.

These units comply with the statutory CE safety directives:

Low Voltage Directive: 2006/95/EC	RoHS Directive: 2011/65/EU
EMC Directive: 2004/108/EC	WEEE 2012/19/EU
IEC 61010-1	IEC 61326-1

Avoiding Damage to the Instrument



The units should never come into contact with the following cleaning agents, as these will cause irreversible and cumulative damage:

acetone, phenol, chloroform, carbon tetrachloride, methanol, ethanol, isopropyl alcohol, alkalis.

Package Contents – Axygen® Horizontal Gel Boxes

Units include tank, lid, Axygen Contrast Enhancer, electrodes, and the following accessories:

HGB-7

Tray sizes	7 x 7 cm, 7 x 10 cm
Recirculation ports	No
Combs	2 x 8 well, 1.5 mm thickness

HGB-10

Tray sizes	10 x 10 cm, 10 x 12 cm
Recirculation ports	Yes
Combs	2 x 10 multi-channel compatible well, 1.5 mm thickness

HGB-15

Tray sizes	15 x 10 cm, 15 x 15 cm
Recirculation ports	Yes
Combs	1 x 16 multi-channel compatible well, 1.5 mm thick 1 x 20 well, 1.5 mm thickness

HGB-20

Tray sizes	20 x 20 cm, 20 x 25 cm
Recirculation ports	Yes
Combs	2 x 20 multi-channel compatible well, 1.5 mm thickness 2 x 40 multi-channel compatible well, 1.5 mm thickness

The packing lists should be referred to as soon as the units are received to ensure that all components have been included. The unit should be checked for damage when received.

Please contact your supplier if there are any problems or missing items.

Usage Guidance and Restrictions

- ▶ Maximum altitude 2,000 meters.
- ▶ Temperature range between 4°C and 65°C.
- ▶ Maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.
- ▶ Not for outdoor use.

Care and Maintenance

Cleaning Axygen® Horizontal Gel Boxes

Units are best cleaned using warm water and a mild detergent. **Water at temperatures above 60°C can cause damage to the unit and components.**

The unit should be thoroughly rinsed with warm water or distilled water to prevent buildup of salts, but care should be taken not to damage the plate electrodes. Vigorous cleaning is not necessary or advised. Air drying is preferable before use.

The units should only be cleaned with the following:

- ▶ Warm water with a mild concentration of soap or other mild detergent.
- ▶ Compatible detergents include dishwashing liquid, Hexane, or aliphatic hydrocarbons.

The units should not be left in detergents for more than 30 minutes.

The units should never come into contact with the following cleaning agents, as these will cause irreversible and accumulative damage:

Acetone	Phenol	Chloroform	Carbon tetrachloride
Ethanol	Methanol	Isopropyl alcohol	Alkalis

RNase Decontamination

- ▶ Clean the units with a mild detergent as previously described.
- ▶ Wash with 3% hydrogen peroxide (H₂O₂) for 10 minutes.
- ▶ Rinse with 0.1% diethyl pyrocarbonate (DEPC)-treated distilled water.

Caution: DEPC is a suspected carcinogen, always take the necessary precautions when using. RNaseZAP™ (Applied Biosystems) can also be used. Consult the Instructions for Use with the Axygen Gel Boxes.

Setting Up the Horizontal Gel Boxes

Instructions for Fitting Electrode Cables

1. Note the position of the lid on the unit. This shows the correct polarity and the correct orientation of the cables: black is negative and red positive.
2. Remove the lid from the unit.
NOTE: If the lid is not removed, fitting the cables may result in the loosening of the gold plug and damage to the electrode.
3. Screw the cables into the tapped holes as fully as possible so there is no gap between the lid and the leading edge of the cable fitting.
4. Refit the lid.

Instructions for the Axygen® Contrast Enhancer

This can be used to enhance visibility of the wells, if desired, for easier gel loading. Use the black side for contrast during gel loading and reverse to the white side while the gel is running. If visible molecular weight (MW) markers are used, it will allow easier visualization of the markers.

Buffer Recirculation Ports

When to Use:

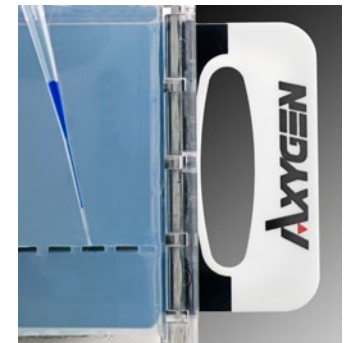
Buffer recirculation can be useful in preventing uneven sample migration especially in larger gels with migration problems of smiling, frowning, or non-straight sample lanes.

The recirculation ports are recommended when a run needs to be extended, run at a high voltage, or situations that might cause buffers to heat up. Poor quality sample separation can occur with overheating of the buffers.

Buffer recirculation ports are recommended for extended run times over 1.5 hours or for high voltage run settings between 150 to 200 volts.

Follow the steps below to fit and use the ports:

1. Carefully unscrew both grey port plugs from the safety lid. Do not discard these as they are required to be fitted when the unit is being run without buffer recirculation.
2. Insert one buffer recirculation port into one of the screw threaded holes in the lid with the clear tube part facing downwards so that it sits in the buffer reservoir. Tighten the screw.
3. Repeat step 2 for the other buffer recirculation port.



Axygen Contrast Enhancer with black side up for easier loading into wells. We recommend using Axygen gel loading tips for your Pipettors.

4. Fill the tank with the buffer ensuring there is an extra 0.5 cm to 1 cm of buffer above the gel.
5. Insert one end of the tubing from a peristaltic pump into the hole in one port making sure the tube is submerged in buffer. Repeat for the other end of the tube.
6. Start the peristaltic pump and set to a rate of 300 to 500 mL/min. Do not exceed these settings.
7. At the end of the run remove the tubes and lid. Replace the port plugs of the lid if the unit is going to be used for standard electrophoresis.

The unit is now ready to be used.

Gel Preparation

1. For a standard 0.7% agarose gel, add 0.7 grams of agarose to 100 mL of 1x TAE or TBE solution (see Solutions section). The same 1x solution should be used in the tank buffer solution. For a 5 mm thick gel 60 mL should be used.
2. Add the agarose powder to a conical flask.
3. Add the appropriate amount of 1x TAE or TBE solution (Table 1). To prevent evaporation during the dissolving steps below, the conical flask should be covered with parafilm.
4. Dissolve the agarose powder by heating the agarose either on a magnetic hot plate with stirring bar or in a microwave oven. If using the microwave method, the microwave should be set at approximately a 400 watt or medium setting and the flask swirled every minute. The solution should be heated until all crystals are dissolved. This is best viewed against a light background. Crystals will be translucent, but they will interfere with sample migration if not completely dissolved.
5. Optional: To facilitate DNA visualization after electrophoresis, add the fluorescent dye of choice, such as ethidium bromide at a final concentration of 0.5 µg/mL, to the solution prior to pouring the gel.

NOTE: Ethidium bromide is a suspected carcinogen and the necessary safety precautions should be taken.

Table 1. Volume of agarose solution required for most commonly used trays

Size Tray	Gel Volume for a 1 mm Thick Gel
7 x 7 cm	50 mL
7 x 10 cm	70 mL
10 x 10 cm	100 mL
15 x 10 cm	150 mL
15 x 15 cm	225 mL
20 x 20 cm	400 mL

The gel must be cooled to between 50°C and 60°C degrees before pouring.

Gel Pouring

Using Trays with Casting Dams

1. Fit the casting dams over each end of the tray and place onto a level surface. The dams should be fitted so there is no gap between the sides of the tray and the groove in the dams. This will ensure there is no possibility of gel leakage.
2. Place the comb(s) in the grooves. Each tray has more than one comb groove so that multiple combs can be used. Using multiple combs increases the sample number available per gel but decreases the run length, and care must be taken to ensure the samples from the first wells do not migrate into the lanes of the wells from the second comb.
3. Pour the agarose in carefully so as not to generate bubbles. Any bubbles that do occur can be smoothed to the edge of the gel and dispersed using a pipet tip.
4. Allow the agarose to set, ensuring that the gel remains undisturbed. This usually takes approximately 20 minutes at room temperature.
5. Carefully remove the gel casting gates and comb, and transfer the gel including tray to the main tank.

Using Traditional Tape Method

1. Autoclave or plastic-backed general tape should be used. A length of 5 cm longer than the width of each end of the tray should be cut. One length should be placed over one end of the tray and placed 1 cm in from the tray edge. This should then be folded and the edges sealed securely. Repeat for the other end and place onto a level surface for gel pouring.
2. Place the comb(s) in the grooves. Each tray has more than one comb groove so that multiple combs can be used. Using multiple combs increases the sample number available per gel but decreases the run length, and care must be taken to ensure the samples from the first wells do not migrate into the lanes of the wells from the second comb.
3. Pour the agarose in carefully so as not to generate bubbles. Any bubbles that do occur can be smoothed to the edge of the gel and dispersed using a pipet tip.
4. Allow the agarose to set, ensuring that the gel remains undisturbed. This usually takes approximately 20 minutes at room temperature.
5. Carefully remove the tape and comb, and transfer the gel including the tray to the main tank.

Gel Running

1. Mix the sample to be loaded with the sample buffer—see Solutions section for common sample buffers. Usually 3 μL of sample buffer is adequate, but less may be used with sample volumes of less than 10 μL .
2. Fill the unit with enough buffer so that it will just cover the gels when they are immersed. This will give the fastest resolution times. To enhance the resolution of the sample, fill the unit to 5 mm above the gel.
3. On the bench surface, load a small amount of running buffer to flood the wells. Load the samples into the wells using a pipet. Multi-channel pipets can be used for loading samples into wells formed by multi-channel compatible combs (Accessories section).
4. Once loaded, gently immerse the gels within the buffer, stacking them carefully on top of each other. Replace lid and connect the unit to the power supply using the cables.
5. Typically gels are run at between 90 and 150 volts. However, maximum voltages are indicated on the serial badge of each unit. It should be noted that higher voltages generally give faster but poorer quality sample resolution.

Gel Staining and Viewing

The gel trays allow staining to be performed without removing the gel from the tray if this is preferred.

1. Transfer the gel to a vessel containing the appropriate volume of 0.5 $\mu\text{g}/\text{mL}$ ethidium bromide stain for 15 to 30 minutes (see Solutions section for stock stain concentration), and adjust to the volume used accordingly. The entire gel should be covered.
2. De-stain the gel for 10 to 30 minutes in distilled water again ensuring the gel is completely immersed.
3. Rinse the gel twice for a couple of seconds with distilled water.
NOTE: If ethidium bromide was incorporated in the gel, skip steps 1 through 3.
4. Transfer the gel to a UV Transilluminator or Axygen® Gel Documentation System (Corning Cat. No. GD-1000 or GDBL-1000).
5. The samples will often appear as brighter, clearer bands when photographed or viewed using a gel documentation system. However, if the gel bands are too faint, the staining procedure should be adjusted so there is less de-staining. If there is too much background, the staining procedure should be adjusted so there is more de-staining.

Horizontal Gel Boxes, Combs, and Accessories

Ordering Information

Axygen Horizontal Gel Box, 7 cm

Corning Cat. No.	Description	Qty/Cs
HGB-7	Axygen horizontal gel box, 7 cm	1
HGB7-5-15	5-well comb for use with 7 cm gel box, 1.5 mm thickness	1
HGB7-8-075	8-well comb for use with 7 cm gel box, 0.75 mm thickness	1
HGB7-8-1	8-well comb for use with 7 cm gel box, 1.0 mm thickness	1
HGB7-10-1	10-well comb for use with 7 cm gel box, 1.0 mm thickness	1
HGB7-10-15	10-well comb for use with 7 cm gel box, 1.5 mm thickness	1
HGB7-12MC-1	12-well multi-channel compatible comb for use with 7 cm gel box, 1.0 mm thickness	1
HGB7-12MC-15	12-well multi-channel compatible comb for use with 7 cm gel box, 1.5 mm thickness	1
HGB7-16-1	16-well comb for use with 7 cm gel box, 1.0 mm thickness	1
HGB7-16-15	16-well comb for use with 7 cm gel box, 1.5 mm thickness	1

Axygen Horizontal Gel Box, 10 cm

HGB-10	Axygen horizontal gel box, 10 cm	1
HGB10-8-1	8-well comb for use with 10 cm gel box, 1.0 mm thickness	1
HGB10-10MC-1	10-well multi-channel compatible comb for use with 10 cm gel box, 1.0 mm thickness	1
HGB10-10MC-15	10-well multi-channel compatible comb for use with 10 cm gel box, 1.5 mm thickness	1
HGB10-12-075	12-well comb for use with 10 cm gel box, 0.75 mm thickness	1
HGB10-12-1	12-well comb for use with 10 cm gel box, 1.0 mm thickness	1
HGB10-12-15	12-well comb for use with 10 cm gel box, 1.5 mm thickness	1
HGB10-16-075	16-well comb for use with 10 cm gel box, 0.75 mm thickness	1
HGB10-16-1	16-well comb for use with 10 cm gel box, 1.0 mm thickness	1
HGB10-16-15	16-well comb for use with 10 cm gel box, 1.5 mm thickness	1
HGB10-16-2	16-well comb for use with 10 cm gel box, 2.0 mm thickness	1
HGB10-20MC-1	20-well multi-channel compatible comb for use with 10 cm gel box, 1.0 mm thickness	1
HGB10-20MC-15	20-well multi-channel compatible comb for use with 10 cm gel box, 1.5 mm thickness	1
HGB10-25-1	25-well comb for use with 10 cm gel box, 1.0 mm thickness	1
HGB10-25-2	25-well comb for use with 10 cm gel box, 2.0 mm thickness	1

Axygen Horizontal Gel Box, 15 cm

HGB-15	Axygen horizontal gel box, 15 cm	1
HGB15-8-1	8-well comb for use with 15 cm gel box, 1.0 mm thickness	1
HGB15-8-15	8-well comb for use with 15 cm gel box, 1.5 mm thickness	1
HGB15-10-1	10-well comb for use with 15 cm gel box, 1.0 mm thickness	1
HGB15-10-15	10-well comb for use with 15 cm gel box, 1.5 mm thickness	1
HGB15-12-1	12-well comb for use with 15 cm gel box, 1.0 mm thickness	1
HGB15-12-15	12-well comb for use with 15 cm gel box, 1.5 mm thickness	1
HGB15-14MC-1	14-well multi-channel compatible comb for use with 15 cm gel box, 1.0 mm thickness	1

Ordering Information (continued)

Corning Cat. No.	Description	Qty/Cs
HGB15-14MC-15	14-well multi-channel compatible comb for use with 15 cm gel box, 1.5 mm thickness	1
HGB15-14MC-2	14-well multi-channel compatible comb for use with 15 cm gel box, 2.0 mm thickness	1
HGB15-16-1	16-well comb for use with 15 cm gel box, 1.0 mm thickness	1
HGB15-16MC-1	16-well multi-channel compatible comb for use with 15 cm gel box, 1.0 mm thickness	1
HGB15-16MC-15	16-well multi-channel compatible comb for use with 15 cm gel box, 1.5 mm thickness	1
HGB15-16MC-2	16-well multi-channel compatible comb for use with 15 cm gel box, 2.0 mm thickness	1
HGB15-18MC-1	18-well multi-channel compatible comb for use with 15 cm gel box, 1.0 mm thickness	1
HGB15-18MC-15	18-well multi-channel compatible comb for use with 15 cm gel box, 1.5 mm thickness	1
HGB15-20-075	20-well comb for use with 15 cm gel box, 0.75 mm thickness	1
HGB15-20-1	20-well comb for use with 15 cm gel box, 1.0 mm thickness	1
HGB15-20-15	20-well comb for use with 15 cm gel box, 1.5 mm thickness	1
HGB15-20-2	20-well comb for use with 15 cm gel box, 2.0 mm thickness	1
HGB15-28MC-075	28-well multi-channel compatible comb for use with 15 cm gel box, 0.75 mm thickness	1
HGB15-28MC-1	28-well multi-channel compatible comb for use with 15 cm gel box, 1.0 mm thickness	1
HGB15-28MC-15	28-well multi-channel compatible comb for use with 15 cm gel box, 1.5 mm thickness	1
HGB15-30MC-1	30-well multi-channel compatible comb for use with 15 cm gel box, 1.0 mm thickness	1
HGB15-30MC-15	30-well multi-channel compatible comb for use with 15 cm gel box, 1.5 mm thickness	1
HGB15-35-15	35-well comb for use with 15 cm gel box, 1.5 mm thickness	1

Axygen Horizontal Gel Box, 20 cm

HGB-20	Axygen horizontal gel box, 20 cm	1
HGB20-16-075	16-well comb for use with 20 cm gel box, 0.75 mm thickness	1
HGB20-20MC-075	20-well comb for use with 20 cm gel box, 0.75 mm thickness	1
HGB20-20MC-1	20-well multi-channel compatible comb for use with 20 cm gel box, 1.0 mm thickness	1
HGB20-20MC-15	20-well multi-channel compatible comb for use with 20 cm gel box, 1.5 mm thickness	1
HGB20-25-1	25-well comb for use with 20 cm gel box, 1.0 mm thickness	1
HGB20-30-1	30-well comb for use with 20 cm gel box, 1.0 mm thickness	1
HGB20-40MC-1	40-well multi-channel compatible comb for use with 20 cm gel box, 1.0 mm thickness	1
HGB20-40MC-15	40-well multi-channel compatible comb for use with 20 cm gel box, 1.5 mm thickness	1
HGB20-40MC-2	40-well multi-channel compatible comb for use with 20 cm gel box, 2.0 mm thickness	1
HGB20-50-2	50-well comb for use with 20 cm gel box, 2.0 mm thickness	1

Gel Trays

Corning Cat. No.	Description	Qty/Cs
HGB7-7-GT	Gel tray 7 x 7 cm for use with 7 cm gel box, UV transparent	1
HGB7-10-GT	Gel tray 7 x 10 cm for use with 7 cm gel box, UV transparent	1
HGB10-10-GT	Gel tray 10 x 10 cm for use with 10 cm gel box, UV transparent	1
HGB15-10-GT	Gel tray 15 x 10 cm for use with 15 cm gel box, UV transparent	1
HGB15-15-GT	Gel tray 15 x 15 cm for use with 15 cm gel box, UV transparent	1
HGB20-20-GT	Gel tray 20 x 20 cm for use with 20 cm gel box, UV transparent	1

Replacement Electrodes

HGB7-NE	Replacement negative electrode, 7 cm	1
HGB7-PE	Replacement positive electrode, 7 cm	1
HGB10-NE	Replacement negative electrode, 10 cm	1
HGB10-PE	Replacement positive electrode, 10 cm	1
HGB15-NE	Replacement negative electrode, 15 cm	1
HGB15-PE	Replacement positive electrode, 15 cm	1
HGB20-NE	Replacement negative electrode, 20 cm	1
HGB20-PE	Replacement positive electrode, 20 cm	1

Rubber Casting Dams

HGB7-CD	Casting dams for use with 7 cm gel box, set of 2	1
HGB10-CD	Casting dams for use with 10 cm gel box, set of 2	1
HGB15-CD	Casting dams for use with 15 cm gel box, set of 2	1
HGB20-CD	Casting dams for use with 20 cm gel box, set of 2	1

Accessories

HGB7-AD	Power supply adapters, 4 mm to 4 mm, 2/pk	1
HGB7-AD2	Power supply adapters, 4 mm to 2 mm, 2/pk	1
HGB-EL	Electrical leads (1 pair)	1

Solutions

1x TAE (Corning Cat No 46-010-CM) or 40 mM tris (pH 7.6), 20 mM acetic acid, 1 mM EDTA

50x (1L) dissolve in 750 mL distilled water:

- ▶ 242 g tris base (FW = 121)
- ▶ 57.1 mL glacial acetic acid
- ▶ 100 mL 0.5 M EDTA (pH 8.0)

Fill to 1L with distilled water.

1x TBE (Corning Cat No 46-011-CM) or 89 mM tris (pH 7.6), 89 mM boric acid, 2 mM EDTA

10x (1L) dissolve in 750 mL distilled water:

- ▶ 108 g tris base (FW = 121)
- ▶ 55 g boric acid (FW = 61.8)
- ▶ 40 mL 0.5 M EDTA (pH 8.0)

Fill to 1L with distilled water.

Sample Loading Dye

10x sample buffer stock consists of 50% glycerol, 0.25% bromophenol blue, and 0.25% xylene cyanole FF in 1x TAE buffer. Only 1 mL to 10 mL of the 10x loading dye should be prepared.

Ethidium Bromide Stock Solution

Add 10 mg of Ethidium Bromide to 1 mL distilled water for 10 mg/mL stock.

Equipment Disposal



According to Directive 2012/19/EU of the European Parliament and Council of 4th July 2012 on waste and electronic equipment (WEEE) as amended, the Axygen® Horizontal Gel Box is marked with the crossed-out wheeled bin and must not be disposed of with domestic waste.

Consequently, the buyer shall follow the instructions for reuse and recycling of waste electronic and electrical equipment (WEEE) provided with the products and available at the following link: <http://www.corning.com/WEEE>

Warranty Statement

Corning Incorporated (Corning) warrants that this product will be free from defects in material and workmanship for a period of three (3) years from date of purchase. CORNING DISCLAIMS ALL OTHER WARRANTIES WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. Corning's sole obligation shall be to repair or replace, at its option, any product or part thereof that proves defective in material or workmanship within the warranty period, provided the purchaser notifies Corning of any such defect. Corning is not liable for any incidental or consequential damages, commercial loss or any other damages from the use of this product.

This warranty is valid only if the product is used for its intended purpose and within the guidelines specified in the supplied instruction manual. This warranty does not cover damage caused by accident, neglect, misuse, improper service, natural forces, or other causes not arising from defects in original material or workmanship. Claims for transit damage should be filed with the transportation carrier.

In the event this product fails within the specified period of time because of a defect in material or workmanship, contact Corning Customer Service at the following numbers: USA: 1.800.492.1110; Canada: 1.978.442.2200. For other regions of the world, visit www.corning.com/lifesciences or see the included instruction manual for a list of worldwide support offices.

Corning's Customer Service team will help arrange local service where available, coordinate a return authorization number, or provide a return authorization number and shipping instructions. Products received without proper authorization will be returned. All items returned for service should be sent postage prepaid in the original packaging or other suitable carton, padded to avoid damage. Corning will not be responsible for damage incurred by improper packaging. Corning may elect for onsite service for larger equipment.

Some states do not allow limitation on the length of implied warranties or the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights. You may have other rights which vary from state to state.

No individual may accept for, or on behalf of Corning, any other obligation of liability, or extend the period of this warranty.

For your reference, make a note of the model and serial number, date of purchase, and supplier here.

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Register your product warranty online at www.corning.com/lifesciences/warranty.

For more specific information on claims, visit the Certificates page at www.corning.com/lifesciences.

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Corning Incorporated
Life Sciences

836 North St.
Building 300, Suite 3401
Tewksbury, MA 01876
t 800.492.1110
t 978.442.2200
f 978.442.2476

www.corning.com/lifesciences

**Worldwide
Support Offices**

ASIA/PACIFIC

Australia/New Zealand

t 61 427286832

China

t 86 21 3338 4338

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t 0800 376 8660

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**All Other European
Countries**

t 31 (0) 20 659 60 51

f 31 (0) 20 659 76 73

LATIN AMERICA

grupoLA@corning.com

Brasil

t (55-11) 3089-7400

f (55-11) 3167-0700

Mexico

t (52-81) 8158-8400

f (52-81) 8313-8589