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Corning® Bottle Top Dispenser

CORNING

Instruction Manual

Catalog Numbers:

6840
6841
6842
6843
6844
6845



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1.0 Introduction

Corning® Bottle Top Dispensers are volumetric instruments designed for convenient and safe dispensing of liquids with no loss of reagent. Depending on the model, they can accommodate volumes from 0.25 mL to 100 mL.

Cat. No.	Description	Volume range (mL)	Increment (mL)	Systematic Error (mL)	Random Error (mL)
6840	Corning Bottle Top Dispenser	0.25 - 2.5	0.05	±0.012	≤0.002
6841	Corning Bottle Top Dispenser	0.5 - 5	0.10	±0.030	≤0.005
6842	Corning Bottle Top Dispenser	1 - 10	0.20	±0.060	≤0.010
6843	Corning Bottle Top Dispenser	2.5 - 25	0.50	±0.150	≤0.025
6844	Corning Bottle Top Dispenser	5 - 50	1.00	±0.300	≤0.050
6845	Corning Bottle Top Dispenser	10 - 100	2.00	±0.500	≤0.100

2.0 General Precautions

2.1 General Safety Precautions

To avoid personal injury from chemicals, wear eye protection and use appropriate safety equipment and clothing. Please follow all safety instructions, as well as the operating procedures in this manual.

Highest safety precautions should be used when dispensing corrosive, radioactive, or hazardous chemicals.

- Observe the general safety regulations for handling chemicals (e.g., protective clothing, protective goggles).
- Always check the device for leak tightness and a firm position of the plug and socket connection before use.
- Never use force. Breakage of any part might lead to hazardous exposure for the user, as well as for other persons.
- Clean the device daily.
- The temperature of the dispenser and reagent should not exceed 40°C.
- The proper and secure function is only guaranteed by using the supplied discharge tube. Use only the original supplied discharge tubes.
- Never use damaged or deformed tubes. If the valve is damaged, the discharge tube might drop.
- The discharge tube should never face the user.
- The collection vessel should be placed underneath.
- Check all screw fittings for tightness approximately one hour after each dispenser has been assembled or disassembled. Temperature variations might lead to material expansions and therefore to leakages.
- If you are unsure about dispensing a specific chemical solution, please contact your local Corning representative.

2.2 Chemical Resistance

Use the Corning® Bottle Top Dispenser only with regard to the chemical resistance of materials and for the purpose for which it is intended. **Do not use** the Corning Bottle Top Dispenser for:

- ▶ PTFE swelling solvents
- ▶ Hydrofluoric acid
- ▶ Chemical solutions which react with platinum-iridium alloys

The following components that come directly in contact with reagents are made of chemical resistant materials:

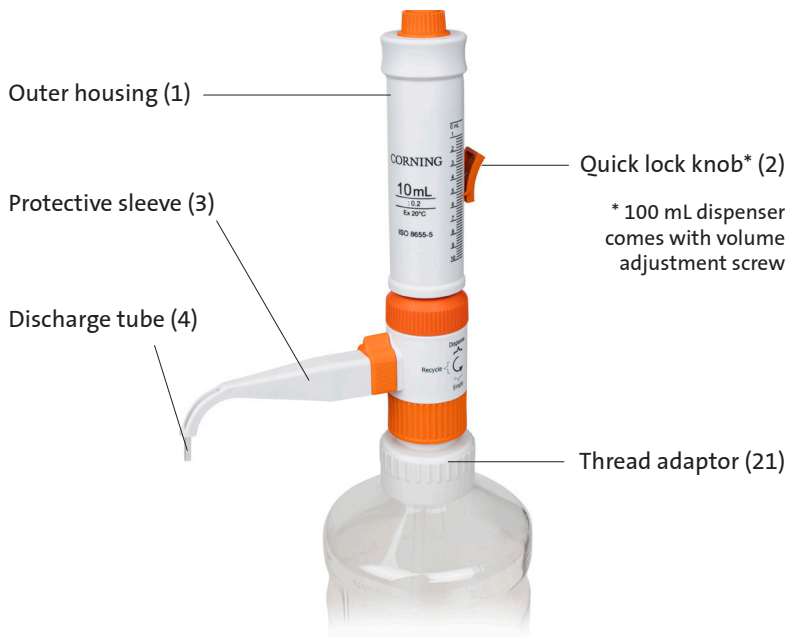
- ▶ Spring: platinum-iridium
- ▶ Valve balls: ceramic
- ▶ Piston: PTFE (polytetrafluoroethylene)
- ▶ Cylinder: borosilicate glass
- ▶ Tubing: FEP (fluorinated ethylene propylene)

3.0 Packing

Each Corning Bottle Top Dispenser is delivered with the following items:

Description	Quantity
Corning Bottle Top Dispenser with discharge tube	1
Telescopic suction tube	1
Calibration tool	1
Thread adaptors, with 4 different diameters	
▶ For models 2.5, 5, 10 mL: A25, A28, A40, A45	1
▶ For models 25, 50, 100 mL: A25, A28, A38, A45/32	
Instruction manual	1
Certificate of performance	1

4.0 Corning® Bottle Top Dispenser Design



5.0 Operating Instructions

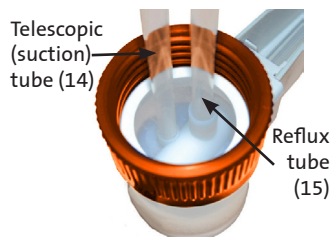
5.1 Before Initial Operation

- ▶ Check the device for damages.
- ▶ Make sure the telescopic tube reaches the bottom of the bottle.
- ▶ Do not use the outer housing (1) for carrying the assembled dispenser.
- ▶ Carefully attach the discharge tube (4) and protective sleeve (3) to avoid damage.
- ▶ When screwing the bottle on/off, do not hold the device at its outer housing (1), hold it at the screw base.
- ▶ Do not use the device before it has been completely assembled and a collecting vessel has been placed underneath.

5.2 Attachment of the Telescopic Tube

The reflux tube is already attached to the bigger socket.

- ▶ Put the telescopic (suction) tube into the smaller socket at the bottom part of the instrument.
- ▶ Check for the proper length of the telescopic tube (it should reach the bottom of the bottle).



5.3 Volume Adjustment

Dispenser size up to 50 mL

- ▶ Push the quick lock knob (2).
- ▶ Slide it down to the desired volume, and release.

Dispenser size 100 mL

- ▶ Untighten the volume adjustment screw.
- ▶ Move the adjustment screw down to the desired volume, and tighten the screw again.



5.4 Air-purging

- ▶ Turn the discharge tube to 90°.
- ▶ Set a small volume.
- ▶ To remove the air, raise and press the outer housing 2 to 3 times.
- ▶ Turn the discharge tube back to the 0° position, and fill it with liquid.
- ▶ Fill the cylinder up to the selected volume.

Your dispenser is now ready to use.



5.5 Dispensing

- ▶ Raise the outer housing until it stops.
- ▶ Press the outer housing to the lowest point to dispense.

NOTE: To achieve an exact dispensing volume, the movements should be smooth and constant.



5.6 Anti-drip System

- ▶ Turn the discharge tube to 180°. The liquid from the discharge tube will now dispense back into the bottle.
- ▶ In order to seal the dispenser, turn the discharge tube to 90°.



6.0 Cleaning

Before cleaning, follow these steps to remove all liquid without any loss of reagent from the Corning® Bottle Top Dispenser:

- ▶ Turn the discharge tube to 180°, and let the remaining reagent from the discharge tube flow back into the reagent bottle.
- ▶ Screw off the dispenser from the bottle.
- ▶ Drain the telescopic tube by slightly tapping inside the reagent bottle.
- ▶ Turn the discharge tube from 180° to 90°, and remove all of the remaining liquid from the cylinder back into the reagent bottle.

NOTE: Cleaning is necessary if you want to use the dispenser for another chemical solution or if not in use for a long period of time.

For cleaning, follow these steps:

- ▶ Fill the bottle with distilled water or alcohol.
 - ▶ Attach the telescopic tube, and screw the dispenser on to the bottle.
 - ▶ Turn the discharge tube to “Dispense” mode.
 - ▶ Dispense multiple times until the dispenser is cleaned.
- If necessary, disassemble the dispenser and clean all components. The dispenser should be cleaned daily if used with the following chemicals:
- ▶ Solutions with a tendency to build crystals (e.g., salts)
 - ▶ Inorganic oxidizing solutions (e.g., biuret reagent)

6.1 Sterilization

After removal of the reflux tube and telescopic tube, the dispenser can be steam-sterilized (121°C, 2 bar, 15 minutes) according to EN 285.

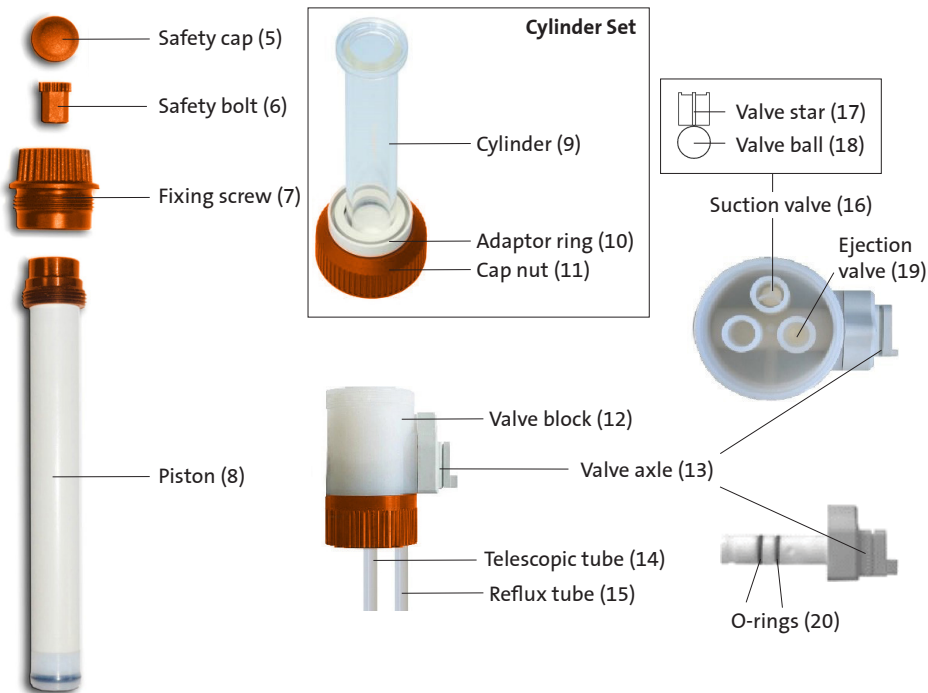
NOTE: The telescopic tube is not autoclavable.

- ▶ Place the dispenser on a cloth, and avoid contact with hot metal surfaces. The discharge tube has to be attached to the protective sleeve.
- ▶ In order to prevent loss of adjustment due to heat expansion of the different materials, the quick lock knob has to be set to a minimum 2/10 of its maximum volume. Before you use the dispenser, let it reach room temperature (about 2 hours cooling time).
- ▶ After autoclaving, check all screw fittings for tightness and all parts for deformations or other changes. The dispenser must be checked and recalibrated if necessary.

NOTE: Do not use any deformed or leaking parts. In case of deformation, please contact your local Corning representative.

7.0 Maintenance

7.1 Disassembling the Corning® Bottle Top Dispenser



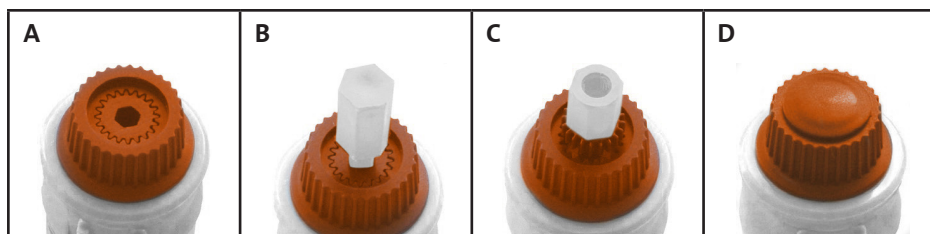
- ▶ Rinse the dispenser with distilled water or alcohol (Section 3).
- ▶ Remove the telescopic tube (14) and the reflux tube (15).
- ▶ Remove the protective sleeve (3) and then discharge tube (4).
- ▶ Loosen the fixing screw (7), and pull out the piston (8).
- ▶ Pull off the adaptor ring (10) from outer housing (1).
- ▶ Press down the quick lock knob (2), and pull it out of the slot.
- ▶ Remove the outer housing (1).
- ▶ Loosen the cap nut (11).
- ▶ Pull the cylinder set out of the valve block (12), keeping in mind that the valve star (17) and the valve ball (18) might fall out.
- ▶ Take the valve star (17) and the valve ball (18) out of the valve block (12).
- ▶ Pull the valve axle (13) out of the valve block (12).

7.2 Reassembling the Corning® Bottle Top Dispenser

- Push the valve axle (13) into the valve block (12).
- Place the valve ball (17) and the valve star (18) into the suction valve (16). Check that the edges of the valve star (17) point upwards.
- Attach the cylinder set to the valve block (12). Check that the notches of the cylinder set are placed exactly over the spikes of the valve block.
- Tighten the cylinder (9) with the cap nut (11). Check that all parts fit tightly.
- Slide the outer housing (1) on the cylinder (9).
- Place the device horizontally, and mount the quick lock knob (2) into the slot of the outer housing (1).
- Clip the adaptor ring (10) to the outer housing (1).
- Push the piston (8) into the cylinder (9) until it stops.
- Attach the fixing screw (7) to the outer housing (1).
- Attach the discharge tube (4) to the valve axle (13).
- Slide the protective sleeve (3) over the attached discharge tube (4).
- Push the reflux tube (15) and the telescopic tube (14) into the valve block (12).
- Screw the assembled device on to the reagent bottle.

8.0 Calibration

Corning® Bottle Top Dispensers are calibrated according to EN ISO 8655-5 and EN ISO 8655-6. After each assembly, calibrate the device following the instructions below.



- ▶ Remove the safety cap (A). The built-in recalibration mechanism will now be visible.
- ▶ Attach the calibration tool to the safety bolt (B).
NOTE: Alternatively, you can use a standard hex key (8 mm) for adjustment.
- ▶ Pull out the calibration tool together with the safety bolt. Now attach the calibration tool with the thicker side to the piston (C).
 - Use the calibration tool to correct the adjustment angle by rotating the outer housing. To recalibrate an undersized volume, rotate the outer housing clockwise. To recalibrate an oversized volume, rotate the outer housing counter-clockwise.
 - Attach the safety bolt to the piston.
 - Check the volume. If the measured volume exceeds the tolerance limits, calibrate the device again.
- ▶ If the calibration was successful, attach the safety cap (D).

9.0 Chemical Compatibility

Chemical	Compat.	Chemical	Compat.	Chemical	Compat.
Acetaldehyde	✓	Butyl methyl ether	✓	Dimethyl sulfoxide	✓
Acetic acid (100%)	✓	Butylamine	✓	Dimethylaniline	✓
Acetic acid (96%)	✓	Butyric acid	✓	Dimethylformamide	✓
Acetic anhydride	✓	Calcium carbonate	✓	1,4 Dioxane	—
Acetone	✓	Calcium chloride	✓	Diphenyl ether	✓
Acetonitrile	✓	Calcium hydroxide	✓	Ethanolamine	✓
Acetophenone	—	Calcium hypochlorite	✓	Ethyl acetate	✓
Acetylacetone	✓	Carbon tetrachloride	—	Ethyl alcohol	✓
Acetyl chloride	—	Chloronaphthalene	✓	Ethylbenzene	—
Acrylic acid	✓	Chloroacetaldehyde (45%)	✓	Ethylene chloride	—
Acrylonitrile	✓	Chloroacetic acid	✓	Fluoroacetic acid	✓
Adipic acid	✓	Chloroacetone	✓	Formaldehyde (40%)	✓
Allyl alcohol	✓	Chlorobenzene	✓	Formamide	✓
Aluminum chloride	✓	Chlorobutane	✓	Formic acid (100%)	✓
Amino acids	✓	Chloroform	—	Glycerol	✓
Ammonia (20%)	✓	Chlorosulfonic acid	✓	Glycol	✓
Ammonia (20%-30%)	✓	Chromic acid (50%)	✓	Glycolic acid (50%)	✓
Ammonium chloride	✓	Chromosulfuric acid	✓	Heating oil	—
Ammonium fluoride	✓	Copper sulfate	✓	Heptane	—
Ammonium sulfate	✓	Cresol	—	Hexane	—
n-Amyl acetate	✓	Cumene	✓	Hexanoic acid	✓
Amyl alcohol	✓	Cyclohexane	—	Hexanol	✓
Amyl chloride	—	Cyclohexanone	✓	Hydriodic acid (57%)	✓
Aniline	✓	Cyclopentane	—	Hydrobromic acid	✓
Barium chloride	✓	Decane	✓	Hydrochloric acid (20%)	✓
Benzaldehyde	✓	1-Decanol	✓	Hydrochloric acid (20%-37%)	✓
Benzol	✓	Dibenzyl ether	✓	Hydrogen peroxide (35%)	—
Benzine	—	Dichlorobenzene	✓	Isooctane	—
Benzoyl chloride	✓	Dichloromethane	—	Isoamyl alcohol	✓
Benzyl alcohol	✓	Dichloroacetic acid	✓	Isobutanol	✓
Benzylamine	✓	Dichloroethane	—	Isopropanol	✓
Benzyl chloride	✓	Dichloroethylene	—	Isopropyl ether	✓
Boric acid (10%)	✓	Diesel oil	—	Lactic acid	✓

Chemical Compatibility (continued)

Chemical	Compat.	Chemical	Compat.	Chemical	Compat.
Bromobenzene	✓	Diethanolamine	✓	Methoxybenzene	✓
Bromonaphthalene	✓	Diethyl ether	–	Methyl alcohol	✓
Butanediol	✓	Diethylamine	✓	Methyl benzoate	✓
1-Butanol	✓	1,2 Diethylbenzene	✓	Methyl butyl ether	✓
n-Butyl acetate	✓	Diethylene glycol	✓	Methyl ethyl ketone	✓
Methyl formate	✓	Phosphoric acid (85%) + Sulfuric acid (98%), 1:1	✓	Tartaric acid	✓
Methyl propyl ketone	✓	Piperidine	✓	Tetrachloroethylene	–
Methylene chloride	–	Potassium chloride	✓	Tetrahydrofuran	–
Mineral oil	✓	Potassium dichromate	✓	Tetramethylammonium hydroxide	✓
Monochloroacetic acid	✓	Potassium hydroxide	✓	Toluene	–
Nitric acid (30%)	✓	Potassium permanganate	✓	Trichloroacetic acid	✓
Nitric acid (30%-70%)	✓	Propionic acid	✓	Trichlorobenzene	–
Nitrobenzene	✓	Propylene glycol	✓	Trichloroethane	–
Oleic acid	✓	Pyridine	✓	Trichloroethylene	–
Oxalic acid	✓	Pyruvic acid	✓	Trichlorotrifluoro ethane	–
n-Pentane	–	Salicylaldehyde	✓	Triethanolamine	✓
Peracetic acid	✓	Silver acetate	✓	Triethylene glycol	✓
Perchloric acid	✓	Silver nitrate	✓	Trifluoro ethane	–
Perchloroethylene	–	Sodium acetate	✓	Trifluoroacetic acid	✓
Petroleum	–	Sodium chloride	✓	Turpentine	–
Petroleum ether	–	Sodium dichromate	✓	Urea	✓
Phenol	✓	Sodium fluoride	✓	Xylene	–
Phenylethanol	✓	Sodium hydroxide (30%)	✓	Zinc chloride (10%)	✓
Phenylhydrazine	✓	Sodium hypochlorite	✓	Zinc sulfate (10%)	✓
Phosphoric acid (85%)	✓	Sulfuric acid (98%)	✓		

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Internal tests are conducted with direct and continuous exposure of the Corning® Bottle Top Dispenser to the tested material.

10.0 Troubleshooting

Problem	Possible Cause	Solution
Piston moves with difficulty or is stuck.	Formation of crystals, dirty.	Stop dispensing immediately. Loosen the piston with circular motion, but do not disassemble. Follow all cleaning process (Section 6).
Filling not possible.	Filling valve stuck.	Follow cleaning process (Section 6).
Dispensing not possible.	Discharge valve stuck.	Follow cleaning process (Section 6).
Air bubbles in the instrument.	Reagent with high vapor pressure has been drawn in too quickly.	Repeat dispensing, lowering the speed.
	The instrument has not been primed.	Repeat air-purging.
	Filling tube is loose or damaged.	Replace the telescopic tube.
Dispensed volume is too low.	Dirty valve system.	Follow cleaning process (Section 6).
Leaking liquid between instrument and bottle.	Filling tube is too loose.	Replace the telescopic tube.

Operating Limits

- ▶ Vapor pressure: maximum 500 mbar
- ▶ Viscosity: maximum 500 mm²/s
- ▶ Temperature: maximum 40°C, minimum 1°C
- ▶ Density: maximum 2.2 g/cm³

10.1 Valve Clogging

NOTE: To avoid valve clogging, clean the dispenser if not in use for a period of time.

Release clogged valves with a thin object (wire, paper clip, etc.) by pushing the upper side of the ejection valve (19) and/or the bottom side of the suction valve (16). Make sure that you rinse the valves residue-free, since clogged valves may lead to leakage of the device.

11.0 Spare Parts and Accessories

Contact Corning Customer Service for availability of spare parts. The Corning® Bottle Dispenser Bottle catalog number and the name of the spare part are required.

Product	Volume/Size	Cat. No.
Outer housing	2.5 mL	6846
	5 mL	6847
	25 mL	6848
	50 mL	6849
	100 mL	6850
Valve head	2.5 - 10 mL	6851
	25 - 100 mL	6852
Cylinder set	2.5 mL	6853
	5 mL	6854
	10 mL	6855
	25 mL	6856
	50 mL	6857
	100 mL	6858
Volume rocker switch	2.5 - 50 mL	6859
	100 mL	6860
PTFE plunger	2.5 mL	6861
	5 mL	6862
	10 mL	6863
	25 mL	6864
	50 mL	6865
	100 mL	6866
Telescopic suction tube	2.5 - 10 mL	6867
	25 - 100 mL	6868
Borosilicate glass one-way valve	—	6869
Borosilicate glass calcium chloride tube	—	6870
Thread adapters made of Polypropylene	A32/A25	6871
	A32/A28	6872
	A32/A38	6873
	A32/A40	6874
	A32/A45	6875
	A45/A32	6876

12.0 Limited Warranty

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. This warranty does not cover pistons, O-rings, seals, valves and tubing, or damage to paint or finish. 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: USA/Canada 1.800.492.1110, outside the U.S. +1.978.442.2200, visit www.corning.com/lifesciences, or contact your local support office.

Corning Customer Service will help arrange local service where available or coordinate 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 number, serial number, date of purchase, and supplier here.

Model No. _____ Date Purchased _____

Serial No. _____ Supplier _____

Warranty/Disclaimer: Unless otherwise specified, all products are for research use only. Not intended for use in diagnostic or therapeutic procedures. Corning Life Sciences makes no claims regarding the performance of these products for clinical or diagnostic applications.

For additional product or technical information, visit www.corning.com/lifesciences or call 800.492.1110. Outside the United States, call +1.978.442.2200 or contact your local Corning sales office.

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