

Cole-Parmer®



Cole-Parmer®

DDW-200 Series
Ductless Downflow
Workstation

78902-60
78902-61

USER OPERATION MANUAL



Specifications are subject to change without notice or obligation

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Safety Warnings

- Read all instructions before proceeding and observe the installation procedure and environmental/electrical requirements.
- Anyone working with, on or around this equipment should read this manual. Failure to read, understand and follow the instructions given in this documentation may result in damage to the unit, injury to operating personnel and/or poor equipment performance.
- Any internal adjustment, modification or maintenance to this equipment must be undertaken by qualified service personnel.
- The use of any hazardous material in the cabinet must be monitored by an industrial hygienist, safety officer or some other suitably qualified individual.
- Explosive or inflammable substances should never be used in the cabinet unless a qualified safety professional has evaluated the risk involved.
- If chemical, radiological or other non-microbiological hazards are being used in the cabinet, additional protective measures should be taken. Additionally, the operation should be monitored by a suitably trained individual.
- If the equipment is used in a manner not specified by this manual, the protection provided by this equipment may be impaired.

Symbols



Warning of hazardous area or situation

Limitation of Liability

The disposal and/or emission of substances used in connection with this cabinet may be governed by various local regulations. Familiarization and compliance with any such regulations are the sole responsibility of the users of the cabinet. The liability of Cole-Parmer is limited with respect to user compliance with such regulations.

European Directive on Waste Electrical and Electronic Equipment (WEEE)



At the end of your product / accessory life, it must not be discarded as domestic waste. Ref: EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment Directive (WEEE). Please contact your distributor / supplier for further information. For end users outside of the EU consult applicable regulations.

Warranty

The manufacturer agrees to correct for the original user of the product, either by repair (using new or refurbished parts), or at the manufacturer's election, by replacement (with a new or refurbished product), any defects in material or workmanship which develop during the warranty period. The standard warranty is twelve (12) months after delivery of the product for Non-Consumable and Electrical parts, excluding Filters and other Consumables. In the event of replacement, the replacement unit will be warranted for the remainder of the original warranty period or ninety (90) days, whichever is longer. For purposes of this limited warranty, "refurbished" means a product or part that has been returned to its original specifications. In the event of a defect, these are your exclusive remedies.

If the product should require service, contact the manufacturer's/supplier's office for instructions. When return of the product is necessary, a return authorization number is assigned and the product should be shipped, transportation charges pre-paid, in either its original packaging or packaging affording an equal degree of protection to the indicated service center. To ensure prompt handling, the return authorization number must be placed on the outside of the package. A detailed explanation of the defect should be enclosed with the item. The warranty shall not apply if the defect or malfunction was caused by accident, neglect, unreasonable use, improper service, acts of God, modification by any party other than Cole-Parmer, or other causes not arising out of defects in material or workmanship.

EXCLUSION OF IMPLIED WARRANTIES. THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WHICH EXTEND BEYOND THE DESCRIPTION AND PERIOD AS STATED IN THE OPERATOR'S MANUAL INCLUDED WITH EACH PRODUCT. LIMITATION ON DAMAGES. THE MANUFACTURER'S SOLE OBLIGATION UNDER THE WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF A DEFECTIVE PRODUCT AND THE MANUFACTURER SHALL NOT, IN ANY EVENT, BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND RESULTING FROM USE OR POSSESSION OF THIS PRODUCT.

Some states do not allow: (A) limitations on how long an implied warranty lasts; or (B) the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may have other rights that vary from state to state.

I. Product Information

Cole-Parmer DDW-200 Ductless Downflow Workstations are high efficiency ductless fume hoods designed to protect the user and the environment from hazardous vapors generated on the work surface. Unrestricted front and side access facilitates applications requiring complex and intensive operator involvement, while downward airflow in the chamber protects the operator. Using innovative Filtration Technology, DDW-200 Downflow Workstations create a safe environment over the widest range of applications in the industry.

Visit our website for ductless downflow workstation specifications.

II. Unpacking Your Cabinet

This chapter aims to provide relevant information on how to handle the cabinet properly upon receipt. Failure to follow these instructions may damage the cabinet. We strongly advise you to read this chapter carefully before proceeding further.

2.1 Step-By-Step Procedure

1. Inspect the Crate, Pallet, Boxes.

- » Upon receipt of your new cabinet, inspect all cartons. If there is any visible damage to the exterior please contact us.

2. Moving the Pallet.

- » The pallet is designed to protect our cabinet from any foreseeable circumstances. However, excessive impact onto the boxes or pallet may also damage the cabinet. Prevent any direct impact or hitting to the pallet when moving.
- » When lifting the pallet, always ensure that the floor jack or mechanical lift truck has fully entered under the pallet in order to achieve stability. Failure to do so will increase the risk of the pallet falling off the floor jack or mechanical lift truck during handling. Please use a suitable extension bar when necessary.

3. Opening the Boxes.

- » If you did not receive one or more of the parts listed on the packing checklist, or if any of the items are damaged, please contact us.

4. Removing the Packaging Material.

- » The cabinet is protected by foam, cardboard and/or shrink-wrap.
- » If you find any damage during this stage of unpacking please contact us.
- » We recommend leaving the cabinet secured with straps to the pallet until the cabinet is located in its approximate final position to facilitate ease and safety in handling.

Note: Choosing the best location for your cabinet in order to achieve optimum operating performance is determined by a number of factors. Please refer to the next chapter for some guidelines.

5. Moving the Cabinet.

- » When lifting the pallet with the cabinet, always ensure that the floor jack or mechanical lift truck has fully entered under the pallet. This is to increase the stability of the cabinet and reduce the risk of the cabinet falling down. Please use a suitable extension bar when necessary. During the moving of the cabinet, ensure there is enough distance between the supports of the pallet and the ground. Dragging the pallet against the ground will damage the pallet and possibly your new cabinet.
- » When removing cabinet from pallet or placing cabinet onto pallet, use at least two people.

6. Removing the Strapping.

- » Remove the strapping by cutting it at a safe position to prevent any scratching the surface of your new cabinet.
- » Do not discard the packaging material for your cabinet until you have checked all of the components, installed and tested the unit.

7. Lifting the Cabinet.

- » The cabinet can be lifted in two sections: The HEAD unit and ENCLOSURE.
- » Install the cabinet on the existing work surface or Cole-Parmer support stand (if ordered).

Note:

- » When installing the cabinet onto an existing work surface, ensure that the structure can safely support the combined weight of the cabinet and any related equipment. Some modifications to the work surface may be necessary.
- » The work surface should be smooth, non-porous and resistant to the disinfectants and chemicals used in conjunction with the cabinet.

2.2 Packaging Contents

The following items are included with your manual:

- Test Certificate
- Test Report

In case this manual and/or test report is lost or misplaced, Cole-Parmer retains a copy in our files. A replacement copy can be obtained by contacting Cole-Parmer and providing the cabinet model, serial number and a brief description of the information desired.

III. Installing Your Cabinet

3.1 Choosing a Suitable Location

Location impacts the nature and extent of external airflow disturbances, which may affect performance of the cabinet when it is exposed to these disturbances.

When installing the cabinet, it should be located as far away as possible from sources of airflow disturbance and in an orientation which optimally shields the airflow of the cabinet from all external airflow disturbances. Please note that the cabinet should not be placed close to another cabinet.

Please follow these guidelines when choosing a suitable location for your cabinet:

- The location must be far away from:
 - » Personnel traffic flows.
 - » Air vents (in and out).
 - » Doors and windows.
 - » Any other sources of disruptive air currents or air drafts.
- If drafts or other disruptive air currents exceed the face velocity of the filter, the potential exists for contaminated air to enter the work zone of the cabinet.

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- A minimum distance of 50 cm (20 in) to the top of the ceiling is recommended for blower changing purposes.
- A clearance of 183 cm (6 ft) in front of the cabinet is strongly advised in order to maintain proper airflow.
- Please permit adequate space for cleaning behind the cabinet.

3.2 Environmental / Electrical Conditions

The equipment is designed to be safe for at least the following conditions:

- » Indoor use.
- » Altitude < 2,000 m (6,562 ft).
- » Temperature range 5°C to 40°C (41°F to 104°F) ambient.
- » Relative humidity <80% up to 31°C (88°F) decreasing to <50% at 40°C (104°F).
- » UL Installation Category II.
- » UL Pollution Degree 2.
- » Continuous operation.
- » Electrical supply tolerance of -10% / +10%.
- » 120VAC, 60Hz, 10A or 230VAC, 50Hz, 5A.
- » Fuse: 250V, 10A, Time Lag for 120VAC or Fuse: 250V, 5A, Time Lag for 230VAC.
- » Always ensure unit is connected to a reliable and properly grounded receptacle.
- » Appliance inlet on this device is the disconnect device; appliance should not be positioned so that it is difficult to operate it.

Power Cord:

- » 1) For units intended to be operated at 120 volts (North America): Use a UL-listed and CSA-certified cordset consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.
- » 2) For units intended to be operated at 230 volts: Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

3.3 Installing Your Cabinet

1. Please refer to unpacking your cabinet.
2. Inspect your cabinet carefully. Should you find any defect please refer to our warranty.
3. Peel off any protective masking that was left on the cabinet during manufacturing.
4. Wipe down the interior and exterior of the cabinet with water or a mild household detergent.
5. Connect cabinet to the main power supply and turn on the blower. Each cabinet requires its own dedicated 13A (230V) or 15A (115V) power outlet which should not be shared with other appliances.



WARNING! Do not move the cabinet without observing the following precautions:

- Observe the necessary precautions when relocating the cabinet, as it is heavy.
- Warning - Tipping Hazard. Pushing high up on the unit may cause system to tip over. Be careful when moving. Move with assistance only.

3.4 Set Up

Your Cole-Parmer product is shipped in one piece. The following instructions and photos explain how to:

- Set up the main unit.
- Fit the main filter and the pre-filter.
- Adjust the fan-speed/airflow control.
- Adjust the filter blockage alarm.

Prior to beginning assembly, ensure the following:

1. Area is free of obstructions, tripping hazards, etc.
2. Ample clearance is available on sides and overhead.
3. Appropriate number of personnel are on hand: two people recommended.

Unpack the Unit

1. Place the unit on the work bench in location required.
2. Remove protective film from the unit panels if installed.



Filter Installation

3. Using the key supplied, unlock both ends of the blue cover door to access filter compartment on head unit.



4. Release the blue levers and unscrew until the main filter just fits into the filter clamps or the red filter hold-down bar.

(Depending on manufacture date, this may instead be a black knob.)



5. Unwrap the main filter from bag.
6. Slide filter unit in place, ensuring that the side with the foam rubber gasket is on the downside. Use caution not to damage gasket while sliding in.
7. Re-screw the blue levers (or black knobs) until the filter is held in the filter clamps.
8. Raise the blue levers to use the lever cam action to increase the clamp on the filter so that the filter gasket is about 50% compressed.
9. When stacking filters, place HEPA on bottom and carbon on top.



10. Note your filter details on the Filter Maintenance sticker for easy reference and place sticker in convenient location on outside of unit. You may also write the install date on the filter itself.



11. Replace the front blue cover to the filter compartment. Turn locking key until dots align indicating lock is engaged. PLEASE KEEP THIS KEY IN A SAFE PLACE.



Pre-Filter Installation

12. Normally, pre-filter is installed at the factory. However, if replacing, unpack pre-filter from bag.
13. Lift stainless work surface off base.
14. Place pre-filter on top of inlet vent towards back of unit.
15. Re-fit base plate onto unit.



WARNING! Sharp Edge.

Please use caution when lifting the stainless steel work top as sharp edges may be present on the lower side.



16. To calibrate the filter blockage alarm (see calibration section), use a screwdriver to adjust the screw inside the calibration port (same side as power inlet). **NOTE:** Adjustment screw is made of nylon, so please use care not to damage the screw.



3.5 Performance Validation / Certification

After installation and prior to use, cabinet performance must be validated and certified to factory standards. The following tests should be performed:

Airflow Velocity

The testing methods and equipment required are specified on the test report. It is recommended that these tests be performed only by a qualified technician who is familiar with the methods and procedures for certifying these types of cabinets.

3.6 Importance of Performance Validation / Certification

An airflow velocity value that falls below the value specified inside the test report will not provide adequate operator protection.

3.7 Disclaimer

The performance of the cabinet, while rigorously evaluated at the factory, cannot be guaranteed after transit and installation. Therefore the onsite testing is always recommended.

IV. Operating Your Cabinet

4.1 Control System

Advanced Control Panel

The **advanced control panel** includes an On/Off switch, Hour Counter with preset alarm intervals for pre-filter and main filter change out and Filter Blockage alarm. If the indicator lamp starts to flash intermittently or stays illuminated, the filters are beginning to become blocked and airflow may be reduced to unsafe levels. Check airflow and/or replace filters as needed. Alarm may be reset and tested.

4.2 Cabinet Operating Procedure

- The fume hood should only be operated with the correct filter installed for the application. Refer to [Filter Information](#) for further information. The ductless fume cabinet must not be used for laboratory work in which chemicals of different types are used that do not match the filter type or that the primary chemicals and their byproducts are not known. The ductless fume cabinet should not be used for different chemical processes where chemicals from the different processes could react in the filter.
- To start the system, apply power to the system and switch on the green power On/Off switch. The lights and fan will automatically turn on.
- Check the airflow and the filter condition of the cabinet on a regular basis. This is covered in the maintenance section.
- Please note, filter blocks do not absorb carbon monoxide or hydrogen. Small quantities will not cause hazards because of the large dilution factor from the amount of air passing through the cabinet and the retardation of the chemical in the filter matrix.
- Cole-Parmer fume hoods have been designed to handle fumes and vapors given off during everyday laboratory procedures. These will be at the parts per million (PPM) level in the air stream entering the filter block. It is not recommended that large quantities of solvents or acids be used or boiled off in the cabinet.
- In the event of a large spillage in the cabinet, the amount of fumes entering the filter block may temporarily reduce the efficiency of the filter. For this reason any major spillage must be cleared up immediately, preferably using spillage absorption granules rather than paper, which may aggravate the evaporation of toxic fumes from the spillage area.
- Following a major spillage, the filters must be changed, as the heat of wetting may reduce the efficiency of the filter. After a period of stabilization, the old filters may be reused, providing they have not reached the saturation level.
- The electrical equipment in the cabinet such as the lights and controls are not in the dirty air stream of the system. The system should not be used in a flammable room atmosphere. Special modified cabinets can be provided for use in these areas. Contact Cole-Parmer for further information on these applications.
- Operators should avoid sudden movements within the fume cabinet, such as rapid opening or closing of the sash window, as this may cause temporary reversal of the airflow.
- The operators should maintain the normal safety equipment and procedures for dealing with hazardous chemicals. Maximum weight load on the work surface is 25 pounds.



WARNING!

- » This equipment should not be used in a flammable room atmosphere. The ductless fume hood should only be operated with the correct filter installed for the application and must not be used for work in which chemicals of different types are used that do not match the filter type or that the primary chemicals or their byproducts are unknown. It should not be used for different chemical processes where chemicals from these processes may react in the filter.
- » Do not use a gas flame (Bunsen burners) whenever possible, as it interferes with airflow.
- » Do not change the original blower speed of the cabinet unless the change is required by a decrease in measured air velocity. Adjustment should be made only by a qualified technician. Do not operate the cabinet if fan fails to run.
- » Minimize arm movement. Move arms in and out of the cabinet slowly to avoid disrupting cabinet airflow.
- » Use absorbent pads on the work surface where appropriate to minimize splatter and aerosol generation in case of spillage.
- » Keep lids/covers on all containers, dishes or sample plates.

V. Monitoring

5.1 General

The purpose of the monitoring program is to ensure consistent reliability from the system. This is achieved by checking the following:

- » If the pre-filters become blocked, the velocity of the cabinet will begin to fall and will eventually cause the filter blockage alarm to illuminate.
- » Manual checking of the main filters by the use of a Gastec™ or Draeger™ test kit will confirm the condition of the filters.

5.2 Manual Monitoring

Manual monitoring of the cabinet should be carried out at least once per year, as this will ensure the monitoring systems are all within calibration and performing correctly.

Airflow Measurements

The inflow velocity of the hood should be checked directly on the work surface using a 4" rotating vane anemometer or similar. Hot wire instruments are not recommended.

Manual Filter Testing

The condition of the filter is to be checked using a Gastec or Draeger test kit. Boiling off a suitable chemical normally used in the cabinet or a controlled release should challenge the filter. Examples can include alcohols, toluene and trichloroethylene.

For testing acid filters (acid adsorbing) or multi combination layered filters incorporating an acid layer, use sulphur dioxide gas (SO₂) at 2 bubbles per second through water.

The results are to be recorded on a service sheet or system log sheet.

If a significant amount of chemical is noted at the exhaust of the system, the main filters should be changed.

VI. Maintenance

6.1 General

In some countries it is mandatory to maintain written records of checks, tests and repairs carried out on safety equipment. These records must be kept for 5 years. A full list of Occupational Exposure Limits should be obtained from your safety officer.

Regular preventative maintenance on the cabinet will reduce the possibility of hazard to the operator and ensure reliable performance from the cabinet.



WARNING! Before attempting inspection and repairs to the cabinet, please ensure main power to the system has been removed and that the power lead has been removed. It should also be noted that fume cabinets are sometimes used to contain and protect users of the cabinet from hazardous or harmful substances. Before commencing this schedule it is important to ensure the cabinet is safe to work on.

6.2 General Cleaning

Wipe down the unit with only soapy water.

6.3 Pre-Filters

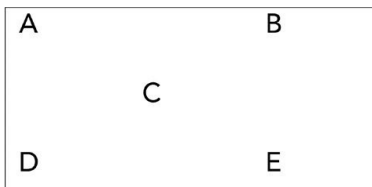
Check condition and replace if required.

6.4 Lights

Ensure that the light diffuser is clean before switching the system on. Check that the light is in working condition.

6.5 Airflow

Check and record the inflow air velocity at the working surface as follows: Using a calibrated rotating large anemometer (ideally 3" vane or larger) or similar approved airflow meter, take a minimum of 5 readings across the work surface as shown below. A rotating vane is recommended for information to calculate an average over a group or worktop perforations whereas a hotwire may show a dead spot if placed at a point over the stainless steel. Do not take readings over solid areas. Calculate the average airflow, which should be greater than 0.4 m/sec or 80 fpm +/- 10%. The readings should be recorded on the service sheet or system log.



$$\frac{A+B+C+D+E}{5} = \text{Average}$$

6.6 Calibration Instructions

Testing the Filter Blockage Alarm

- » Ensure the fitted pre-filters are new. Switch on the cabinet; the red/amber neon should not be illuminated.
- » Switch the unit off. Block the pre-filter using paper or cardboard to permit airflow of <math><0.3\text{ m/sec}</math> or 60 fpm.
- » Switch the unit on. The red/amber neon should illuminate. If not, the calibration should be reset.

Calibration

The filter blockage alarm operates using a differential pressure switch to detect a “high vacuum” situation when the pre-filter is blocked or blocking up. The pressure switch is calibrated and tested prior to leaving our factory and under normal circumstances will not require any adjustment.

- » With the cabinet running and the pre-filter blocked as described above, locate the grey pressure switch through the hole in the right hand sidewall. Adjustment is made by turning the small screw in the end of the switch. ([See Photograph #16](#)).
- » Adjust the screw to make the alarm show. You may have to repeat these steps to ensure an accurate setting has been achieved.
- » Remove the blockage and restart the machine. The red/amber neon should not be illuminated.

6.7 Changing Out Filters



WARNING! Ensure persons removing filters are made aware of any potential hazards and that they are provided with any necessary protective clothing and equipment.

Hazards associated with the removal and disposal of used filters will depend on the application of the hood. If an activated carbon filter is used with hydrocarbon solvents, the filter will retain the solvents without loss, and can be removed in the laboratory. The used filter should be sealed into a plastic bag prior to disposal, preferably by incineration.

If the filter has contained any dangerous materials such as asbestos dust or radioactive chemicals, operator protection is advised, including the use of a respirator. The used filters may require disposal by a specialist company.

NOTE: CONSULT YOUR SAFETY OFFICER OR INDUSTRIAL HYGIENIST BEFORE REMOVING OR DISPOSING OF ANY FILTERS.

Pre-Filters

The pre-filter is located below the work surface. Remove the work surface. Remove the filter and place it into a bag. Seal for disposal. Refit the new filter and refit the pre-filter tray.

Main Carbon / HEPA Filter



WARNING! Disconnect the power supply before removing filter access cover.

- Remove the front cover to gain access to the filter. Loosen the filter clamps. Lift the filter slightly to break the seal and then withdraw the filter. Place the filter in a plastic bag. Seal the bag for disposal.
- Slide the new filter into position by pushing the filter fully into the module. Refit the front cover and lock it in position.
- Please note, sometimes after new filters are fitted, it may be necessary to recalibrate the airflow system. This procedure can be found in Calibration Instructions.

6.8 Airflow Adjustment

The speed controller on the cabinet can be accessed behind the main control panel.

6.9 Maintenance Schedule

Please follow the suggested maintenance schedule in order to maintain your Cole-Parmer cabinet at its optimum performance.

Monthly

- Using a damp cloth, clean the exterior surfaces of the cabinet, particularly the front and top of the cabinet, to remove any accumulated dust. When needed use soap or other household mild detergent.

Quarterly

- Replace pre-filters.
- All monthly activities.

Semiannually

- Replace all HEPA filters.
- All quarterly activities.

Annually

- Replace all main carbon filters.
- All semiannual activities.

Biennially

- Replace fluorescent lamps.
- All annual activities.

6.10 User Monthly Maintenance Schedule

Model:		Year:	
Serial Number:		Responsible Person:	
Month	Clean Exterior Surface	Notes	By Who
Jan			
Feb			
Mar			
Apr			
May			
Jun			
Jul			
Aug			
Sep			
Oct			
Nov			
Dec			

6.11 Fault Finding



WARNING! Before attempting any inspection or replacement of electrical components, always isolate the cabinet from the main power supply and remove the power supply cable.

Fault	Check
Filter Blockage Alarm	<ul style="list-style-type: none"> • Check airflow at aperture • Check pre-filter is not blocked • Check fan is running • Recalibrate
Filter Saturated (Optional)	<ul style="list-style-type: none"> • Check filter condition with Gastec or Draeger test kit • Check filter seal • Check filter is correct for application • Check date on filter • Replace all filters
Fan Not Working	<ul style="list-style-type: none"> • Check inlet fuse • Check any loose wires to terminal blocks • Bypass speed controller; if fan works, replace speed controller • Replace fan capacitor • Replace fan

6.12 Component Changing

SHOULD ONLY BE CARRIED OUT BY TRAINED PERSONNEL



WARNING! Ensure main power supply has been removed prior to any work being carried out.

Light Units

To change a light unit, use the following instructions:

1. Ensure the power cord has been disconnected from the wall outlet.
2. Using the key supplied, unlock both ends of the blue cover door to access filter compartment on head unit.



3. Remove the light box cover screws located in the ceiling of the work zone.
4. Replace the light unit.
3. Replace the light box cover and tighten the screws.



VII. Filter Information

Filter Types

Cole-Parmer offers various types of activated carbon and particulate filter media. These formulas can be customized or layered into nearly limitless combinations to best suit your specific application. HEPA filters are available for applications involving particulates and can be combined together with any of our activated carbon filters.

7.1 Filter Descriptions

Item #	Description
78902-62	DDW-200 Downflow Workstation carbon filter for organic vapors including solvents and hydrocarbon vapors
78902-63	DDW-200 Downflow Workstation carbon filter for inorganic vapors including acids
78902-64	DDW-200 Downflow Workstation HEPA filter for powders and particulates
78902-65	DDW-200 Downflow Workstation carbon filter for lightweight aldehyde vapors, such as formaldehyde and glutaraldehyde

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