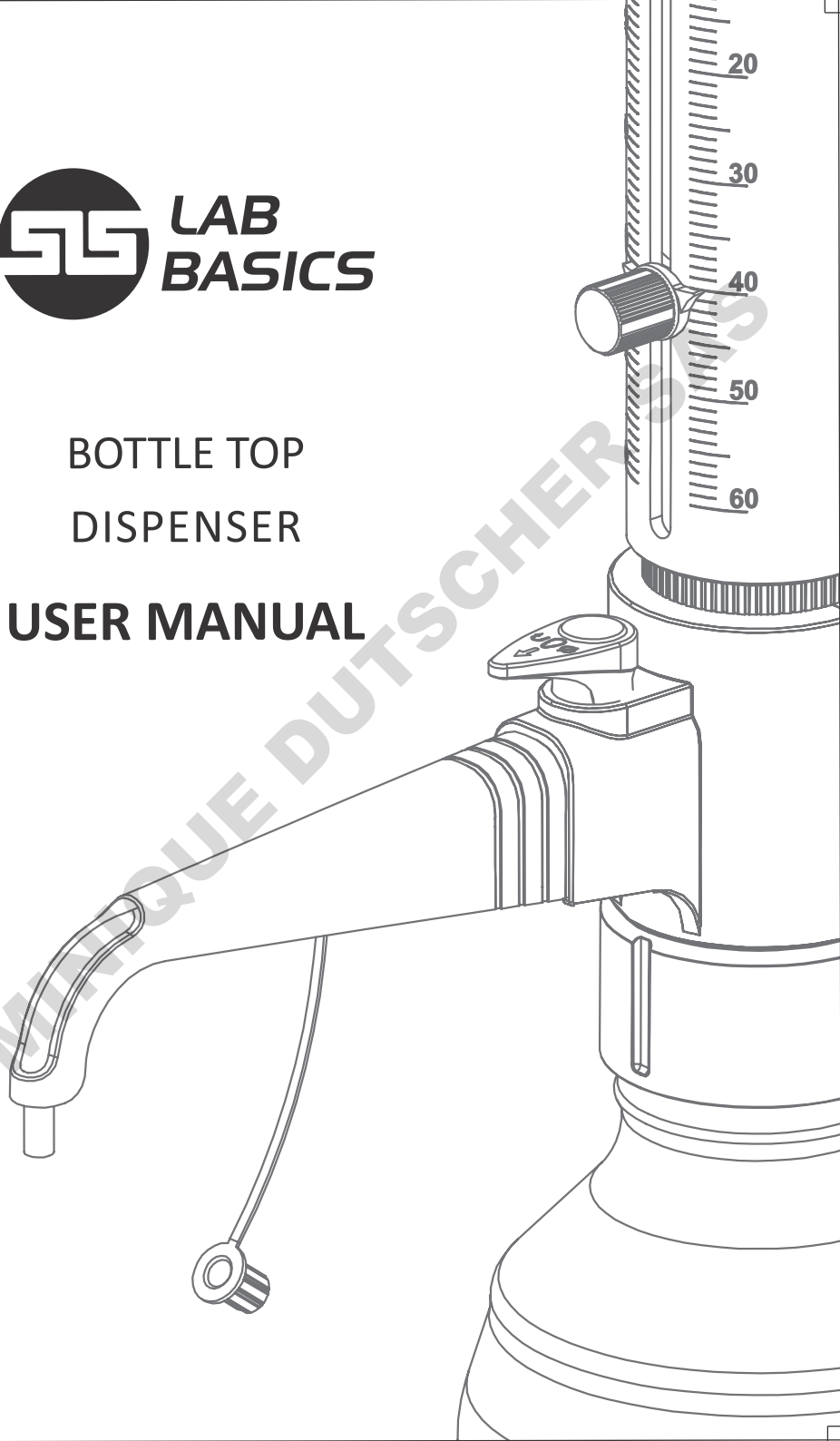
LAB BASICS

BOTTLE TOP DISPENSER

USER MANUAL



DOMINIQUE DUTSCHER S.A.S

DOMINIQUE DUTSCHER SAS

Instructions for use

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1. Safety Instructions

Please read the instruction manual carefully before using the dispenser. It is responsibility of the user for their own health and safety.

- Please use protective clothing, eye protection and gloves whilst working with hazardous liquids.
- Do not dispense flammable liquids into plastic vessels which generates static charge and can cause a fire.
- This device is not suitable for the following solutions.

  concentrated (hydrochloric acid, fluorinated hydrocarbons, saline solutions, nitric acid), highly concentrated alkaline solutions and solutions with crystals in.

  The liquids attacking FEP, PFA, PTFE, borosilicate glass, Al_2O_3, organic solvents, trifluoroacetic acid, explosive liquids, fuming acids, tetrahydrofuran, suspension (e.g. of charcoal) as solid particles.
- Please handle the dispenser carefully to avoid any accidents during usage.
- The nozzle should always point away from the user while dispensing. Avoid splashes.
- Always use suitable vessels for dispensing liquids.
- Never push the piston down while nozzle cap is on.
- Clean the discharge tube regularly.
- Please do not use excess pressure while aspirating or dispensing. The glass tube may break inside. Please follow the trouble shooting guide if you find any difficulty in moving the piston up and down.
- Please use original accessories to avoid accidents.

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2. Intended Use

Bottle top dispensers are generally used for dispensing small volumes of liquid repetitively.

The dispensers are made up of high grade plastics like PFA, FEP, PTFE etc. which ensures high performance and adaptability for most liquids.

In addition to ensure high accuracy true bore glass cylinder is used in the dispenser.

Easy to clean. The lower part is also autoclavable to avoid contamination.

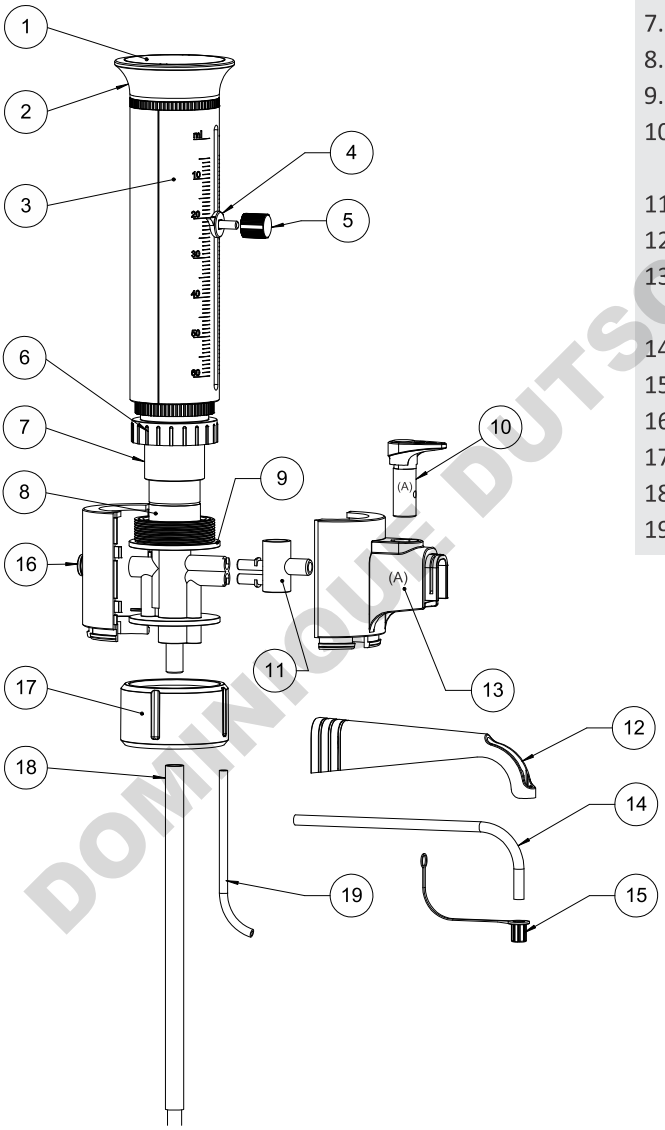
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2.1 Functions

This instrument is designed for dispensing liquids observing the following limits.

- +15°C to 40°C instrument and reagent.
- Vapour pressure up to 500 mbar.
- Density upto 2.2 g/cm^3
- Kinematic viscocity up to 500 mm^2/sec.
  (dynamic viscosity [mPas]=Kinematic Viscosity [mm^2/s] density[g/cm^3])

3. Overview



1. Cap
2. Head
3. Main Body
4. Pointer
5. Volume Knob
6. Cylinder Sleeve
7. Cylinder
8. Piston
9. Main Valve
10. Valve Piston
    (A) Recirculation Valve
11. Recirculation Valve
12. Spout
13. Front Cover
    (A) With Recirculation
14. Nozzle
15. Nozzle Cap
16. Air Plug
17. Adapter
18. Telescopic Filling Tube
19. Recirculation Tube

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4. Package Inclusions

The bottle top dispenser package includes the following:

- Bottle top dispenser - 1
- Telescopic filling tube - 1
- Recirculation tube - 1
- Bottle adapters - 4 (Thread sizes : 28, 38, 40 & 45mm)
- Calibration tool - 1
- User manual
- Certificate of conformity / Calibration report
- Warranty card

5. Assembly

1. Mounting the telescopic filling tube/ recirculation tube

Adjust length of the telescoping filling tube to the bottle height and attach it carefully in centre. If dispenser with recirculation valve mechanism is used, the optional recirculation tube should also be installed. Insert it with opening pointing outward (Fig. 1).

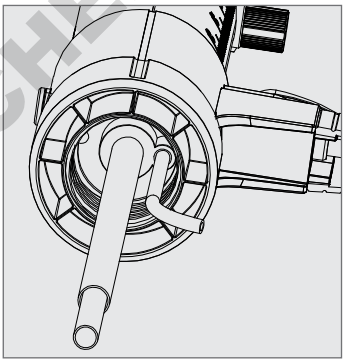


Fig.1

2. Mounting the dispenser on a bottle

Screw the dispenser (GL 32 threads) onto the reagent bottle and ensure to tighten it properly. It is preferable to align the nozzle with graduation mark on main body.

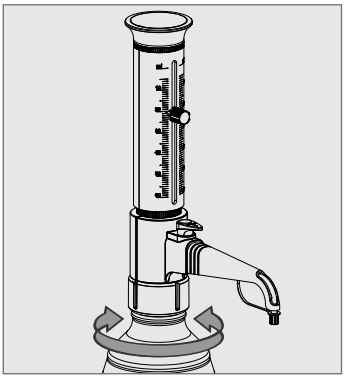


Fig.2

Note : For bottles with other thread sizes, select a suitable adapter.

The adapters supplied with the dispenser are made of polypropylene (PP), and can only be used for media which do not attack PP.

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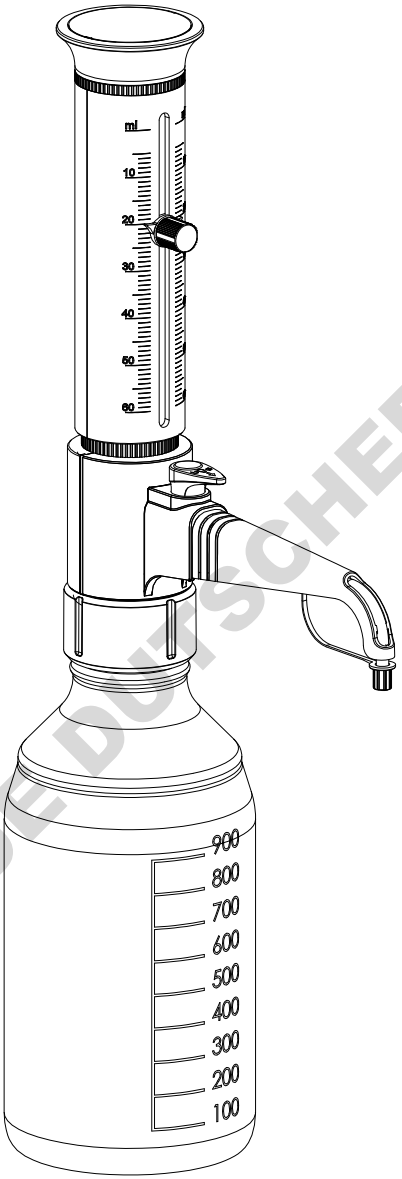


Fig.3

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⚠ WARNING

Always wear protective gloves when touching the dispenser or the bottle, especially when using dangerous liquids.

When mounted to a reagent bottle, always carry/use the dispenser in the upright position as shown in Fig.3

6. Priming

6.1 Bottle Top Dispenser with recirculation valve mechanism

WARNING

The nozzle should always point away from the user. Please ensure you never press down when the nozzle cap is mounted. Avoid splashing.

Please follow the following steps for priming **(with recirculation mechanism)**:

1. Adjust the knob to recirculation mode. (Fig.5)
2. Slowly pull up the piston and push it down rapidly till the end. Repeat this process until air bubbles disappear from the cylinder. (Fig.6)
3. Change the knob to dispense.

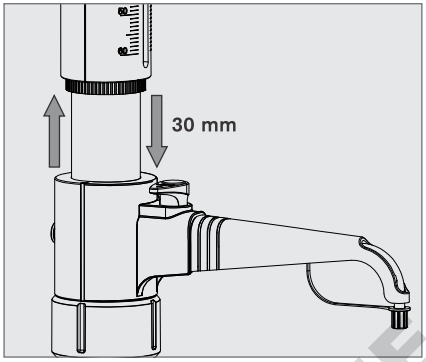


Fig.6

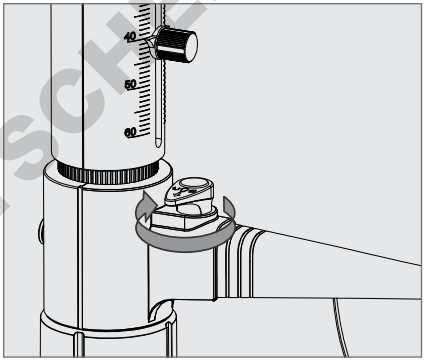


Fig.5

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7. Operating Instructions

7.1 Volume Setting

1. Turn the volume setting knob in anti clock wise direction.
2. Adjust the knob to desired volume by moving it up or down.
3. Match the pointer with the graduation mark and tighten the knob in clockwise direction.

Now your dispenser is ready to work at your desired set volume. (Fig.8)

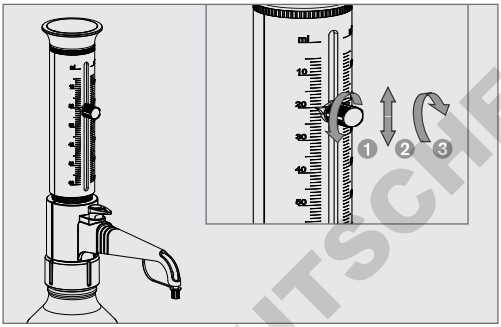


Fig.8

7.2 Dispensing

WARNING
Please follow all safety instructions before you start.

1. Follow priming process before you start (as shown in 6.Priming).
2. Turn the knob to dispensing.
3. Keep a vessel below the nozzle.
4. Set your desired volume (as shown in 7.1 Volume setting).
5. Gently pull the piston until the upper stop and then push down the piston until lower stop.
6. Touch the nozzle against the inner wall of the receiving vessel. Repeat this process as per number of dispensing cycles required.
7. Close the nozzle cap to the nozzle.

Note : Do not use excessive force while pushing the piston down. If the piston is jammed, follow trouble shooting guide (12).
Before you fix the nozzle cap, ensure that the piston is at lower stop.

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8. Cleaning

Clean the dispenser regularly for it's smooth functioning.

In the event of any of the following ensure the dispenser is thoroughly cleaned.

- If the piston is stuck inside the glass tube
- Before changing of reagents
- If the dispenser will not be used for an extended period
- Before autoclaving process
- Before any maintenance

Wear suitable eye protection and protective clothing.

Follow Steps for cleaning:

1. Completely dispense out the liquid present inside the dispenser.
2. Mount the dispenser on a bottle filled with deionised water or any other suitable cleaning agent and rinse the dispenser several times.
3. Pull off the telescopic tube and recirculation tube and clean it with the deionised water.
4. For recirculation, change the knob position to recirculation mode. Again rinse the dispenser for several times.

Steps to clean the piston and glass barrel:

This procedure must be followed if the piston is difficult to move or if dispenser is to be autoclaved.

1. Unscrew the head as shown in Fig. 9
2. Take out the piston completely as shown in Fig. 10
   Clean the piston & glass barrel and put them back in their original position and screw the head back on

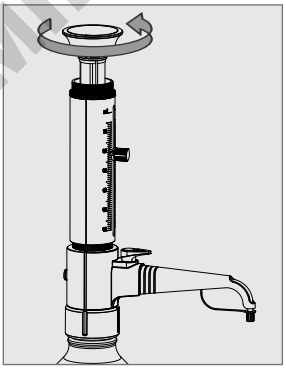


Fig. 9

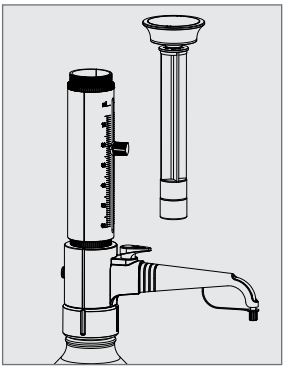


Fig. 10

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9. Error Limits

Error limits related to the nominal capacity (= maximum volume) indicated on the instrument, are obtained using distilled water at an ambient temperature of 20°C. The calibration process is performed as per the EN ISO 8655-6 standard with a completely assembled instrument and uniform dispensing.

Volume (mL)	Increment (mL)	Inaccuracy (±) %		Imprecision (±) %	
		± %	± mL	± %	± mL
0.25 - 2.5	0.05	0.6	0.015	0.2	0.005
0.5 - 5	0.1	0.5	0.025	0.2	0.01
1 - 10	0.2	0.5	0.05	0.2	0.02
2.5 - 25	0.5	0.5	0.125	0.2	0.05
2.5 - 30	0.5	0.5	0.15	0.2	0.06
5 - 50	1.0	0.5	0.25	0.2	0.1
5 - 60	1.0	0.5	0.3	0.2	0.12

* The specifications (inaccuracy and imprecision) are decided on the basis of EN ISO 8655-5 standard.

10. Calibration

WARNING

During the calibration process take the lowest volume reading first, ensure not to move the body before you close the cap and then proceed to the medium and high volume.

Calibration check

1. Please follow complete calibration procedure as per EN ISO 8655-5 following environment conditions, water, weighing balance etc.

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Volume adjustment

Steps to calibrate the bottle top dispenser if there is a variation in the desired volume and actual volume:

1. Open the cap with calibration tool as shown in Fig. 11
2. Insert the hex tool on hex nut as shown in Fig. 12
3. Rotate the hex tool in clockwise direction to decrease the volume, rotate the hex tool in anti clockwise direction to increase the volume.

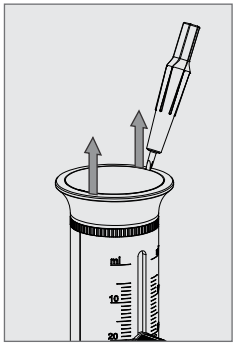


Fig. 11

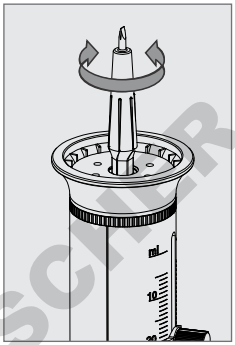


Fig. 12

11. Autoclaving

This dispenser is autoclavable under following conditions.

Temperature:	121°C
Pressure:	1.05 bar / 15 psi
Time:	Up to 20 minutes

WARNING

Exceeding the above conditions will cause damage to the parts.

1. Clean the dispenser thoroughly as described in cleaning section before you start autoclaving.
2. Remove the following parts:
   a) Pull out the piston by unscrewing the head
   b) Pull off the nozzle cap and telescopic filling tube
3. Autoclave all the parts as per above procedure.
4. Cool down the parts for at least 8 hours at room temperature and then reassemble.

It is recommended to do quick calibration check.

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12. Troubleshooting

Issue	Possible root cause	Corrective action
Piston jam	Formation of crystals or dirt accumulation	Immediately stop dispensing. Do not use extra force to dispense the liquid. Follow cleaning procedure. (8.cleaning)
Liquid filling / dispensing issue	Valve piston contaminated or dirt accumulation	Follow cleaning procedure
Air bubble in the dispenser	Liquid with high vapour pressure has been drawn in too quickly	Try to draw the liquid slowly
	Priming issue	Prime the instrument
	Fitting of telescopic filling tube is loose	Connect the tube firmly
Leakage	Recirculation tube is not connected	Connect the recirculation tube

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Recommended Reagents

Below is a list of suitable reagents for use with the bottle top dispenser:

Acetaldehyde
Acetic acid (glacial), 100%
Acetic acid, ≤ 96%
Acetic anhydride
Acetone
Acetonitrile
Acetophenone
Acetyl chloride
Acetylacetone
Acrylic acid
Acrylonitrile
Adipic acid
Allyl alcohol
Aluminium chloride
Amino acids
Ammonia, ≤ 20%
Ammonia, 20-30%
Ammonium chloride
Ammonium fluoride
Ammonium sulfate
n-Amyl acetate
Amyl alcohol (Pentanol)
Amyl chloride (Chloropentane)
Aniline
Barium chloride
Benzaldehyde
Benzene (Benzol)
Petroleum ether bp 70-180°C
Benzoyl chloride
Benzyl alcohol
Benzylamine
Benzylchloride
Boric acid, ≤ 10%
Bromobenzene
Bromonaphthalene
Butanediol
1-Butanol
n-Butyl acetate

Butyl methyl ether
Butylamine
Butyric acid
Calcium carbonate
Calcium chloride
Calcium hydroxide
Calcium hypochlorite
Carbon tetrachloride
Chloro naphthalene
Chloroacetaldehyde, ≤ 45%
Chloroacetic acid
Chloroacetone
Chlorobenzene
Chlorobutane
Chloroform
Chlorosulfonic acid
Chromic acid, ≤ 50%
Chromosulfuric acid
Copper sulfate
Cresol
Cumene (Isopropyl benzene)
Cyclohexane
Cyclohexanone
Cyclopentane
Decane
1-Decanol
Dibenzyl ether
Dichloroacetic acid
Dichlorobenzene
Dichloroethane
Dichloroethylene
Dichloromethane
Diesel oil (Heating oil), bp 250-350°C
Diethanolamine
Diethyl ether
Diethylamine
1.2 Diethylbenzene
Diethylene glycol

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Recommended Reagents

Dimethyl sulfoxide (DMSO)
Dimethylaniline
Dimethylformamide (DMF)
1.4 Dioxane
Diphenyl ether
Essential oil
Ethanol
Ethanolamine
Ethyl acetate
Ethylbenzene
Ethylene chloride
Fluoroacetic acid
Formaldehyde, ≤40%
Formamide
Formic acid, ≤100%
Glycerol
Glycol (Ethylene glycol)
Glycolic acid, ≤50%
Heating oil (Diesel oil), bp 250-350°C
Heptane
Hexane
Hexanoic acid
Hexanol
Hydriodic acid, ≤57%
Hydrobromic acid
Hydrochloric acid, ≤20%
Hydrochloric acid, 20-37%
Hydrogen peroxide,≤35%
Isoamyl alcohol
Isobutanol
Isooctane
Isopropanol (2-Propanol)
Isopropyl ether
Lactic acid
Methanol
Methoxybenzene
Methyl benzoate
Methyl butyl ether
Methyl ethyl ketone

Methyl formate
Methyl propyl ketone
Methylene chloride
Mineral oil (Engine oil)
Monochloroacetic acid
Nitric acid, ≤30%
Nitrobenzene
Oleic acid
Oxalic acid
n-Pentane
Peracetic acid
Perchloric acid
Perchloroethylene
Petroleum, bp 180-220°C
Petroleum ether, bp 40-70°C
Phenol
Phenylethanol
Phenylhydrazine
Phosphoric acid, ≤85%
Phosphoric acid, 85%
Sulfuric acid, 98% 1:1
Piperidine
Potassium chloride
Potassium dichromate
Potassium hydroxide
Potassium permanganate
Propionic acid
Propylene glycol (Propanediol)
Pyridine
Pyruvic acid
Salicylaldehyde
Scintilation fluid
Silver acetate
Silver nitrate
Sodium acetate
Sodium chloride
Sodium dichromate
Sodium fluoride
Sodium hydroxide, ≤30%
Sodium hypochlorite

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Recommended Reagents

Sulphuric ≤98%
Tartaric acid
Tetrachloroethylene
Tetramethylammonium hydroxide
Toluene
Trichloroacetic acid
Trichlorobenzene
Trichloroethane
Trichloroethylene
Trichlorotrifluoroethane
Triethanolamine
Triethylene glycol
Trifluoroethane
Trifluoroacetic acid (TFA)
Turpentine
Urea
Xylene
Zinc chloride, ≤10%
Zinc sulfate, ≤10%

⚠ CAUTION:

Always follow instructions in the operating manual of the dispenser as well as the reagent manufacturer's specifications. In addition to these chemicals, a variety of organic and inorganic saline solutions (e.g. biological buffers), biological detergents and media for cell culture can be dispensed. If used with strong acids, it is advised to rinse & remove dispenser at the end of every working day & store it safely. If you require information on chemicals not listed, please contact us.

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