MAXIMUM QUANTITIES (GALLONS) OF FLAMMABLE & COMBUSTIBLE LIQUIDS FOR CLASS C (LOW HAZARD) LABORATORIES*

<table>
<thead>
<tr>
<th>Square Feet of Laboratory**</th>
<th>Sprinklered Flammable or Combustible Liquid Class</th>
<th>Un-Sprinklered Flammable or Combustible Liquid Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>I+II+III A***</td>
</tr>
<tr>
<td>100</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>200</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>300</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>400</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>500+</td>
<td>10=max</td>
<td>20=max</td>
</tr>
</tbody>
</table>

EXCLUDING quantities in storage cabinets and safety cans (amount permitted out in open lab)

<table>
<thead>
<tr>
<th>Square Feet of Laboratory**</th>
<th>Sprinklered Flammable or Combustible Liquid Class</th>
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<td>16</td>
</tr>
<tr>
<td>300</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>400</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>500</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>600</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td>700</td>
<td>28</td>
<td>56</td>
</tr>
<tr>
<td>800</td>
<td>32</td>
<td>64</td>
</tr>
<tr>
<td>900</td>
<td>36</td>
<td>72</td>
</tr>
<tr>
<td>1000</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>1500+</td>
<td>60=max</td>
<td>120=max</td>
</tr>
</tbody>
</table>

INCLUDING quantities in storage cabinets, safety cans, and out in open lab (total quantity allowed in laboratory)

* Per order of the Boston Fire Department.
** The area of offices and other contiguous areas of a laboratory unit are to be included when determining square footage of the laboratory unit.
*** The maximum quantities of Class I liquids shall not exceed the quantities specified for Class I liquids alone.

Revised 8/4/98
FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE

The Boston Fire Department restricts the amount of flammable and combustible chemicals that can be stored in any laboratory. The following tables are to help you determine which common chemicals fall in which category. Tabulate the respective amounts, compare these amounts to the liquid limits imposed by the BFD in its chart titled, "Maximum Quantities of Flammable & Combustible Liquids for Class C Laboratories."

**FLAMMABLE LIQUID:** A liquid having a flash point (the minimum temperature at which a liquid gives off vapor in sufficient concentration to ignite) below 100°F (37.8°C). There are three classes of flammable liquids.

- **Class 1A**
  - Flash point < 73°F (22.8°C), boiling point < 100°F (37.8°C)
  - (NFPA "704" red-diamond rating of "4." See laboratory placard.)

- **Class 1B**
  - Flash point < 73°F, boiling point ≥ 100°F
  - (NFPA "704" red-diamond rating of "3." See laboratory placard.)

- **Class 1C**
  - Flash point ≥ 73°F and < 100°F
  - (NFPA "704" red-diamond rating of "3." See laboratory placard.)

**COMBUSTIBLE LIQUID:** A liquid having a flash point at or above 100°F (37.8°C). Three classes of combustible liquids are:

- **Class 2**
  - Flash point ≥ 100°F and < 140°F (60.0°C)
  - (NFPA "704" red-diamond rating of "2." See laboratory placard.)

- **Class 3A**
  - Flash point ≥ 140°F and < 200°F (93.3°C)
  - (NFPA "704" red-diamond rating of "2." See laboratory placard.)

- **Class 3B**
  - Flash point ≥ 200°F
  - (NFPA "704" red-diamond rating of "1." See laboratory placard.)

**NONCOMBUSTIBLE LIQUID:** A liquid that will not burn in air when exposed to a temperature of 1500°F (815.5°C) for a period of five minutes. (NFPA "704" red-diamond rating of "0." See laboratory placard.)

**MAXIMUM ALLOWABLE CONTAINER SIZE:**

<table>
<thead>
<tr>
<th>CONTAINER TYPE</th>
<th>CLASS 1A</th>
<th>CLASS 1B</th>
<th>CLASS 1C</th>
<th>CLASS 2 / 3A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass</td>
<td>500 ml (1 pint)</td>
<td>1 L (1 quart)</td>
<td>4 L (1.1 gal)</td>
<td>4 L (1.1 gal) / 20 L (5 gal)</td>
</tr>
<tr>
<td>Metal or Approved Plastic</td>
<td>4 L (1.1 gal)</td>
<td>20 L (5 gal)</td>
<td>20 L (5 gal)</td>
<td>20 L (5 gal)</td>
</tr>
<tr>
<td>Approved Safety Can</td>
<td>10 L (2.6 gal)</td>
<td>20 L (5 gal)</td>
<td>20 L (5 gal)</td>
<td>20 L (5 gal)</td>
</tr>
</tbody>
</table>

2 Exception: "Glass containers as large as 4 L (1.1 gal) shall be permitted to be used if needed and if the required purity would be adversely affected by storage in a metal or an approved plastic container, or if the liquid would cause excessive corrosion or degradation of a metal or an approved plastic container."

(Author's note: where feasible, consider plastic-coated, shatter-resistant bottles.)

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# FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE

## Class 1A

<table>
<thead>
<tr>
<th>Compound</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaldehyde</td>
<td>Dimethyl sulphide</td>
</tr>
<tr>
<td>Ammonium perchlorate</td>
<td>Ethylamine</td>
</tr>
<tr>
<td>tert-Butylamine</td>
<td>Ethyl chloride</td>
</tr>
<tr>
<td>1-Butene</td>
<td>Ethyl ether</td>
</tr>
<tr>
<td>1-Butyl hydroperoxide</td>
<td>Ethyl mercaptan</td>
</tr>
<tr>
<td>“Collodion”</td>
<td>Furan</td>
</tr>
<tr>
<td>Cyanogen</td>
<td>Hydrogen cyanide</td>
</tr>
<tr>
<td>Deuterium</td>
<td>Isopentane</td>
</tr>
<tr>
<td>Dimethylamine</td>
<td>Isoproplamine</td>
</tr>
<tr>
<td>Methylamine</td>
<td>Methyl formate</td>
</tr>
<tr>
<td>Methyl mercaptan</td>
<td>n-Butane</td>
</tr>
<tr>
<td>Propylene oxide</td>
<td>Trimethylamine</td>
</tr>
<tr>
<td>Vinyl chloride</td>
<td>Vinylidene chloride</td>
</tr>
</tbody>
</table>

## Class 1B

<table>
<thead>
<tr>
<th>Compound</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetal</td>
<td>Diisopropylamine</td>
</tr>
<tr>
<td>Acetone</td>
<td>1,1-Dimethylethylene</td>
</tr>
<tr>
<td>Acetonitrile</td>
<td>Dioxane</td>
</tr>
<tr>
<td>Acetyl chloride</td>
<td>Ethyl acetate</td>
</tr>
<tr>
<td>Acrolein</td>
<td>Ethyl acrylate</td>
</tr>
<tr>
<td>Acrylonitrile</td>
<td>Ethyl alcohol, &gt; 60%</td>
</tr>
<tr>
<td>Allyl alcohol</td>
<td>Ethyl benzene</td>
</tr>
<tr>
<td>Allyl chloride</td>
<td>Ethyl bromide</td>
</tr>
<tr>
<td>Benzene</td>
<td>Ethyl chlorofluorocarbon</td>
</tr>
<tr>
<td>2-Butanone (MEK)</td>
<td>Ethylene dichloride</td>
</tr>
<tr>
<td>Butylaldehyde</td>
<td>Ethylenimine</td>
</tr>
<tr>
<td>n-Butyl acetate</td>
<td>Ethyl formate</td>
</tr>
<tr>
<td>Tert-Butyl alcohol</td>
<td>Gasoline</td>
</tr>
<tr>
<td>n-Butylamine</td>
<td>n-Heptane</td>
</tr>
<tr>
<td>n-Butyl mercaptan</td>
<td>n-Hexane</td>
</tr>
<tr>
<td>n-Butyronitrile</td>
<td>n-Hexanethiol</td>
</tr>
<tr>
<td>Carbon disulfide</td>
<td>Hexene</td>
</tr>
<tr>
<td>Bis-Chloromethyl ethy</td>
<td>Iron pentacarbonyl</td>
</tr>
<tr>
<td>Chloroethy methyl ether</td>
<td>Isobutyl alcohol</td>
</tr>
<tr>
<td>B-Chloroprene</td>
<td>Isotridecyl alcohol</td>
</tr>
<tr>
<td>Crotonaldehyde</td>
<td>Isopropyl alcohol</td>
</tr>
<tr>
<td>Cyclohexene</td>
<td>Isopropyl ether</td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>Methycyclohexane</td>
</tr>
<tr>
<td>Cyclopentane</td>
<td>Methyl acetate</td>
</tr>
<tr>
<td>1,1-Dichloroethane</td>
<td>Methyl acrylate</td>
</tr>
<tr>
<td>1,2-Dichloroethene</td>
<td>Methyl acrylimidate</td>
</tr>
<tr>
<td>1,2-Dichloropropane</td>
<td>Methylal</td>
</tr>
<tr>
<td>Diethylamine</td>
<td>Methyl alcohol</td>
</tr>
<tr>
<td>Diethyl ketone</td>
<td>n-propyl alcohol</td>
</tr>
</tbody>
</table>

## Class 1C

<table>
<thead>
<tr>
<th>Compound</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amyl acetate</td>
<td>Cumene</td>
</tr>
<tr>
<td>Amyl alcohol</td>
<td>Cyclohexylamine</td>
</tr>
<tr>
<td>n-Butyl alcohol (1-Butanol)</td>
<td>Cyclopentadiene</td>
</tr>
<tr>
<td>n-Butyl acetate</td>
<td>1,3-Dichloropropene</td>
</tr>
<tr>
<td>Chlorobenzene</td>
<td>Dicyclopentadiene</td>
</tr>
<tr>
<td>Chloroform</td>
<td>Diethyl carbonate</td>
</tr>
<tr>
<td>Chloroform</td>
<td>Epichlorohydrin</td>
</tr>
<tr>
<td>o-Chlorothiolone</td>
<td>Ethyl alcohol, 20-60%</td>
</tr>
</tbody>
</table>

## Notes
- Methyl chlorideformate
- Methyl ethyl ketone (MEK)
- Dioxane
- Ethyl alcohol
- Ethyl acetate
- Ethyl benzene
- Ethyl bromide
- Ethyl chlorofluorocarbon
- Ethylene dichloride
- Ethylenimine
- Ethyl formate
- Gasoline
- n-Heptane
- n-Hexane
- n-Hexanethiol
- Hexene
- Iron pentacarbonyl
- Isobutyl alcohol
- Isotridecyl alcohol
- Isopropyl alcohol
- Isopropyl ether
- Methycyclohexane
- Methyl acetate
- Methyl acrylate
- Methyl acrylimidate
- Methylal
- Methyl alcohol
- Cumene
- Cyclohexylamine
- Cyclopentadiene
- 1,3-Dichloropropene
- Dicyclopentadiene
- Diethyl carbonate
- Epichlorohydrin
- Ethyl alcohol, 20-60%
- Ethylamine
- Ethyl morpholine
- Ethyl silicate
- Hydratine
- Isomyl acetate
- Isomyl alcohol (secondary)
- 2-Isohexyl xylene

## Revised
- Revised, 08/02/01
FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE

Isopropyl glycidyl ether
Mesityl oxide
Methoxyfluorene
Methyl butyl ketone
Methyl isoamyl ketone
Morpholine
Nickel tetra-carboxylic
Nitroethane
Nitromethane
1-Nitropropane
2-Nitropropane
Nonane

n-Octane
Propylene glycol monomethyl ether
Styrene (Vinyl benzene)
Trimethyl phosphite
Turpentine

Class 2

Acetic acid, glacial
Acetic anhydride
Acrylic acid
Allyl glycidyl ether
Benzenesulfonic acid
Butyl acrylate
n-Butyl glycidyl ether
Chloroacetaldehyde
Dibromomethane
Dicyclopentadiene
1,2-Dichloroethane
2-Diethylether
1,2-Diethoxyethane
Dibenzylic ketone

Dimethyl formamide
Dipropyl ketone
2-Ethoxyethanol
2-Ethoxyethyl acetate
Ethyl alcohol, 10%
Ethyl butyl ketone
Ethylene chlorohydrin
Ethylglycol acetate
Ethylidenene norbornene
Formalin, 37% (Methanol, 15%)
Formic acid
1-Heptanol
sec-Heptyl acetate
Isomyl alcohol (primary)
Kerosene
Methyl (n-amyl) ketone

Methyl “Cellusolve” (EGME)
Methyl “Cellusolve” acetate
(EGMEA)
o-Methylcyclohexanone
5-Methyl-3-heptanone
Methyl isobutyl carbinol
Methyl styrene
Naphtha (coal tar)
1-Octanol
Propionic acid
Stoddard solvent
Tetramethylene oxide
1,2,4-Trichlorobenzene
1,3,5-Trichlorobenzene
Vinyl toluene

Class 3A

2-Aminopyridine
Aniline (and homologs)
Benzyl peroxide
Benzyl chloride
2-Butoxyethanol (EGME)
n-Butyl lactate
p-Tert-Butyl toluene
Camphor (synthetic)
Chloroacetaldyde
1-Chloro-1-nitropropane
m, o, p-Cresol
Cyclohexanol
Cyclohexanone
Decaborane
1,2-Dibromo-3-chloropropane (DBCP)
2-Methylimidazoline
o, p-Dichlorobenzene
Diglycidyl ether
Dimethyl aceticamide
Dimethylaminopropionitrile
N,N-Dimethylamine
Dimethyl carboxylic chloride
Dimethyl sulfone
Dipropylene glycol methyl ether
Divinyl benzene

1-Dodecanethiol
Ethanolamine
Ethyl alcohol, 5%
Formalin, 37% (Methanol, 7%)
Furfural
Furfuryl alcohol
Glycidol
2-Hydroxypropyl acrylate
Indene
Isooctyl alcohol
Isophorone
N-Isopropyl aniline
Methacrylic acid
Methyl-2-cyanoacrylate
Methylcyclohexanone
Monomethyl aniline
Naphthalene
Nitrobenzene
Phenol (Carbolic acid)
Phenyldiazine
B-Propiolactone
o,o,p-Trisiloxane
1,2,3-Trichloropropane

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## FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE

### Class 3B
- Acrylamide
- o,-sec-Butylphenol
- Caprolactam
- Caesalpin
- Chlorocarophenone
- Cyanamide
- 1-Decanethiol
- o-Dianisidine
- Di-butylphthalate
- 1,1-Dichloroethylene
- 1,3-Dichloro-5,5-dimethylhydantoin
- Diethanolamine
- Diethyleneetriamine
- Diethyl phthalate
- Dimethyl phthalate
- o-m-Dinitrobenzene
- Dinitrotoluene
- Di-sec octyl phthalate
- Diphenyl
- Diphenylamine
- Ethylene glycol
- Ethylene thioether
- Formamide
- 1-Hexadecanethiol
- Hexamethylene diisocyanate
- Hexamethyl phosphoramidate
- Hexylene glycol
- Hydroquinone
- Isoflurane ("Forane")
- Isophorone diisocyanate
- Maleic anhydride
- Malonitrile
- 4-Methoxyphenol
- Methylene bisphenyl isocyanate
- Methylene chloride
- 4,4'-Methylene dianiline
- Methyl silicone
- Naphthalene diisocyanate
- Naphthylamine
- Nicotine
- p-Nitroaniline
- 4-Nitrophenol
- p-Nitrochlorobenzene
- o,m,p-Nitrotoluene
- Oil mist (mineral)
- Paraffin wax
- Phenol/Chloroform
- p-Phenylenediamine
- Phenyl ether (vapor)
- Phthalic anhydride
- Propylene sulfone
- Succinonitrile
- Sulfur monochloride
- o,p,p'-Terphenyl
- Tetrachloromethane
- Tetraethyl lead
- Thioglycolic acid
- Toluenemamine
- Toluene-2,4-disocyanate
- Tributyl phosphate
- 1,2,4-Trichlorobenzene
- 1,1,1-Trichloroethane
- Trichloroethylene
- Trichloromethane
- Triphenyl phosphate
- Vinyl cyclohexene dioxide
- Xylidine
- Zinc stearate

### Noncombustible
- Boron tribromide
- Bromine
- Bromoform
- Carbon tetrachloride
- Chloracetyl chloride
- Chlorobromomethane
- Chloroform
- Difluorobromomethane
- Enflurane ("Ethinsol")
- Ethylene diisocyanate
- Fluoromethylchloroethane
- Formalin, 10%
- Glutaraldehyde
- Halothane
- Hexachlorocyclopentadiene
- Methyl iodide
- Perchloroethylene (Perk)
- Perchloromethyl mercaptan
- 1,1,2,2-Tetrachloroethane
- Tetraethyl pyrophosphate (TEPP)
- Thiocyanate
- 1,1,2,2-Trichloro-1,2,2-trifluoroethane (Freon-CFC-113)