Dangerous Substances

Guidance on dealing with fires and spillages
Home Office

Dangerous Substances
Guidance on dealing with fires and spillages

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An increasing variety of dangerous substances is daily being conveyed by road in the United Kingdom in substantial quantity, and from time to time the emergency services are called upon to deal with accidents involving vehicles carrying loads of this kind. The personal protection required by members of the emergency services, and the extinguishing media required in the event of fire, will tend to vary in relation to the nature of the individual substance concerned, even as regards substances presenting the same primary hazard (e.g. inflammability, corrosiveness, toxicity). The Home Office Standing Advisory Committee on Dangerous Substances has therefore recommended that guidance should be prepared for the emergency services, and in particular the fire service, as to appropriate means of dealing with fires or spillages involving dangerous substances.

The purpose of this handbook is to present, in ready reference form, for use in an emergency, information about any special hazards presented by dangerous substances conveyed by road in commercial quantities, together with guidance on the personal protection required and the fire extinguishing media to be used. To facilitate reference, the synonyms for each substance have been inserted not only under the chemically correct name of the substance, but also in the full alphabetical sequence, and the relevant information has been shown against each synonym, as well as against each chemically correct name.

Notes explaining the guidance given in each column of the information will be found at the beginning of each section, and guidance on means of dealing with spillages, where appropriate, at the end of the section.

The first section of the guidance relates to inflammable liquids with a flashpoint below 73° F. Subsequent sections will relate to corrosive substances, and other classes of dangerous substances.
Section 1

Inflammable liquids
Section I

Fire extinguishing media and personal protection required when dealing with fires or spillages involving inflammable liquids with a flash-point below 73°F.

This is an alphabetical list of inflammable liquids with a flash-point below 73°F (22.8°C). An indication of the toxicity of each substance is given, together with brief notes on the personal protection required and the fire extinguishing media to be used in the event of a road accident or other incident. The following notes explain the information given in each column:

(Column 1)

Name of substance

Certain substances are known by a number of names: in such cases, any commonly accepted synonyms have been inserted after the correct chemical name of the substance. These synonyms have also been included in the full alphabetical sequence.

(Column 2)

Toxicity

T is indicated where the threshold limit value (TLV) given in the Department of Employment and Productivity's booklet 'Dust and Fumes in Factory Atmosphere' is less than 200 parts per million or where other data indicate that there may be a toxicity risk to personnel, either from inhalation of vapour or contact with the liquid concerned. All the liquids listed may be said to have some toxic potentiality.

The particular toxicity hazard presented by a leakage or spillage without fire of any one of the substances listed is dependent on many factors, including the toxicity value of the substance, its volatility, the quantity of liquid exposed and the atmospheric conditions (eg. temperature and wind) prevailing at the time.
In order to determine which liquids, although toxic to some degree, offer a negligible toxicity hazard to personnel and therefore would not, under normal conditions, require the use of BA, an arbitrary level of 200 ppm in the TLV scale was selected, because liquids such as methanol and ethyl methyl ketone, which have a TLV of 200 ppm or more, are generally regarded as coming within this category.

Although a number of substances in the list are not in normal conditions regarded as toxic (as arbitrarily defined), nevertheless a change in the physical circumstances, such as are described above, may result in a considerable toxic hazard and this should be borne in mind when dealing with emergencies in conveyance.

If a leakage is accompanied by fire, the toxicity hazards may be considerably increased and even after the fire is extinguished vapour from hot residues may present a higher than normal hazard. Such factors should be taken into account.

(Column 3)

**Personal protection**

A indicates that breathing apparatus should be used to give protection against inhalation of vapour or fumes.

B Indicates that breathing apparatus should be used to give protection against inhalation of vapour or fumes and that, in addition, suitable protection against contact with the skin should be worn. In an incident involving a liquid in respect of which protection B is recommended, personnel who have suffered contact with, or splashes from, the liquid should be withdrawn. Contaminated clothing should be removed as soon as possible and any affected parts of the skin washed immediately with running water. In case of doubt or where severe contamination has occurred, personnel should receive immediate medical attention. Removed clothing should not be worn again until it has been cleaned.

(Column 4)

**Fire extinguishing media**

The extinguishing media which may be used are given for each substance but the circumstances of particular incidents may
call for the use of certain of these media rather than others.

Where the use of water or other particular media would be dangerous, a note to this effect is given in column 6

Otherwise, the omission of particular media from Column 4 indicates that their use would be less effective but not usually hazardous. The use of water spray as an extinguishing medium has been recommended in the case of substances which are not less than 10 per cent soluble in water.

Where Column 4 indicates that vaporising liquids may be used, the reference is only to such vaporising liquids as satisfy the Home Office recommendations with regard to standards of toxicity (see Fire Service Circular No. 45/1968).

In the absence of alcohol-resistant foam, the use of protein foam at several times the normal rate may prove effective.

(Column 5)

Packaging

An indication is given of the most usual kinds of containers used for conveyance:

W Carried in bulk in containers with a capacity exceeding 50 gallons (e.g. road tankers).

D Carried in containers with a capacity not exceeding 50 gallons. The maximum size, where known, is indicated.

WD Carried both in bulk and in smaller individual containers.

(Column 6)

Other information

Any special precautions with regard to personal protection and fire extinguishing media are noted here, together with notes on spillages which present special problems. Guidance on dealing with spillages of inflammable liquids generally is given at the end of this section.

Each of the substances listed gives off vapour which, with air, forms explosive mixtures within the limits of its inflammability range. Some have a very wide inflammability range and are thus potentially a greater hazard. Those having an upper inflammability limit in excess of 20 per cent are indicated.
Spillages of inflammable liquids

Wherever possible, spillages of inflammable liquids should be prevented from entering drains or sewers.

The spillage should be retained on the ground surface by improvising dams with sand or earth, or by other means, protecting it as necessary against the possibility of accidental ignition (eg. by covering with a layer of foam).

Where spillage has already entered drains, or in the case of a large spillage where some part will inevitably find its way into sewers, flushing the remaining liquid through the drains may present a lesser hazard.

In any event, all services which might be affected should be notified of the presence of the liquid.

Reference should also be made to 'Dear Chief Officer' letter No. 674 of 4 July 1963, headed 'Spillages of Petroleum on Highways'.

Name of Substance—Other Information
<table>
<thead>
<tr>
<th>Name of substance</th>
<th>Toxicity (2)</th>
<th>Personal protection (3)</th>
<th>Fire extinguishing media (4)</th>
<th>Packing (5)</th>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetal</td>
<td>TA</td>
<td>x x</td>
<td>x x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Acetaldehyde Ethanal</td>
<td>--</td>
<td>x x</td>
<td>x x</td>
<td></td>
<td>Beware explosion risk of released vapour. Wide inflammability range.</td>
</tr>
<tr>
<td>Acetaldehyde oxime Acetaldoxime</td>
<td>--</td>
<td>--</td>
<td>x x</td>
<td>D (50kg)</td>
<td></td>
</tr>
<tr>
<td>Acetaldoxime</td>
<td>--</td>
<td>--</td>
<td>x x</td>
<td>D (50kg)</td>
<td></td>
</tr>
<tr>
<td>Acetone Dimethyl ketone Propanone</td>
<td>--</td>
<td>x x</td>
<td>x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Acetylene dichloride</td>
<td>TA</td>
<td>x x</td>
<td>x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acraldehyde</td>
<td>TB</td>
<td>x x</td>
<td>x x</td>
<td></td>
<td>Beware explosion risk of released vapour. Wide inflammability range.</td>
</tr>
<tr>
<td>Acrolein</td>
<td>TB</td>
<td>x x</td>
<td>x x</td>
<td></td>
<td>Beware explosion risk of released vapour. Wide inflammability range.</td>
</tr>
<tr>
<td>Acrolein acetal</td>
<td>TA</td>
<td>--</td>
<td>x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acrylaldehyde</td>
<td>TB</td>
<td>x x</td>
<td>x x</td>
<td></td>
<td>Beware explosion risk of released vapour. Wide inflammability range.</td>
</tr>
<tr>
<td>Acrylonitrile Propenenitrile Vinyl cyanide</td>
<td>TB</td>
<td>x x</td>
<td>x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Allyl acetate</td>
<td>TB</td>
<td>--</td>
<td>x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allyl alcohol Prop-2-en-1-ol 2-Propan-1-ol</td>
<td>TB</td>
<td>x x</td>
<td>x x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Compound</td>
<td>Code</td>
<td>Exposability</td>
<td>Amount</td>
<td>Note</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
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<td>-------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Allyl aldehyde</td>
<td>TB</td>
<td>x - x x x</td>
<td></td>
<td>Beware explosion risk of released vapour. Wide inflammability range.</td>
<td></td>
</tr>
<tr>
<td>Allylamine 2-Propenylamine</td>
<td>TB</td>
<td>x x - x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allyl bromide 3-Bromopropene</td>
<td>TB</td>
<td>x x - x x</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allyl chloride 3-Chloropropene</td>
<td>TB</td>
<td>x x - x x</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allyl ethyl ether 3-Ethoxypropene</td>
<td>TA</td>
<td>- - - x x</td>
<td>2.5 litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allyl formate 2-Propenyl methanoate</td>
<td>TB</td>
<td>- x - x x</td>
<td>D (50kg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Aminobutane</td>
<td>TB</td>
<td>x - x x x</td>
<td>D (45galls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Aminobutane</td>
<td>TB</td>
<td>x - x x x</td>
<td>D (45galls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Aminoisobutane</td>
<td>TB</td>
<td>x - x x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aminocyclohexane</td>
<td>TB</td>
<td>x x - x x</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Amino-4-methylpentane</td>
<td>TA</td>
<td>x x - x x</td>
<td>D (45galls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Amino-2-methylpropane</td>
<td>TB</td>
<td>x - x x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Amino-2-methylpropane</td>
<td>TB</td>
<td>x - x x x</td>
<td>D (45galls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Aminopentane</td>
<td>TB</td>
<td>- - - x x</td>
<td>25kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>isoAmyl acetate</td>
<td></td>
<td>- - - x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>secAmyl alcohol</td>
<td>TB</td>
<td>x x - x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tertAmyl alcohol</td>
<td>TA</td>
<td>x - x x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>isoAmyl alcohol</td>
<td>TA</td>
<td>x - x x x</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>isoAmyl alcohol</td>
<td>TA</td>
<td>- - - x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Amylamine</td>
<td>TB</td>
<td>- - - x x</td>
<td>25kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>isoAmylamine</td>
<td>TB</td>
<td>- - - x x</td>
<td>2.5 litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>secAmyl bromide</td>
<td>TA</td>
<td>x - - x x</td>
<td>2.5 litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>isoAmyl bromide</td>
<td>TA</td>
<td>x - - x x</td>
<td>2.5 litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of substance</td>
<td>Toxicity (2)</td>
<td>Fire extinguishing media (4)</td>
<td>Packing (5)</td>
<td>Other information</td>
<td></td>
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<td>-----------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Amyl chloride</td>
<td>TA</td>
<td>x x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>tert</em> Amyl chloride</td>
<td>TA</td>
<td>x x x</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>iso</em> Amyl chloride</td>
<td>TA</td>
<td>x x x</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amyl mercaptan</td>
<td>TB</td>
<td>x x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Amyl nitrite</td>
<td>TB</td>
<td>- - x</td>
<td>90oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>iso</em> Amyl nitrite</td>
<td>TB</td>
<td>- - x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aziridene</td>
<td>TB</td>
<td>x x x</td>
<td></td>
<td>Liable to exothermic reaction with some metals. Do not use CO₂. Beware of explosion risk of released vapour. Wide inflammability range.</td>
<td></td>
</tr>
<tr>
<td>Benzenethiol</td>
<td>TB</td>
<td>x x x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thiophenol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzotrifluoride</td>
<td>TB</td>
<td>x x x</td>
<td>D (45galls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trifluoromethylbenzene</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycloheptadiene</td>
<td>TB</td>
<td>x x x</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boron trifluoride diethyl etherate</td>
<td>TB</td>
<td>- - x</td>
<td>D</td>
<td>Reacts with water or steam to produce toxic, corrosive and inflammable vapours. For spillages use dry sand or earth.</td>
<td></td>
</tr>
<tr>
<td>2-Bromobutane</td>
<td>TA</td>
<td>x - x</td>
<td>2.5litres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>secButyl bromide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Bromo-2,3-epoxypropane</td>
<td>TA</td>
<td>x - x</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epibromohydrin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Bromoethyl ethylether</td>
<td>TA</td>
<td>- - x</td>
<td>x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compound</td>
<td>TA</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>----------------------------------</td>
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<td>---</td>
</tr>
<tr>
<td>1-Bromo-3-methylbutane isoAmyl bromide</td>
<td>TA</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1-Bromo-2-methylpropane isoButyl bromide</td>
<td>TA</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2-Bromo-2-methylpropane tertButyl bromide</td>
<td>TA</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2-Bromopentane secAmyl bromide</td>
<td>TA</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1-Bromopropane Propyl bromide</td>
<td>TB</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>x</td>
</tr>
<tr>
<td>2-Bromopropane isoPropyl bromide</td>
<td>TB</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>x</td>
</tr>
<tr>
<td>3-Bromopropene</td>
<td>TB</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>x</td>
</tr>
<tr>
<td>3-Bromopropyne Propargyl bromide</td>
<td>TB</td>
<td>-</td>
<td>x</td>
<td>-</td>
<td>x</td>
</tr>
</tbody>
</table>

Beware: explosion risk if subjected to heat; keep container cool with water spray. Danger of explosion in contact with copper alloys with a high copper content, silver or mercury.

<table>
<thead>
<tr>
<th>Compound</th>
<th>TA</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Butanal</td>
<td>TA</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td></td>
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<tr>
<td>Butanedione Diacetyl</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>n-Butane thiol</td>
<td>TB</td>
<td>-</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>D</td>
</tr>
<tr>
<td>Butane-1-thiol n-Butane thiol Butyl mercaptan</td>
<td>TB</td>
<td>-</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>D</td>
</tr>
<tr>
<td>Butan-2-ol seeButanol seeButyl alcohol</td>
<td>TA</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>WD</td>
</tr>
<tr>
<td>seeButanol seeButyl alcohol</td>
<td>TA</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>WD</td>
</tr>
<tr>
<td>tertButanol</td>
<td>TA</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2-Butanol acetate</td>
<td>TA</td>
<td>-</td>
<td>x</td>
<td>-</td>
<td>x</td>
<td>WD</td>
</tr>
</tbody>
</table>

Amyl chloride—2-Butanol acetate
<table>
<thead>
<tr>
<th>Name of substance</th>
<th>Toxicity (2)</th>
<th>Personal protection (3)</th>
<th>Fire extinguishing media (4)</th>
<th>Packing (5)</th>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butanone</td>
<td>TA</td>
<td>x - x</td>
<td>x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Ethyl methyl ketone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methyl ethyl ketone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butanoyl chloride</td>
<td>TB</td>
<td>- -</td>
<td>x x</td>
<td>D</td>
<td>Reacts with water or steam to produce toxic and corrosive fumes. For spillage use dry sand or earth.</td>
</tr>
<tr>
<td>isoButanoyl chloride</td>
<td>TB</td>
<td>- -</td>
<td>x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Butenal</td>
<td>TB</td>
<td>x x</td>
<td>- -</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>But-3-on-2-one</td>
<td>TB</td>
<td>x x</td>
<td>- -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-Butene-2-one</td>
<td>TB</td>
<td>x x</td>
<td>- -</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>3-Butene-2-one:</td>
<td>TB</td>
<td>x x</td>
<td>- -</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>secButyl acetate</td>
<td>TA</td>
<td>- x</td>
<td>x x</td>
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For spillage use dry sand or earth. For disposal seek manufacturer's assistance.

Reacts with water or steam to produce toxic and corrosive fumes. For spillage use dry sand or earth.
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<td>WD</td>
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<td>TB</td>
<td>x - x</td>
<td>D</td>
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<td>Diethyl ether</td>
<td>TA</td>
<td>- x x</td>
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<td>- x x</td>
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<td>Diethyl oxide</td>
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<td>- x x</td>
<td>WD (Beware of explosion risk of released vapour. Wide inflammability range.)</td>
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<tr>
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<td>D (45galls)</td>
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<td>Dimethyl acetylene</td>
<td></td>
<td>- x x</td>
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<td>Dimethyl acetone</td>
<td></td>
<td>x x -</td>
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<td>TB</td>
<td>x x -</td>
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<td></td>
<td>x x -</td>
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<table>
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<th>Packing</th>
<th>Other information</th>
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<td></td>
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<td>x x - x x</td>
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<tr>
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<td></td>
<td>T B</td>
<td>-- -- x x</td>
</tr>
<tr>
<td>Dimethyl diethoxysilane</td>
<td></td>
<td>T B</td>
<td>-- -- x x</td>
</tr>
<tr>
<td>Dimethyl disulphide</td>
<td></td>
<td>T B</td>
<td>-- -- x x</td>
</tr>
<tr>
<td>Dimethyleneimine</td>
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<td>T B</td>
<td>x x -- x</td>
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<tr>
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<td>x x</td>
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<td>x x</td>
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<td>x - x</td>
<td>x x</td>
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<td>Dimethyl sulphide</td>
<td>TA</td>
<td>x x -</td>
<td>x x</td>
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<td>x x</td>
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<td>Di-2-propenylamine</td>
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<td>x -</td>
<td>x x</td>
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<tr>
<td>Dipropylamine</td>
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<td>- - x</td>
<td>x</td>
</tr>
<tr>
<td>Diisopropylamine</td>
<td>TB</td>
<td>- - x</td>
<td>x</td>
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<tr>
<td>Dipropyl ether</td>
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<td>- - x</td>
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<td>Diisopropyl ether</td>
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<td>TA</td>
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<td>x</td>
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<td>x - x</td>
<td>x x</td>
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<td>x - x</td>
<td>x x</td>
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Beware of explosion risk of released vapour. Wide inflammability range.
<table>
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<tr>
<th>Name of substance</th>
<th>Toxicity (2)</th>
<th>Personal protection (3)</th>
<th>Fire extinguishing media (4)</th>
<th>Packing (5)</th>
<th>Other information</th>
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<tbody>
<tr>
<td>Ethane thiol</td>
<td>T</td>
<td>B</td>
<td>x x -</td>
<td>D</td>
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<tr>
<td>Ethyl mercaptan</td>
<td></td>
<td></td>
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<tr>
<td>Ethanol</td>
<td>--</td>
<td></td>
<td>x - x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethoxyethane</td>
<td>--</td>
<td></td>
<td>x x -</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>1-Ethoxybutane</td>
<td>--</td>
<td></td>
<td>x x -</td>
<td>50kg</td>
<td></td>
</tr>
<tr>
<td>Ethoxyethane</td>
<td>T</td>
<td>A</td>
<td>- x</td>
<td>WD</td>
<td>Beware of explosion risk of released vapour. Wide inflammability range.</td>
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<td>Ethoxypropene</td>
<td>T</td>
<td>A</td>
<td>- - x</td>
<td>2·5 litres</td>
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<tr>
<td>Ethyl acetate</td>
<td></td>
<td></td>
<td>x x -</td>
<td>WD</td>
<td></td>
</tr>
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<td>Ethyl acrylate</td>
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<td></td>
<td></td>
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<tr>
<td>Ethyl propenoate</td>
<td>T</td>
<td>B</td>
<td>x x -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td></td>
<td></td>
<td>x - x</td>
<td>WD</td>
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<tr>
<td>Ethylamine solutions in alcohol or water</td>
<td>T</td>
<td>B</td>
<td>x x x</td>
<td>WD</td>
<td></td>
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<tr>
<td>Ethylborate</td>
<td>T</td>
<td>B</td>
<td>x - x</td>
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<td></td>
</tr>
<tr>
<td>2-Ethylbutyraldehyde</td>
<td></td>
<td></td>
<td>x x -</td>
<td>50kg</td>
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<td>Diethyl acetaldehyde</td>
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<td>Ethyl isobutyrate</td>
<td></td>
<td></td>
<td>x x -</td>
<td>D</td>
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</tr>
<tr>
<td>Ethyl chlorocarbonate</td>
<td>T</td>
<td>B</td>
<td>x x -</td>
<td>10galls</td>
<td></td>
</tr>
<tr>
<td>Compound</td>
<td>TB</td>
<td>Quantity</td>
<td>Notes</td>
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<td>------------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
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<tr>
<td>Ethyl chloroformate</td>
<td>T B</td>
<td>x x - x x</td>
<td>10galls</td>
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<tr>
<td>Ethyl chlorocarbonate</td>
<td>T B</td>
<td>x x - x x</td>
<td>2.5 litres</td>
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<tr>
<td>Ethyl crotonate</td>
<td>T B</td>
<td>- x - x x</td>
<td>For spillage use dry sand or earth. For disposal seek manufacturer's assistance.</td>
<td></td>
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<tr>
<td>Ethyl cyanide</td>
<td>T B</td>
<td>- - - x x</td>
<td>Reacts with water to give toxic, corrosive and inflammable vapours. May ignite spontaneously on contact with air. For fire use CO₂, dry powder, dry sand or earth. For a small spillage use dry sand or earth. For a larger spillage use fine water spray.</td>
<td></td>
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<tr>
<td>Ethyl dichlorosilane</td>
<td>T B</td>
<td>- - - x x</td>
<td>For spillage use dry sand or earth. For disposal seek manufacturer's assistance.</td>
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<tr>
<td>Ethyl dimethyl carbinol</td>
<td>T A</td>
<td>x - x x x</td>
<td>Liable to exothermic reaction with some metals. Do not use CO₂. Beware of explosion risk of released vapour. Wide inflammability range.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethylene dichloride</td>
<td>T B</td>
<td>x x - x x</td>
<td>Liable to exothermic reaction with some metals. Do not use CO₂. Beware of explosion risk of released vapour. Wide inflammability range.</td>
<td></td>
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<tr>
<td>Ethyleneimine</td>
<td>T B</td>
<td>x x - x -</td>
<td>Liable to exothermic reaction with some metals. Do not use CO₂. Beware of explosion risk of released vapour. Wide inflammability range.</td>
<td></td>
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</tr>
<tr>
<td>Aziridene Dimethylenidine</td>
<td>T B</td>
<td>x x - x -</td>
<td>Liable to exothermic reaction with some metals. Do not use CO₂. Beware of explosion risk of released vapour. Wide inflammability range.</td>
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<td></td>
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<tr>
<td>Ethyl ether</td>
<td>T A</td>
<td>- - x x x</td>
<td>Beware of explosion risk of released vapour. Wide inflammability range.</td>
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<tr>
<td>Ethyl formate Ethyl methanoate</td>
<td>T A</td>
<td>x x - x x</td>
<td>D</td>
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<tr>
<td>Ethylidene chloride</td>
<td>T A</td>
<td>x x - x x</td>
<td>WD</td>
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<tr>
<td>Ethylidene diethyl ether</td>
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<td>x x - x x</td>
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<tr>
<td>Ethyl methanoate</td>
<td>T A</td>
<td>x x - x x</td>
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Ethane thiol—Ethyl methanoate

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<table>
<thead>
<tr>
<th>Name of substance</th>
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<th>Personal protection (3)</th>
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<td>TA</td>
<td>x - x</td>
<td>x x</td>
<td>WD *</td>
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<tr>
<td>Ethyl 2-methyl propanoate</td>
<td>--</td>
<td></td>
<td>x x</td>
<td>D</td>
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<td>Ethyl nitrite</td>
<td>TA</td>
<td>x x - x</td>
<td>x x</td>
<td>D</td>
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<td>x x - x</td>
<td>x x</td>
<td>D</td>
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<tr>
<td>N-Ethyl piperidine</td>
<td>--</td>
<td>x x - x</td>
<td>x x</td>
<td>D</td>
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<td>--</td>
<td>x x - x</td>
<td>x x</td>
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<td>Ethyl propenoate</td>
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<td>x x</td>
<td>D</td>
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<td>x x - x</td>
<td>x x</td>
<td>D</td>
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<td>Ethyl propionyl</td>
<td>--</td>
<td>x - x</td>
<td>x x</td>
<td>D</td>
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<td>Ethyltrichlorosilane</td>
<td>TB</td>
<td>--</td>
<td>x x</td>
<td>D(45galls)</td>
<td>Reacts with water to give toxic, corrosive and inflammable vapours. May ignite spontaneously on contact with air. For fire use CO₂, dry powder, dry sand or earth. For a small spillage use dry sand or earth. For a larger spillage of shallow depth (less than 1in) use copious water (not jets). For a deeper spillage use fine water spray.</td>
</tr>
<tr>
<td>Ethyl vinyl ether</td>
<td>--</td>
<td>-- x</td>
<td>x x</td>
<td>D(45galls)</td>
<td>Beware of explosion risk of released vapour. Wide inflammability range.</td>
</tr>
<tr>
<td>Fluorobenzene</td>
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<td>--</td>
<td>x x</td>
<td>D</td>
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<td>Chemical</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
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<td>x</td>
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<td>x</td>
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<td>x</td>
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<td>Furan</td>
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<td>x</td>
<td>x</td>
<td>D(45galls)</td>
</tr>
<tr>
<td>Fuseloi</td>
<td>TA</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>D</td>
</tr>
<tr>
<td>Glyceryl trinitrate solutions in alcohol</td>
<td>-B</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>Protection required against skin absorption, and against clothing contamination, which would become highly inflammable when the alcohol evaporated.</td>
</tr>
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<td>TB</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>WD</td>
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<tr>
<td>4-Hydroxy-2-keto-4-methylpentane</td>
<td>TA</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>WD</td>
</tr>
<tr>
<td>4-Hydroxy-4-methylpentan-2-one</td>
<td>TA</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>WD</td>
</tr>
<tr>
<td>2-Iodobutane secButyl iodide</td>
<td>TB</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>2.5</td>
</tr>
<tr>
<td>1-Iodo-2-methylpropane isoButyl iodide</td>
<td>TB</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>2.5</td>
</tr>
<tr>
<td>2-Iodo-2-methylpropane tertButyl iodide</td>
<td>TB</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>2.5</td>
</tr>
<tr>
<td>1-Iodopropane Propyl iodide</td>
<td>TB</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>2.5</td>
</tr>
<tr>
<td>2-Iodopropane isoPropyl iodide</td>
<td>TB</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>2.5</td>
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</table>

Ethyl methyl ketone—2-Iodopropane
<table>
<thead>
<tr>
<th>Name of substance</th>
<th>Toxicity (2)</th>
<th>Personal protection (3)</th>
<th>Fire extinguishing media (4)</th>
<th>Packing (5)</th>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron carbonyl</td>
<td>T</td>
<td>B</td>
<td>- - x x</td>
<td></td>
<td>Reacts with moisture and may ignite spontaneously on contact with air. Beware explosion risk of released vapour or on heating of cylinders. For spillage use copious water to flush away.</td>
</tr>
<tr>
<td>Iron pentacarbonyl</td>
<td>T</td>
<td>B</td>
<td>- - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isoprene monomer</td>
<td>T</td>
<td>A</td>
<td>- x x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>2-Methyl-1,3-butadiene</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Methylpropenal</td>
<td>T</td>
<td>B</td>
<td>- x x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methacrolein</td>
<td>T</td>
<td>A</td>
<td>- x x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Methylacetone</td>
<td>T</td>
<td>B</td>
<td>- x x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methanol</td>
<td>-</td>
<td>-</td>
<td>- x x x</td>
<td>WD</td>
<td>Beware of explosion risk of released vapour. Wide inflammability range.</td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>-</td>
<td>-</td>
<td>- x x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Methanethiolmethane</td>
<td>T</td>
<td>A</td>
<td>- x x x</td>
<td>1D(45galls)</td>
<td></td>
</tr>
<tr>
<td>1-Methoxybutane</td>
<td>T</td>
<td>A</td>
<td>- x x x</td>
<td>2.5litres</td>
<td></td>
</tr>
<tr>
<td>Methyl acetate</td>
<td>-</td>
<td>-</td>
<td>- x x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Methyl acetone</td>
<td>-</td>
<td>-</td>
<td>- x x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>β-Methyl acrolein</td>
<td>T</td>
<td>B</td>
<td>- x x x</td>
<td></td>
<td></td>
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<tr>
<td>Compound</td>
<td>TL</td>
<td>DM</td>
<td>C</td>
<td>U</td>
<td>W</td>
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<td>-----------------------------------------------</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Methyl acrylate</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Methylal</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>--</td>
<td>--</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Methylamine solutions in alcohol or water</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Methylated spirit</td>
<td>--</td>
<td>--</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>2-Methyl-1,3-butadiene</td>
<td>T</td>
<td>A</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3-Methyl butanal</td>
<td>T</td>
<td>A</td>
<td>--</td>
<td>x</td>
<td>x</td>
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<tr>
<td>3-Methylbutane-1-thiol</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Amyl mercaptan</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pentanethiol</td>
<td></td>
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</tr>
<tr>
<td>2-Methylbutan-2-ol</td>
<td>T</td>
<td>A</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>tertAmyl alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Ethyl dimethyl carbinol</td>
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</tr>
<tr>
<td>2-Methyl-2-butanol</td>
<td>T</td>
<td>A</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3-Methyl-2-butanol</td>
<td>T</td>
<td>A</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>isoAmyl alcohol</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3-Methylbutan-2-one</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3-Methyl-2-butanone</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Methyl isobutyl ketone</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Methyl butyrate</td>
<td>--</td>
<td>--</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Methyl carbonate</td>
<td>T</td>
<td>A</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Methyl chlorocarbonate</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Methyl chlorofomate</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Iron carbonyl—Methyl chlorofomate</td>
<td></td>
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<tr>
<td>Name of substance</td>
<td>Toxicity (2)</td>
<td>Personal protection (3)</td>
<td>Fire extinguishing media (4)</td>
<td>Packing (5)</td>
<td>Other information</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------------</td>
<td>-------------------------</td>
<td>----------------------------</td>
<td>-------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Methyl dichlorosilane</td>
<td>TB</td>
<td></td>
<td>- - - - - - - - - - - - -</td>
<td>D</td>
<td>Very difficult to fight. Low auto-ignition temperature. Do not use foam, CO₂, or vaporising liquids. Use copious water on shallow spills. Otherwise use very fine spray (fog).</td>
</tr>
<tr>
<td>Methylene dimethyl ether</td>
<td>- - - - - - -</td>
<td></td>
<td>x x</td>
<td>D(45galls)</td>
<td></td>
</tr>
<tr>
<td>Methyl ethyl ketone</td>
<td>TA</td>
<td></td>
<td>x - x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>N-Methylformamide Form-methylamide</td>
<td>TB</td>
<td></td>
<td>- - x x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Methyl formate</td>
<td>TB</td>
<td></td>
<td>- - - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methylhydrazine</td>
<td>TB</td>
<td></td>
<td>x x - x x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Methyl hydrogen dichlorosilane</td>
<td>TB</td>
<td></td>
<td>- - - - -</td>
<td>D</td>
<td>Very difficult to fight. Low auto-ignition temperature. Do not use foam, CO₂, or vaporising liquids. Use copious water on shallow spills. Otherwise use very fine spray (fog).</td>
</tr>
<tr>
<td>Methyl methacrylate, monomer</td>
<td>TA</td>
<td></td>
<td>x x - x x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Methyl oxiran</td>
<td>TB</td>
<td></td>
<td>x - x x x</td>
<td>WD</td>
<td>Beware of explosion risk of released vapour. Wide inflammability range.</td>
</tr>
<tr>
<td>2-Methylpentan-2-ol</td>
<td>TA</td>
<td></td>
<td>- - x x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>4-Methylpentan-2-one isoButyl methyl ketone</td>
<td>TB</td>
<td></td>
<td>x - x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Hexone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-Methyl-2-pentanone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methyl iso-butyl ketone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical Name</td>
<td>TA</td>
<td>TB</td>
<td>x</td>
<td>--</td>
<td>W/</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>----</td>
<td>----</td>
<td>---</td>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td>4-Methyl-2-pentanone</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>N-Methylpiperidine</td>
<td></td>
<td>TA</td>
<td>x</td>
<td>--</td>
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</tr>
<tr>
<td>N-Methylpiperidine</td>
<td></td>
<td>TA</td>
<td>x</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>2-Methyl propanal</td>
<td></td>
<td>TA</td>
<td>x</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>2-Methylpropan-2-ol</td>
<td></td>
<td>TA</td>
<td>x</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>tertButanol</td>
<td></td>
<td>TA</td>
<td>x</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>tertButyl alcohol</td>
<td></td>
<td>TA</td>
<td>x</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>2-Methyl-2-propanol</td>
<td></td>
<td>TA</td>
<td>x</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>2-Methylpropenal</td>
<td></td>
<td>TB</td>
<td>x</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Methyl propionate</td>
<td>--</td>
<td>--</td>
<td>x</td>
<td>x</td>
<td>D(50kg)</td>
</tr>
<tr>
<td>Methyl propyl carbinol</td>
<td></td>
<td>TB</td>
<td>x</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Methyl isopropyl ketone</td>
<td></td>
<td>TB</td>
<td>x</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Methyl sulphide</td>
<td></td>
<td>TA</td>
<td>x</td>
<td>--</td>
<td>D(45galls)</td>
</tr>
<tr>
<td>Methyltrichlorosilane</td>
<td></td>
<td>TB</td>
<td>x</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>a-Methylvaleraldehyde</td>
<td></td>
<td>TB</td>
<td>x</td>
<td>--</td>
<td>D</td>
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<tr>
<td>b-Methylvaleraldehyde</td>
<td></td>
<td>TA</td>
<td>x</td>
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<tr>
<td>2-Methylvaleraldehyde</td>
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<td>TB</td>
<td>x</td>
<td>--</td>
<td>D</td>
</tr>
<tr>
<td>Methyl isovalerate</td>
<td>--</td>
<td>--</td>
<td>x</td>
<td>x</td>
<td>50kg</td>
</tr>
</tbody>
</table>

Reacts with water to give toxic, corrosive and inflammable vapours. May ignite spontaneously on contact with air. For fire use CO₂, dry powder, dry sand or earth. For a small spillage use dry sand or earth. For a larger spillage of shallow depth (less than 1 in) use copious water (not jets). For a deeper spillage use fine waterspray.
<table>
<thead>
<tr>
<th>Name of substance</th>
<th>Toxicity</th>
<th>Personal protection</th>
<th>Fire extinguishing media</th>
<th>Packing</th>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl vinyl ketone</td>
<td>T B</td>
<td></td>
<td>x x - x x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Nickel carbonyl</td>
<td>T B</td>
<td></td>
<td>- - - x x</td>
<td>5lb</td>
<td>cylinders</td>
</tr>
<tr>
<td>Nickel tetracarbonyl</td>
<td>T B</td>
<td></td>
<td>- - - x x</td>
<td>5lb</td>
<td>cylinders</td>
</tr>
<tr>
<td>Nitroglycerine solutions in alcohol</td>
<td>T B</td>
<td></td>
<td>- - - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(not exceeding 5% of nitroglycerine)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paraldehyde</td>
<td>T A</td>
<td></td>
<td>x - x x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pentanethiol</td>
<td>T B</td>
<td></td>
<td>x x - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pentan-2-ol</td>
<td>T B</td>
<td></td>
<td>x x - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sec Amyl alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methyl propylcarbinol</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>2-Pentanol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Pentanol</td>
<td>T B</td>
<td></td>
<td>x x - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pentan-3-une</td>
<td>- -</td>
<td></td>
<td>x - x x x</td>
<td></td>
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</tr>
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<td>Diethyl ketone</td>
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<tr>
<td>Propione</td>
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</tr>
<tr>
<td>isoPentyl acetate</td>
<td>- -</td>
<td></td>
<td>- - x x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>isoAmyl acetate</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Chemical</td>
<td>TB</td>
<td>X</td>
<td>X</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
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</tr>
<tr>
<td>Pentylamine</td>
<td>TB</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>25kg</td>
</tr>
<tr>
<td>1-Aminopentane n-Amylamine</td>
<td>TB</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>2.5 litres</td>
</tr>
<tr>
<td>isoPentylamine isoAmylamine</td>
<td>TB</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>90 oz</td>
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<tr>
<td>Pentynitrite n-Amyl nitrite</td>
<td>TB</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>2.5 litres</td>
</tr>
<tr>
<td>isoPentyl nitrite isoAmyl nitrite</td>
<td>TB</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>1-Phenylpropane-1,2-dione</td>
<td>TB</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>2.5 litres</td>
</tr>
<tr>
<td>Piperidine</td>
<td>TB</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>D</td>
</tr>
<tr>
<td>Propane-1-thiol Propyl mercaptan</td>
<td>TA</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>D</td>
</tr>
<tr>
<td>Propane-2-thiol isoPropyl mercaptan</td>
<td>TA</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>D</td>
</tr>
<tr>
<td>Propan-1-ol 1-Propanol Propyl alcohol</td>
<td>--</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1-Propanol</td>
<td>--</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>W</td>
</tr>
<tr>
<td>Propan-2-ol Dimethyl carbinol 2-Propanol isoPropanol isoPropanol isoPropyl alcohol secPropyl alcohol</td>
<td>--</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2-Propanol</td>
<td>--</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>isoPropanol</td>
<td>--</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propanone</td>
<td>--</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propanone</td>
<td>--</td>
<td>-</td>
<td>X</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

Beware explosion risk if subjected to heat; keep container cool with water spray. Danger of explosion in contact with copper, alloys with a high copper content, silver or mercury.
<table>
<thead>
<tr>
<th>Name of substance</th>
<th>Toxicity (2)</th>
<th>Fire extinguishing media (4)</th>
<th>Packing (5)</th>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propenal</td>
<td>T B</td>
<td>x - x</td>
<td>x x</td>
<td>Beware explosion risk of released vapour. Wide inflammability range.</td>
</tr>
<tr>
<td>Propenenitrile</td>
<td>T B</td>
<td>x - x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Propene oxide</td>
<td>T B</td>
<td>x - x</td>
<td>WD</td>
<td>Beware explosion risk of released vapour. Wide inflammability range.</td>
</tr>
<tr>
<td>Prop-2-en-1-ol</td>
<td>T B</td>
<td>x - x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>2-Propen-1-ol</td>
<td>T B</td>
<td>x - x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>isoPropenyl acetate</td>
<td>--</td>
<td>- x - x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>2-Propenylamine</td>
<td>T B</td>
<td>x x - x</td>
<td>D</td>
<td>Beware explosion risk of released vapour. Wide inflammability range.</td>
</tr>
<tr>
<td>2-Propenyl methanoate</td>
<td>T B</td>
<td>- x - x</td>
<td>D(50kg)</td>
<td></td>
</tr>
<tr>
<td>Propionaldehyde</td>
<td>TA</td>
<td>x - x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Propyne</td>
<td>--</td>
<td>x - x</td>
<td>x x</td>
<td></td>
</tr>
<tr>
<td>Propionitrile</td>
<td>T B</td>
<td>-- - x</td>
<td>x x</td>
<td>For spillage use dry sand or earth. For disposal seek manufacturer's assistance.</td>
</tr>
<tr>
<td>Ethyl cyanide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-isoPropoxy propane</td>
<td>TA</td>
<td>- - x</td>
<td>WD</td>
<td>Beware of explosion risk of released vapour. Wide inflammability range.</td>
</tr>
<tr>
<td>Propyl acetate</td>
<td>--</td>
<td>- - x</td>
<td>x x</td>
<td></td>
</tr>
<tr>
<td>isoPropyl acetate</td>
<td>--</td>
<td>- - x</td>
<td>x x</td>
<td></td>
</tr>
<tr>
<td>Propyl alcohol</td>
<td>--</td>
<td>x - x</td>
<td>x x</td>
<td></td>
</tr>
<tr>
<td>Chemical</td>
<td>MFR</td>
<td>SFR</td>
<td>R</td>
<td>E</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----</td>
<td>-----</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Sec propyl alcohol</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Iso propyl alcohol</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propyl aldehyde</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propylamine</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td>Iso propylamine</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>-</td>
</tr>
<tr>
<td>Propyl bromide</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Iso propyl bromide</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Iso propyl butyrate</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Iso propyl isobutyrare</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propyl chloride</td>
<td>T</td>
<td>A</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Iso propyl chloride</td>
<td>T</td>
<td>A</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Iso propyl chloroformate</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propyl cyanide</td>
<td>T</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propylene aldehyde</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propylene chloride</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propylene dichloride</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propyleneimine</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propylene oxide</td>
<td>T</td>
<td>B</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1,2-Epoxy propane</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methyl oxiran</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propene oxide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iso propyl ether</td>
<td>T</td>
<td>A</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propyl formate</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Iso propyl formate</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Propyl iodide</td>
<td>T</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iso propyl iodide</td>
<td>T</td>
<td>B</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For spillage use dry sand or earth. For disposal seek manufacturer's assistance.

Beware of explosion risk of released vapour. Wide inflammability range.
<table>
<thead>
<tr>
<th>Name of substance</th>
<th>Toxicity (2)</th>
<th>Fire extinguishing media (4)</th>
<th>Packing (5)</th>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propyl mercaptan</td>
<td>TA</td>
<td>- x - x -</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>isoPropyl mercaptan</td>
<td>TA</td>
<td>- x - x -</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Propyl nitrate</td>
<td>TA</td>
<td>x x - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>isoPropyl nitrate</td>
<td>TA</td>
<td>x x - x x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>isoPropyl propionate</td>
<td>- -</td>
<td>x x - x x</td>
<td>50kg</td>
<td></td>
</tr>
<tr>
<td>Pyridine</td>
<td>TA</td>
<td>x x - x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Pyrrolidine</td>
<td>TA</td>
<td>x x - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetrahydrobenzene</td>
<td>- -</td>
<td>x x - x x</td>
<td>10galls</td>
<td></td>
</tr>
<tr>
<td>Tetrahydrofuran</td>
<td>TA</td>
<td>x x - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2,3,6-Tetrahydropyridine</td>
<td>TB</td>
<td>- - - x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Tetrahydrothiophen</td>
<td>- -</td>
<td>- x - x -</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Tetramethylene sulphide</td>
<td>- -</td>
<td>- x - x -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetramethyl ethylene diamine</td>
<td>- -</td>
<td>x x - x x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Tetramethylene sulphide</td>
<td>- -</td>
<td>- x - x -</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Tetrapropyl orthotitanate</td>
<td>- -</td>
<td>- - - x x</td>
<td>2.5 litres</td>
<td>Reacts with water, but water spray may be used.</td>
</tr>
<tr>
<td>Thioacetic acid</td>
<td>TB</td>
<td>x x - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thiophen</td>
<td>- -</td>
<td>x x - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thiophenol</td>
<td>TB</td>
<td>x x - x x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triethoxyboron</td>
<td>TB</td>
<td>x - - x x</td>
<td>10galls</td>
<td></td>
</tr>
<tr>
<td>Triethylamine</td>
<td>TB</td>
<td>x - x x x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Compound</td>
<td>Symbol</td>
<td>Hazard</td>
<td>Quantity</td>
<td>Notes</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------</td>
<td>--------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>Triethyl borate</td>
<td>TB</td>
<td>x-x-x</td>
<td>10galls</td>
<td></td>
</tr>
<tr>
<td>Ethylborate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triethoxyboron</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trifluoromethylbenzene</td>
<td>TB</td>
<td>x-x-x</td>
<td>D(45galls)</td>
<td></td>
</tr>
<tr>
<td>Trimethoxyborine</td>
<td>TB</td>
<td>x-x-x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Trimethylaminesolutions in alcohol or water</td>
<td>TB</td>
<td>x-x-x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimethyl borate</td>
<td>TB</td>
<td>x-x-x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Trimethoxyborine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimethyl carbinol</td>
<td>TA</td>
<td>x-x-x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimethylchlorosilane</td>
<td>TB</td>
<td>- - x-x</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>isoValeraldehyde</td>
<td>TA</td>
<td>- - x-x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>isoAmyl aldehyde</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-Methyl butanal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vinyl acetate</td>
<td>- - x-x</td>
<td>x-x-x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>β-Methyl valeraldehyde</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vinyl cyanide</td>
<td>TB</td>
<td>x-x-x</td>
<td>WD</td>
<td></td>
</tr>
<tr>
<td>Vinyl ether</td>
<td>TA</td>
<td>- x-x</td>
<td>25ml</td>
<td></td>
</tr>
<tr>
<td>Vinylidene chloride</td>
<td>TA</td>
<td>x-x-x</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reacts with water to give toxic, corrosive and inflammable vapours. May ignite spontaneously on contact with air. For fire use CO₂, dry powder, dry sand or earth. For a small spillage use dry sand or earth. For a larger spillage of shallow depth (less than 1 in) use copious water (not jets). For a deeper spillage use fine water spray.

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<table>
<thead>
<tr>
<th>Name of substance</th>
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<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vinyltrichlorosilane</td>
<td>T B</td>
<td>Water spray</td>
<td></td>
<td>Reacts with water to give toxic, corrosive and inflammable vapours. May ignite spontaneously on contact with air. For fire use CO₂, dry powder, dry sand or earth. For a small spillage use dry sand or earth. For a larger spillage of shallow depth (less than 1 in) use copious water (not jets). For a deeper spillage use fine water spray.</td>
</tr>
</tbody>
</table>