## Table II
## Chemical Resistance of Fortiflex HDPE

**Legend: S = Satisfactory, O = Some Attack, U = Unsatisfactory**

| Reagent | 21°C (70°F) | 60°C (140°F) |
|---|---|---|
| Copper Chloride Sat'd | S | S |
| Copper Cyanide Sat'd | S | S |
| Copper Fluoride 2% | S | S |
| Copper Nitrate Sat'd | S | S |
| Copper Sulfate Dilute | S | S |
| Copper Sulfate Sat'd | S | S |
| Corn Oil | S | S |
| Cottonseed Oil | S | S |
| Cranberry Sauce | S | S |
| Cresols | S | O |
| Cuprous Chloride Sat'd | S | S |
| Cuprous Oxide | S | S |
| Cyclohexane | U | U |
| Cyclohexanone | U | U |
| Decalin | S | U |
| Detergents Synthetic | S | S |
| Developers Photographic | S | S |
| Dextrin Sat'd | S | S |
| Dextrose Sat'd | S | S |
| Dibutyl Ether | O | U |
| Dichlorobenzene (O&P) | U | U |
| Diethylene Glycol | S | S |
| Disodium Phosphate | S | S |
| Dioxane | S | S |
| Emulsions Photographic | S | S |
| Ether | O | O |
| Ethyl Acetate 100% | O | O |
| Ethyl Alcohol 100% | S | S |
| Ethyl Alcohol 35% | S | S |
| Ethylbenzene | O | U |
| Ethylene Glycol | S | S |
| Ferric Chloride Sat'd | S | S |
| Ferric Nitrate Sat'd | S | S |
| Ferrous Ammonium Citrate | S | S |
| Ferrous Chloride Sat'd | S | S |
| Ferrous Sulfate | S | S |
| Fluoboric Acid | S | S |
| Fluorine | S | U |
| Fluosilicic Acid 32% | S | S |
| Fluosilicic Acid Conc. | S | S |
| Formaldehyde | | |
| 10-30% | S | S |
| 30-40% | S | O |
| Formic Acid 20% | S | S |
| Formic Acid 50% | S | S |
| Formic Acid 100% | S | S |
| Fructose Sat'd | S | S |
| Fuel Oil | S | U |
| Furfural 100% | O | U |
| Furfuryl Alcohol | S | O |
| Gallic Acid Sat'd | S | S |
| Gasoline | S | U |
| Glucose | S | S |
| Glycerine | S | S |
| Glycol | S | S |

| Reagent | 21°C (70°F) | 60°F (140°F) |
|---|---|---|
| Glycolic Acid 30% | S | S |
| Grape Juice | S | S |
| Grapefruit Juice | S | S |
| Heptane | O | U |
| Hexachlorobenzene | S | S |
| Hexane | U | U |
| Hydrobromic Acid 50% | S | S |
| Hydrocyanic Acid Sat'd | S | S |
| Hydrochloric Acid 10% | S | S |
| Hydrochloric Acid 30% | S | S |
| Hydrochloric Acid 35% | S | S |
| Hydrocyanic Acid | S | S |
| Hydrofluoric Acid 40% | S | S |
| Hydrofluoric Acid 60% | S | S |
| Hydrofluoric Acid 75% | S | S |
| Hydrogen 100% | S | S |
| Hydrogen Bromide 10% | S | S |
| Hydrogen Chloride Gas Dry | S | S |
| Hydrogen Peroxide 30% | S | S |
| Hydrogen Peroxide 90% | S | S |
| Hydroquinone | S | S |
| Hydrogen Sulfide | S | S |
| Hypochlorous Acid Conc | S | S |
| Inks | S | S |
| Iodine Crystals | O | O |
| Isobutyl Alcohol | S | S |
| Isopropyl Alcohol | S | S |
| Isopropyl Ether | O | O |
| Kerosene | O | O |
| Lactic Acid 10% | S | S |
| Lactic Acid 90% | S | S |
| Lanolin | S | S |
| Lard | S | S |
| Lead Acetate Sat'd | S | S |
| Lead Nitrate | S | S |
| Lemon Juice | S | S |
| Lemon Oil | O | U |
| Lime Juice | S | S |
| Linseed Oil | S | S |
| Magnesium Carbonate Sat'd | S | S |
| Magnesium Chloride Sat'd | S | S |
| Magnesium Hydroxide Sat'd | S | S |
| Magnesium Nitrate Sat'd | S | S |
| Magnesium Sulfate Sat'd | S | S |
| Margarine | S | S |
| Mercuric Chloride | S | S |
| Mercuric Cyanide Sat'd | S | S |
| Mercurous Nitrate Sat'd | S | S |
| Mercury | S | S |
| Methyl Alcohol 100% | S | S |
| Methyl Ethyl Ketone 100% | U | U |
| Methylsulfuric Acid | S | S |
| Methylene Chloride 100% | U | U |

## Table II
## Chemical Resistance of Fortiflex HDPE

**Legend: S = Satisfactory, O = Some Attack, U = Unsatisfactory**

| Reagent | 21°C (70°F) | 60°C (140°F) |
|---|---|---|
| Milk | S | S |
| Mineral Oils | S | U |
| Molasses | S | S |
| Mustard (Prepared) | S | S |
| Naphtha | O | U |
| Napthalene | S | U |
| Natural Gas (Wet) | S | S |
| Nickel Chloride Sat'd | S | S |
| Nickel Nitrate Conc. | S | S |
| Nickel Sulfate | S | S |
| Nicotinic Acid | S | S |
| Nitric Acid 0-30% | S | S |
| Nitric Acid 30-50% | S | O |
| Nitric Acid 70% | S | O |
| Nitric Acid 95-98% | U | U |
| Nitrobenzene 100% | U | U |
| Nitroglycerine | O | U |
| Octane | S | S |
| Oleum Conc | U | U |
| Olive Oil | S | S |
| Orange Juice | S | S |
| Oxalic Acid Dilute | S | S |
| Oxalic Acid Sat'd | S | S |
| Ozone | O | O |
| Palm Oil | S | S |
| Paraffin Oil | S | O |
| Peanut Butter | S | S |
| Perchloroethylene | U | U |
| Pepper (Fresh Ground | S | S |
| Peppermint Oil | O | U |
| Perchloric Acid 50% | S | O |
| Petroleum Ether | U | U |
| Petroleum Jelly | S | S |
| Phenol | S | S |
| Phosphoric Acid 0-30% | S | S |
| Phosphoric Acid 30-90% | S | S |
| Phosphoric Acid Over 90% | S | S |
| Photographic Solutions | S | S |
| Phthalic Anhydride | S | S |
| Pickling Baths | | |
| Sulfuric Acid | S | S |
| Hydrochloric Acid | S | S |
| Sulfuric-Nitric | S | U |
| Pine Oil | O | U |
| Plating Solutions | | |
| Brass | S | S |
| Cadmium | S | S |
| Chromium | S | S |
| Copper | S | S |
| Gold | S | S |
| Indium | S | S |
| Lead | S | S |
| Nickel | S | S |
| Rhodium | S | S |
| Silver | S | S |

| Reagent | 21°C (70°F) | 60°F (140°F) |
|---|---|---|
| Tin | S | S |
| Zinc | S | S |
| Potassium Bicarbonate Sat'd | S | S |
| Potassium Borate 1% | S | S |
| Potassium Bromate 10% | S | S |
| Potassium Bromide Sat'd | S | S |
| Potassium Carbonate | S | S |
| Potassium Chlorate Sat'd | S | S |
| Potassium Chloride Sat'd | S | S |
| Potassium Chromate 40% | S | S |
| Potassium Cyanide Sat'd | S | S |
| Potassium Dichromate 40% | S | S |
| Potassium Ferri/Ferro Cyanide | S | S |
| Potassium Fluoride | S | S |
| Potassium Hydroxide 20% Conc | S | S |
| Potassium Nitrate Sat'd | S | S |
| Potassium Perborate Sat'd | S | S |
| Potassium Perchlorate 10% | S | S |
| Potassium Permanganate 20% | S | S |
| Potassium Sulfate Conc | S | S |
| Potassium Sulfide Conc | S | S |
| Potassium Sulfite Conc | S | S |
| Potassium Persulfate Sat'd | S | S |
| Propane Gas | S | S |
| Propargyl Alcohol | S | S |
| Propyl Alcohol | S | S |
| Propylene Glycol | S | S |
| Pyridine | S | O |
| Rayon Coagulating Bath | S | S |
| Resorcinol | S | S |
| Salicylic Acid | S | S |
| Sea Water | S | S |
| Shortening | S | S |
| Silicic Acid | | |
| Silver Nitrate Sol'n | S | S |
| Soap Solution Conc. | S | S |
| Sodium Acetate Sat'd | S | S |
| Sodium Benzoate 35% | S | S |
| Sodium Bicarbonate Sat'd | S | S |
| Sodium Bisulfate Sat'd | S | S |
| Sodium Bisulfite Sat'd | S | S |
| Sodium Borate | S | S |
| Sodium Carbonate Conc. | S | S |
| Sodium Chlorate Sat'd | S | S |
| Sodium Chloride Sat'd | S | S |
| Sodium Cyanide | S | S |
| Sodium Dichromate Sat'd | S | S |
| Sodium Ferricyanide Sat'd | S | S |
| Sodium Ferricyanide | S | S |
| Sodium Fluoride Sat'd | S | S |
| Sodium Hydroxide Conc | S | S |

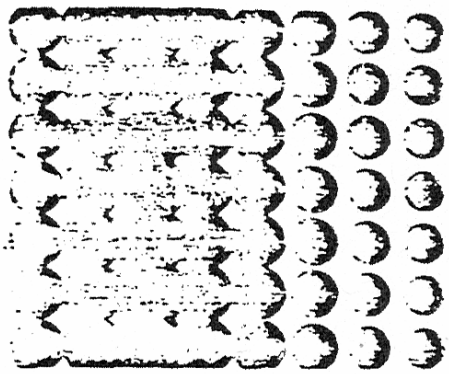
**Table II**
**Chemical Resistance of Fortiflex HDPE**

**Legend: S = Satisfactory, O = Some Attack, U = Unsatisfactory**

| Reagent | 21°C (70°F) | 60°C (140°F) |
|---|---|---|
| Sodium Hypochlorite | S | S |
| Sodium Nitrate | S | S |
| Sodium Nitrite | S | S |
| Sodium Perborate | S | S |
| Sodium Phosphate | S | S |
| Sodium Sulfide 25% to Satd | S | S |
| Sodium Sulfite Satd | S | S |
| Sodium Thiosulphate | S | S |
| Soybean Oil | S | S |
| Stannous Chloride Satd | S | S |
| Stannic Chloride Satd | S | S |
| Starch Solution Satd | S | S |
| Stearic Acid 100% | S | S |
| Sulfuric Acid 0-50% | S | S |
| Sulfuric Acid 70% | S | O |
| Sulfuric Acid 80% | S | U |
| Sulfuric Acid 96% | O | U |
| Sulfuric Acid 98% Conc | O | U |
| Sulfuric Acid Fuming | U | U |
| Sulfurous Acid | S | S |
| Tartaric Acid | S | S |
| Tannic Acid 10% | S | S |
| Tea | S | S |
| Tetrahydrofurane | C | C |

| Reagent | 21°C (70°F) | 60°F (140°F) |
|---|---|---|
| Toluene | U | U |
| Tomato Juice | S | S |
| Transformer Oil | S | O |
| Trisodium Phosphate Satd | S | S |
| Trichloroethylene | U | U |
| Turpentine | O | U |
| Urea | S | S |
| Urine | S | S |
| Vanilla Extract | S | S |
| Vaseline | S | S |
| Vinegar Comm. | S | S |
| Wetting Agents | S | S |
| Whiskey | S | S |
| Wines | S | S |
| Xylene | U | U |
| Yeast | S | S |
| Zinc Chloride Satd | S | S |
| Zinc Oxide | S | S |
| Zinc Sulfate Satd | S | S |

# Rigidex
high density
polyethylene



## Technigram T800/1

## Chemical resistance of Rigidex

### Introduction

A guide to the effect that a variety of chemicals has on high density polyethylene (HDPE) is given in the following Table which is a compendium of BP Chemicals Limited information and other published literature sources.

Polyethylene materials as a class have a high resistance to chemical attack and are insoluble in all known solvents at room temperature. However, when considering the suitability of Rigidex HDPE for a particular application, certain other factors should be taken into account.

### Permeation effects

HDPE has a closely packed molecular structure and as a result provides an effective barrier to many liquids, gases and vapours. Consequently, Rigidex grades are used extensively to package and transport a wide range of household and industrial products, foodstuffs, pharmaceuticals, agrochemicals and cosmetics. However, HDPE, in common with all thermoplastics is incapable of providing a complete barrier to all substances and loss by relatively low permeation rates can sometimes be accompanied by partial collapse of the container (panelling). In some instances, this can influence the stacking performance of the container in addition to detracting from the aesthetic appeal.

If panelling cannot be overcome by improving bottle rigidity, then it might sometimes be possible to camouflage the effect by using an oval cross section bottle or incorporating concave surfaces.

### Photo-degradation effects

Panelling can also occur with products that are either photo-degradable or result in the absorption of oxygen from the ullage space. However, the use of opaque pigmentation and/or flushing the head space with nitrogen immediately prior to capping, will often eliminate panelling.

### Absorption

This phenomenon is similar to permeation and in general the two effects tend to present problems with the same liquids. One notable exception is motor oil, which often exhibits quite high absorption levels yet negligible permeation.

When HDPE absorbs a liquid, there may be a change of dimensions and swelling. In severe cases, buckling of the container walls and panelling effects similar to those observed by permeation can occur. The swelling is usually accompanied by some loss of mechanical properties, notably tensile strength and softening of the polymer.

### Environmental stress crack resistance

Products made from HDPE sometimes fail prematurely in service in the presence of certain surface active environments. Examples of these are detergents, chlorinated hydrocarbons, alcohols and some silicone products.

The brittle type of failure which occurs is always associated with a combination of the active environment and mechanical stresses in the moulded product. In any moulding there will always be regions of moulded-in stress in addition to stresses which result from externally applied loads. Also, some features of container design such as sharp corners or notches will produce areas of stress concentration which intensify the effects of applied loads. These stresses can result in brittle failure in the presence of active environments, even though the stresses involved would normally be within the mechanical limits of the polymer. In addition, these effects can be accelerated by elevated temperatures.

The activity of a liquid as a stress cracking environment and the resistance to stress cracking provided by the polymer may be assessed by a range of test methods. Generally, polyethylene materials of lower density and melt flow rate have better resistance to environmental stress cracking.

### Packaging suitability

The use of small scale accelerated tests should be used only as an indication of the suitability of HDPE as a packaging material for a particular product. Information inferred from these tables for a single product may not, of course, be relevant when it is used as a component in a mixture of chemicals. Consequently, potential users of HDPE containers should always satisfy themselves that the containers are suitable for their particular product, taking into account the conditions of storage and distribution.

## Guide to chemical resistance

### Key

**S.** Satisfactory. This chemical is only absorbed to a low level and thus has little or no measurable effect on physical properties.

**L.** Limited resistance. A higher level of absorption occurs resulting in definite loss of physical properties. The question of the suitability of high density polyethylene would have to be considered with respect to the particular environment.

**E.** Environmental stress cracking may occur.

**NS.** Not satisfactory. Chemical attack or a high level of absorption occurs. In both cases the loss of physical properties is such that high density polyethylene is not suitable where prolonged contact is likely.

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| **General chemical products** | | | |
| Acetaldehyde | 100 | S | L |
| Acetic acid | 10 | S/E | S/E |
| Acetic acid | 100 | S/E | L/E |
| Acetic anhydride | 100 | S | L |
| Acetone | 100 | S | S |
| Acetophenetidin | | S | S |
| Acetophenone | 100 | S | S |
| Acetylene | All | S | S |
| Acrylic emulsions | All | S/E | S/E |
| Acrylonitrile | 100 | S | S |
| Adipic acid | | S | S |
| Aliphatic alcohols | 100 | S | S |
| Allyl chloride | 100 | S | S |

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| Allyl chloride | 100 | L | L |
| Aluminium acetate | All | S | S |
| Aluminium carbonate | All | S | S |
| Aluminium chloride | | S | S |
| Aluminium fluoride | | S | S |
| Aluminium hydroxide | | S | S |
| Aluminium nitrate | | S | S |
| Aluminium oxalate | | S | S |
| Aluminium oxychloride | | S | S |
| Aluminium sulphate | | S | S |
| Alums | All | S | S |
| Amino acetic acid | All | S | S |
| Ammonia (gaseous) | 100 | S | S |
| Ammonium acetate | All | S | S |
| Ammonium bicarbonate | All | S | S |
| Ammonium carbonate | | S | S |
| Ammonium chloride | | S | S |
| Ammonium fluoride | | S | S |
| Ammonium hydroxide | | S | S |
| Ammonium metaphosphate | | S | S |
| Ammonium nitrate | | S | S |
| Ammonium oxalate | | S | S |
| Ammonium persulphate | | S | S |
| Ammonium phosphate | | S | S |
| Ammonium sulphate | | S | S |
| Ammonium sulphide | | S | S |
| Ammonium thiocyanate | | S | S |

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| Amyl alcohol | 10 | L | L |
| Amyl chloride | All | L | L |
| Aniline | 100 | L | L |
| Antimony | 100 | S | S |
| Antimony trichloride | 100 | S | S |
| Aqua regia | 100 | NS | NS |
| Arsenic | 100 | S | S |
| Arsenic acid | | S | S |
| Aryl sulphonic acid | 100 | S | S |
| Benzaldehyde | 100 | S | L |
| Benzaldehyde (AQ) | Sat. | S | — |
| Benzene | 100 | L | NS |
| Benzene sulphonic acid | 100 | S/E | S/E |
| Benzoic acid | Sat. | S | S |
| Benzophenone | 100 | S | S |
| Benzoyl cloride | 100 | L | L |
| Bismuth carbonate | | S | S |
| Boric acid | | S | S |
| Boron trifluoride | 100 | S | |
| Bromic acid | 10 | S | S |
| Bromine (liquid) | 100 | NS | NS |
| Bromine (vapour) | High | NS | NS |
| Bromine water | Sat. | NS | NS |
| Bromochloromethane | 100 | NS | NS |
| Butadiene | 100 | NS | NS |
| Butanediol | 100 | S/E | |
| Butane (gaseous) | 100 | S | S |
| Butane (liquid) | 100 | L | — |
| Butanol | 100 | S | S |
| Butoxyl (methoxy butyl acetate) | 100 | S | L |
| Butyl acetate | 100 | L | NS |
| Butyl alcohol | 100 | S/E | S/E |
| Butylene glycol | 100 | S | S |
| Butyric acid | 100 | S | L |
| Carbon dioxide (dry) | 100 | S | S |
| Carbon dioxide (wet) | 100 | S | S |
| Carbon disulphide | 100 | L | — |
| Carbon monoxide | 100 | S | S |
| Carbon tetrachloride | 100 | NS | NS |
| Caustic potash (soln.) | 50 | S | S |
| Caustic potash (soln.) | 10 | S | S |
| Caustic soda | 50 | S | S |
| Caustic soda | 10 | S | S |
| Chloral hydrate | 100 | S | S |
| Chlorine gas (moist) | | L | NS |
| Chlorine liquid | | NS | NS |
| Chlorine water | | L | NS |
| Chloroacetic acid | 100 | S | S |
| Chlorobenzene | 100 | L | NS |

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| Chloroethanol | 100 | S | S |
| Chloroform | 100 | NS | NS |
| Chloromethane | 100 | L | — |
| Chlorosulphonic acid | 100 | NS | NS |
| Chrome alum | | S | S |
| Chromic acid | Sat. | S/L | NS |
| Chromium salts | Sat. | S | S |
| Citric acid | | S/E | S/E |
| Copper salts (aqueous) | Sat. | S | S |
| Cresols | 100 | S | S |
| Cresylic acid | 100 | L | — |
| Cresylic acid | 50 | S | S |
| Cyclohexane | 100 | L | L |
| Cyclohexanol | 100 | S/E | S/E |
| Cyclohexanone | 100 | S | L |
| Decahydronaphthalene | 100 | L | NS |
| Dibutyl ether | 100 | L | NS |
| Dibutyl phthalate | 100 | L | L |
| Dibutyl sebacate | 100 | S | — |
| Dichloroacetic acid | 100 | S | L |
| Dichloroacetic acid | 50 | S | S |
| Dichloroacetic acid/methyl ester | | S | S |
| o-dichlorobenzene | | L | NS |
| p-dichlorobenzene | | L | NS |
| Dichloroethane | 100 | L | L |
| Dichloroethylene | 100 | NS | NS |
| Diethyl ether | 100 | L | L |
| Diethylene glycol | 100 | S/E | S/E |
| Diglycolic acid | 100 | S/E | S/E |
| Dihexyl phthalate | 100 | S | S |
| Diisobutyl ketone | 100 | S | NS |
| Dimethyl carbinol | 100 | S | — |
| Dimethyl formamide | 100 | S | L |
| Dimethyl sulphoxide | 100 | S | S |
| Dinonyl adipate | 100 | S | — |
| Dinonyl phthalate | 100 | S | L |
| Dioctyl adipate | 100 | S | — |
| Dioctyl phthalate | 100 | S | L |
| 1,4-Dioxane | 100 | S | S |
| Diphenyl ether | 100 | L | L |
| Disodium phosphate | 100 | S | S |
| Epichlorhydrin | 100 | S | S |
| Epoxy resins | 100 | S | S |
| Ethanediol | 100 | S | S |
| Ether | 100 | S/E | L |
| Ethyl acetate | 100 | S | L |
| Ethyl acrylate | 100 | L | L |
| Ethyl alcohol | 100 | S/E | S/E |
| Ethylbenzene | 100 | L | NS |

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| Ethyl butyrate | 100 | L | NS |
| Ethyl chloride | 100 | L | NS |
| Ethylene chloride | 100 | L | NS |
| Ethylenediaminetetra-acetic acid | 100 | S | S |
| Ethylene dichloride | 100 | L | NS |
| Ethylene glycol | 100 | S/E | S/E |
| 2-Ethylhexanol | 100 | S | — |
| Fatty acids ( > 6) | | S/E | S/E |
| Ferric chloride | | S | S |
| Ferric nitrate | | S | S |
| Ferric sulphate | | S | S |
| Ferrous ammonium citrate chloride | Sat. | S | S |
| Ferrous sulphate | | S | S |
| Fluoboric acid | 100 | S | S |
| Fluoric acid | 40 | S | S |
| Fluorine | 100 | NS | NS |
| Fluorosilicic acid | | S | S |
| Formaldehyde (aqueous) | 40 | S/E | S/E |
| Formalin | | S | S |
| Formic acid | | S/E | S/E |
| Furfural | 100 | L | NS |
| Furfuryl alcohol | 100 | S | L |
| Gallic acid | | S/E | S/E |
| Glycolic acid | 30 | S/E | S/E |
| Glycolic acid butyl ester | 100 | S | S |
| Heptane | 100 | S | NS |
| Hexachlorobenzene | 100 | S | S |
| Hexamine | 100 | S/E | S/E |
| Hexane | 100 | NS | NS |
| Hydrazine | 100 | S/E | S |
| Hydrazine hydrate | 100 | S/E | S |
| Hydrobromic acid | 50 | S | S |
| Hydrochloric acid | Conc. | S | S |
| Hydrocyanic acid | 100 | S | S |
| Hydrocyanic acid | Sat. | S | S |
| Hydrocyanic acid | 10 | S | S |
| Hydrofluoric acid | 40 | S | S |
| Hydrofluoric acid | 70 | S | S |
| Hydrogen | 100 | S | S |
| Hydrogen bromide | 10 | S | S |
| Hydrogen peroxide | 30 | S | S |
| Hydrogen peroxide | 90 | S | NS |
| Hydrogen phosphite | 100 | S | S |
| Hydrogen sulphide | Low | S | S |
| Hydroquinone | | S | S |
| Hypochlorites | 100 | S | S |
| Hypochlorous acid | All | S | S |

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| Iron salts (aqueous) | Sat. | S | S |
| Isobutyl alcohol | 100 | S | — |
| Isooctane | 100 | S | L |
| Isopropanol | 100 | S | S |
| Isopropyl ether | 100 | L | NS |
| Lactic acid | 100 | S/E | S/E |
| Lead acetate | Sat. | S | S |
| Lead tetraethyl | | S | |
| Magnesium carbonate | | S | S |
| Magnesium chloride | | S | S |
| Magnesium hydroxide | | S | S |
| Magnesium nitrate | | S | S |
| Magnesium sulphate | | S | S |
| Maleic acid | 50 | S | S |
| Manganese sulphate | | S | S |
| Mercuric chloride | | S | S |
| Mercuric cyanide | | S | S |
| Mercurous nitrate | | S | S |
| Mercury | 100 | S | S |
| Methoxybutanol | 100 | S | L |
| Methyl acrylate | | NS | NS |
| Methyl alcohol | | S E | S E |
| Methyl bromide | | L | NS |
| Methyl cyclohexane | | L | NS |
| Methylene chloride | | NS | NS |
| Methyl ethyl ketone | 100 | S | L |
| Methyl glycol | | S | S |
| 4-Methyl-2-pentanol | | S | L |
| Methyl sulphuric acid | | S/E | S/E |
| Monochloroacetic acid | | S | S |
| Monochlorobenzene | | S | S |
| Naphthalene | 100 | S | |
| Natural gas | | S | S |
| Nickel salts (aqueous) | Sat. | S | S |
| Nicotine | Dil. | S/E | S/E |
| Nicotinic acid | | S/E | S/E |
| Nitric acid | 50 | L | NS |
| Nitric acid | 98 | NS | NS |
| Nitrobenzene | 100 | NS | NS |
| Nitroglycerine | 100 | NS | NS |
| Nitropropane | | L | L |
| o-nitrotoluene | 100 | S | L |
| Nitrous gases | 100 | S | S |
| Nonyl alcohol | 100 | S | — |
| Oleic acid | 100 | S/E | L/E |
| Oleum | | NS | NS |
| Oxalic acid | | S/E | S/E |

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| Oxygen | 100 | S | S |
| Ozone | | NS | NS |
| Palmitic acid | | S/E | S/E |
| Pentane | | NS | — |
| Perchloric acid | 20 | S | S |
| Perchloric acid | 50 | S | S |
| Perchloric acid | 70 | S | NS |
| Petroleum ether | 100 | S | L |
| Phenol (aqueous phase) | | S | S |
| Phenol (solid phase) | 100 | S | S |
| Phenyl sulphonate | | S | S |
| Phosgene | | S | — |
| Phosphoric acid | 25 | S | S |
| Phosphoric acid | 50 | S | S |
| Phosphoric acid | Conc. | S/L | NS |
| Phosphoric anhydride | | S | S |
| Phosphorous | | S | S |
| Phosphorous oxychloride | | S | L |
| Phosphorous pentoxide | | S | S |
| Phosphorous trichloride | | S | L |
| Phthalic acid | 50 | S | S |
| Phthalic anhydride | | S | S |
| Picric acid | | S | S |
| Polyglycol ethers | | S | S |
| Potassium antimonate | | S | S |
| Potassium bicarbonate | | S | S |
| Potassium bichromate | | S | S |
| Potassium bisulphate | | S | S |
| Potassium borate | | S | S |
| Potassium bromate | | S | S |
| Potassium bromide | | S | S |
| Potassium carbonate | | S | S |
| Potassium chlorate | | S | S |
| Potassium chloride | | S | S |
| Potassium chromate | | S | S |
| Potassium cuprocyanide | | S | S |
| Potassium cyanide | | S | S |
| Potassium dichromate | | S | S |
| Potassium ferri/ ferrocyanide | | S | S |
| Potassium fluoride | | S | S |
| Potassium hydroxide | | S | S |
| Potassium hypochlorite | | S | S |
| Potassium iodide | Sat. | S | S |
| Potassium nitrate | | S | S |
| Potassium orthophosphate | | S | S |

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| Potassium perborate | | S | S |
| Potassium permanganate | | S | S |
| Potassium persulphate | | S | S |
| Potassium sulphate | | S | S |
| Potassium sulphide | | S | S |
| Potassium sulphite | | S | S |
| Propane (gaseous) | 100 | S | S |
| Propane (liquid) | 100 | S | — |
| Propargyl alcohol | | S/E | S/E |
| Propionic acid | 50 | S | S |
| Propionic acid | 100 | S | L |
| Propyl alcohol | 100 | S/E | S/E |
| Propylene dichloride | 100 | NS | NS |
| Propylene glycol | | S/E | S/E |
| Pseudocumene | | L | L |
| Pyridine | 100 | S | NS |
| Quinine | | S | |
| Resorcinol | 100 | S | S |
| Salicylic acid | | S | S |
| Selenic acid | 100 | S | S |
| Silicic acid | | S | S |
| Silicone fluids | | S/E | S/E |
| Silver nitrate | | S | S |
| Silver salts (aqueous) | Sat. | S | S |
| Sodium acetate | | S | S |
| Sodium benzoate | | S | S |
| Sodium bicarbonate | | S | S |
| Sodium bisulphate | | S | S |
| Sodium borate | | S | S |
| Sodium bromide | | S | S |
| Sodium carbonate | | S | S |
| Sodium chlorate | | S | S |
| Sodium chloride | | S | S |
| Sodium chlorite | | S | S |
| Sodium cyanide | | S | S |
| Sodium dichromate | | S | S |
| Sodium dodecyl-benzenesulphonate | | S | S |
| Sodium ferricyanide | | S | S |
| Sodium ferrocyanide | | S | S |
| Sodium fluoride | | S | S |
| Sodium hydroxide | | S | S |
| Sodium hypochlorite | | S | S |
| Sodium hyposulphate | | S | — |
| Sodium nitrate | | S | S |
| Sodium nitrite | | S | S |

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| Sodium orthophosphate | | S | S |
| Sodium perborate | | S | S |
| Sodium peroxide | 10 | S | — |
| Sodium peroxide | Sat. | L | — |
| Sodium phosphate | | S | S |
| Sodium silicate | | S | S |
| Sodium sulphate | | S | S |
| Sodium sulphide | | S | S |
| Sodium sulphite | | S | S |
| Sodium tetraborate | | S | S |
| Sodium thiosulphate | | S | S |
| Stannic chloride | | S | S |
| Stannous chloride | | S | S |
| Stearic acid | 100 | S/E | S/E |
| Succinic acid | Sat. | S | S |
| Sulphur | | S | S |
| Sulphur dioxide (dry) | | S | S |
| Sulphur dioxide (wet) | | S | S |
| Sulphur trioxide | | NS | NS |
| Sulphuric acid | 10 | S | S |
| Sulphuric acid | 50 | S | S |
| Sulphuric acid | 95 | S | L |
| Sulphurous acid | 30 | S | S |
| Sulphuryl chloride | | NS | |
| Tannic acid | | S/E | S/E |
| Tartaric acid | 100 | S | S |
| Tartaric acid (aqueous) | Sat. | S | S |
| Tetrabromomethane | 100 | NS | NS |
| Tetrachloroethane | 100 | NS | NS |
| Tetrahydrofuran | 100 | L | NS |
| Tetralin | 100 | S | L |
| Thioglycolic acid | 100 | S | S |
| Thionyl chloride | | NS | |
| Thiophene | 100 | L | L |
| Toluene | 100 | L | NS |
| Trichloroacetic acid | 50 | S | S |
| Trichloroacetic acid | 100 | L | NS |
| Trichloroethylene | 100 | L | NS |
| Tri ß chloroethylene phosphate | 100 | S | S |
| Tricresyl phosphate | 100 | L | L |
| Triethanolamine | | L | L |
| Urea | | S/E | S/E |

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| Xylene | 100 | L | NS |
| Zinc ammonium carbonate | | S | S |
| Zinc carbonate | | S | S |
| Zinc chloride | | S | S |
| Zinc oxide | | S | S |
| Zinc sulphate | | S | S |
| **Oils and Waxes** | | | |
| Aniseed oil | 100 | L | NS |
| Beeswax | 100 | S | S |
| Carnauba wax | | S | S |
| Castor oil | 100 | S/E | S/E |
| Cedar leaf oil | | NS | NS |
| Cedar wood oil | | NS | NS |
| Cinnamon oil | | NS | NS |
| Citronella oil | | NS | NS |
| Clove oil | | S | S |
| Coconut oil | | S | NS |
| Coconut oil alcohols | | S/E | S/E |
| Cod liver oil | 100 | S | — |
| Corn seed oil | | S | L |
| Cotton seed oil | | S/E | S/E |
| Diesel oil | | S | S |
| Fuel oil | 100 | S | L |
| Kerosene | | L | L |
| Lanolin | 100 | S | — |
| Lemon peel oil | | S | L |
| Linseed oil | 100 | S | S |
| Menthol | 100 | S | S |
| Mineral oil | | L | L |
| Motor oil | 100 | S | L |
| Olive oil | 100 | S | S |
| Orange peel oil | 100 | S | — |
| Palm oil | 100 | S | — |
| Paraffin oil | 100 | S | L |
| Paraffin wax | 100 | S | S |
| Peanut oil | 100 | S | S |
| Peppermint oil | | L | NS |
| Petrol | | S/L | S/L |
| Pine needle oil | 100 | S | S |
| Pine oil | 100 | L | NS |
| Salad oils | 100 | S | L |
| Silicone oil | 100 | S/E | L/E |

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| Soya bean oil | 100 | S | S |
| Tallow | 100 | S | — |
| Transformer oil | 100 | S | L |
| Turpentine oil | 100 | L | NS |
| White spirit | | S/L | L |
| **Foods etc.** | | | |
| Beer | | S | S |
| Brandy | | S | — |
| Butter | | S | — |
| Buttermilk | | S | — |
| Cider | | S/E | S/E |
| Cinnamon | | S | — |
| Cloves | | S | — |
| Coca Cola | | S | S |
| Cocoa | | S | — |
| Coffee | | S | — |
| Cream | | S | — |
| Curds | | S | — |
| Dextrose | | S | S |
| Fructose | | S | S |
| Fruit juices | | S | S |
| Gelatine | | S | S |
| Gin | 40 | S | L |
| Glucose | | S | S |
| Glycerine | 100 | S/E | S/E |
| Glycerine (aqueous) | High | S | S/E |
| Glycerine (aqueous) | Low | S | S |
| Grapefruit juice | | S | S |
| Honey | | S | S |
| Horse radish | | S | — |
| Jam | 100 | S | S |
| Jelly | 100 | S | S |
| Lard | | S | |
| Lemon juice | | S | S |
| Lime juice | | S | S |
| Margarine | 100 | S | S |
| Mayonnaise | 100 | S | — |
| Milk | | S | S |
| Molasses | | S | S |
| Mustard | | S | S |
| Orange juice | | S | S |
| Paprika | 100 | S | S |

| Substance | Conc.% | 20°C | 60°C |
|---|---|---|---|
| Pectin | Sat | S | S |
| Pepper | | S | S |
| Pineapple juice | | S | S |
| Rum | | S | S |
| Saccharose | 100 | S | S |
| Soda water | | S | — |
| Starch | | S | S |
| Sugar beet syrup | 100 | S | S |
| Tea (leaves) | | S | S |
| Tomato juice | 100 | S | S |
| Tomato ketchup | 100 | S | S |
| Vanilla | 100 | S | S |
| Vinegar | All | S | S |
| Whisky | 40 | S/E | |
| Wine (mulled claret) | 100 | S | S |
| Wine spirit | 100 | S | S |
| Yeast | 100 | S | S |
| **Car, garden, household products** | | | |
| Antifreeze | | S | S |
| Bleach | | L | L |
| Borax | | S | S |
| Brake fluid | 100 | S/E | S/E |
| Brine | | S | S |
| Creosote | 100 | S | S |
| Cresol (aqueous) | | S | S |
| Detergents | | S/E | S/E |
| Dextron | | S | S |
| Emulsions (photographic) | 100 | S/E | S/E |
| Floor wax | 100 | S | L |
| Furniture polish | 100 | S/E | L |
| Hair shampoo | | S | S |
| Hydraulic fluid | 100 | S | L |
| Ink | 100 | S | S |
| Methylated spirit | | S/E | S/E |
| Nail polish and remover | 100 | S | L |
| Petroleum jelly | 100 | S | S |
| Shoe polish | 100 | S | L |
| Talc | | S | S |
| Tar | 100 | S | L |