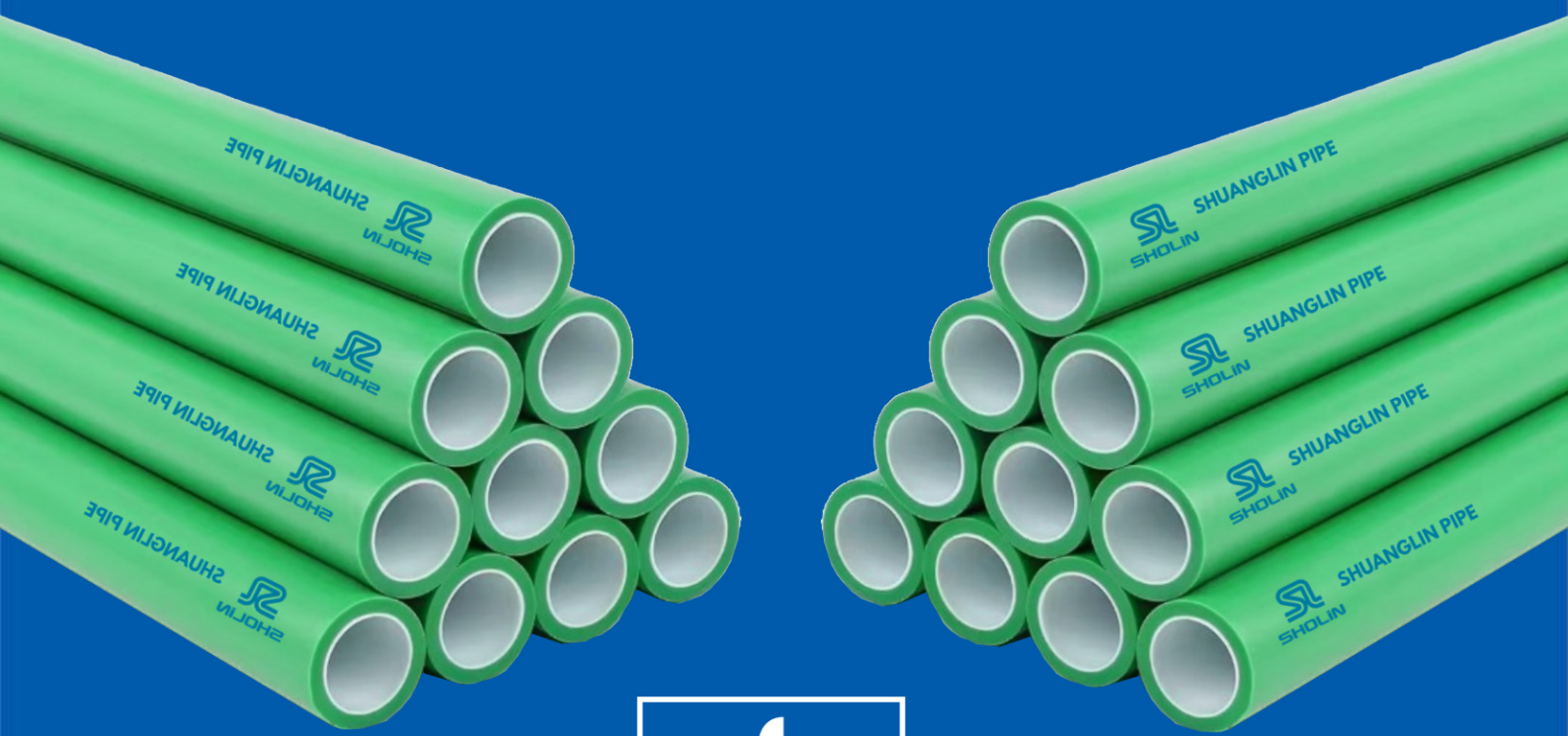
PT. EXCELINDO ADHI PRATAMA

SHOLiN

PPR ANTIBACTERIAL PIPE AND FITTINGS



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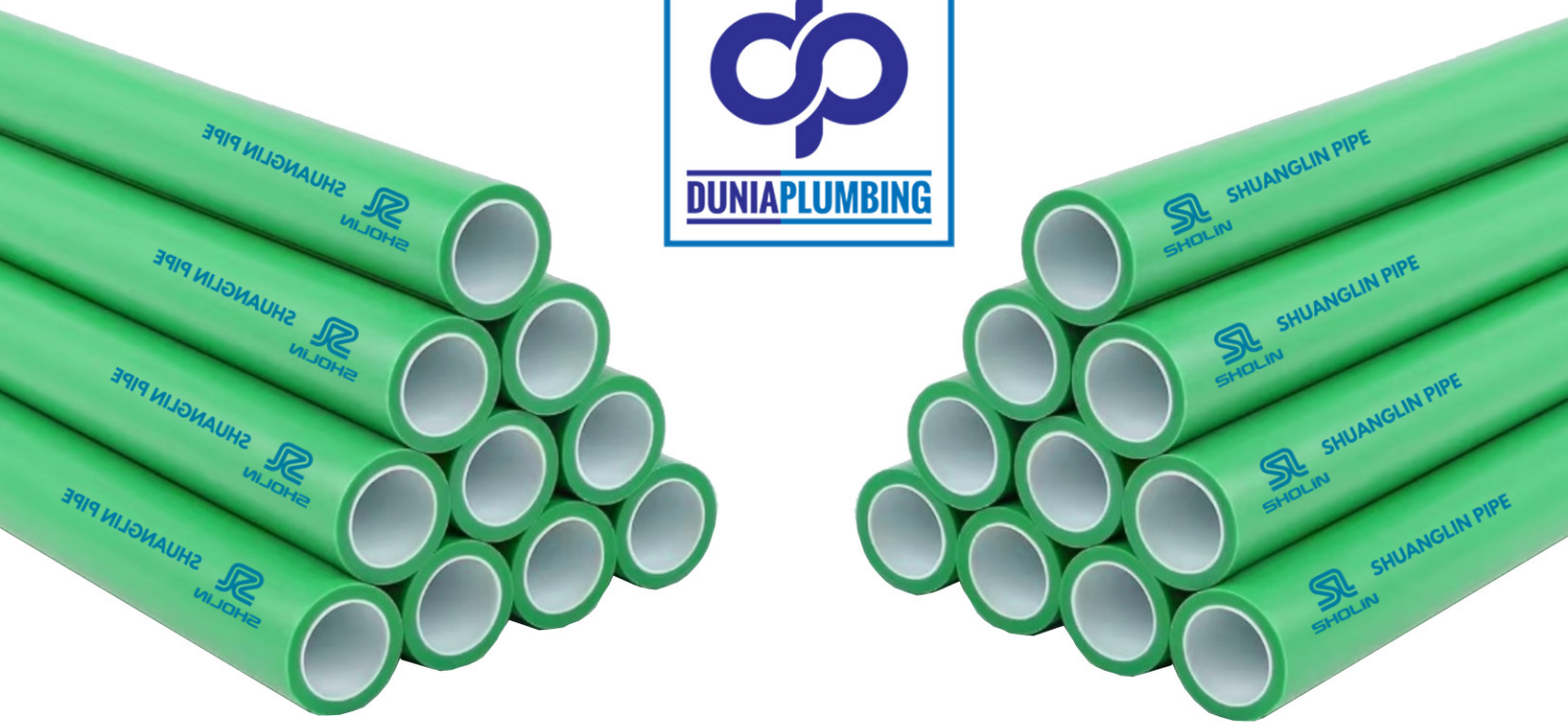

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Part 1

COMPANY
INTRODUCTION

PT.SHUANGLIN PIPE INDONESIA was established in 2017, with the brand name SHOLIN pipe. The factory is located in KITIC (China-Indonesia industrial area) in the Deltamas industrial area in Cikarang,Bekasi. Shuanglin factory covers an area of 20,000 ㎡,which has a modern production workshop and a comfortable office environment. Shuanglin specializes in manufacturing PPR pipes,HDPE solid wall pipes,HDPE corrugated pipes, HDPE corrugated conduit pipes and related fittings.

PT.SHUANGLIN PIPE INDONESIA is equipped with advanced and highly efficient production facilities, and also has a highly ef ficient management team and a professional production team. SHUANGLIN factory can produce PPR pipes and HDPE pipes with an annual capacity of 10,000 tons. Shuanglin factory is certified with ISO 9001:2015, 14001:2015, 45001: 2018, SNI 4829:2015 quality management system, and other certificates.

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CERTIFICATES


Certificate of Registration
(Environmental Management System)
QFS MANAGEMENT SYSTEMS LLP
This is to Certify that the Environmental Management System of
PT SHUANGLIN PIPE INDONESIA
ISO 14001:2015
This certificate is valid for the following product or service range
MANUFACTURE OF PIPE HIGH DENSITY POLYETHYLENE (HDPE).
QFS MANAGEMENT SYSTEMS LLP


Certificate of Registration
(Occupational Health & Safety Management System)
QFS MANAGEMENT SYSTEMS LLP
This is to Certify that the Occupational Health & Safety Management System of
PT SHUANGLIN PIPE INDONESIA
ISO 45001:2018
This certificate is valid for the following product or service range
MANUFACTURE OF PIPE HIGH DENSITY POLYETHYLENE (HDPE).
QFS MANAGEMENT SYSTEMS LLP


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REPUBLIK INDONESIA
TANDA SAH CAPAIAN TINGKAT KOMPONEN DALAM NEGERI


BSN
SURAT PERSETUJUAN PENGGUNAAN TANDA SNI


Certificate of Registration
(Quality Management System)
QFS MANAGEMENT SYSTEMS LLP
This is to Certify that the Quality Management System of
PT SHUANGLIN PIPE INDONESIA
Has been found to be of the Quality Management System Standard
ISO 9001:2015
This certificate is valid for the following product or service range
MANUFACTURE OF PIPE HIGH DENSITY POLYETHYLENE (HDPE).
QFS MANAGEMENT SYSTEMS LLP


LAMPIRAN

Part 2 | PPR pipes Characteristics

2.1 PPR pipe

PP-R pipes, made from polypropylene random copolymer since 1990s, applying in cold and hot water supplyin buildings, with variety of advantages as following:

- **Light weight:**
  The density of the pipe is only 0.895-0.915g/m³, which is only 1/9 of steel pipe and 1/10 of copper pipe.It makes handling and installation more convenient.
- **Good heat and pressure resistance:**
  Its short-term operating temperature can up to 95°C. And under the temperature of 80°C, it still can bear some pressure for a long term. That's the best choice for cold and hot water supply pipeline in buildings.
- **Long service life:**
  Under proper temperature and pressure, its service life can reach over 50 years.
- **Good corrosion resistance:**
  SHOLIN PP-R pipes have excellent corrosion resistance to most inorganic ion and common chemical substances in buildings. It is anti-corrosion and does not rust in long term use.
- **Reliable and convenient connection:**
  PP-R material has excellent melting welding performance. The pipes and fittings are made from the same material, joined together by melting welding. Compared to single pipe, the tensile, bending and impact strength in joint are much higher, which prevents the danger of leakage, and this kind of connection method also makes the site installation reliable and convenient
- **Nonpoisonous and harmless:**
  PP-R belongs to polyolefin, which is a kind of thermoplastics, whose molecule is only composed of carbon and hvdrogen. And the sanitary property of the materials for SHOLIN PP-R pipes and fittings has been certificated by national authority organization.
- **Good thermal and sound insulation property:**
  The thermal conductivity coefficient of PP-R is 0.23w/m°C, which is only 1/200 of steel pipe (43-52w/m°C).No need to use insulating materials when used in hot water systems, which saves insulation materials and energy. And it has lower noise when water delivery in pipeline system.
- **Better water passing capacity:**
  The smooth inner surface of PP-R pipes and fittings have lower friction, which ensure fast running of the water.
- **Environment–friendly building material:**
  During production, installation and application, no pollution will be caused to the environment. Meanwhile,the materials are recyclable, which can minimize resource wasting.

Application Fields

Due to its special characteristics and outstanding advantages, PP-R piping system is a piping system with many applications.

- **Portable water pipe network** for cold and hot water supply in civil buildings, such as residence.hospitals, hotels, offices, schools and buildings on ship, etc.
- **Industrial pipe networks for foodstuff, chemical and electric industry.** e.g. for the transportation of some corrosive fluids (acid or alkaline water and ionized water, etc.).
- **Pipe networks for purified water and mineral water.**
- **Pipe networks for air conditioning equipment.**
- **Pipe networks for floor heating system.**
- **Pipe networks for rainwater utilization system.**
- **Pipe networks for swimming pool facilities.**
- **Pipe networks for agriculture and horticulture.**
- **Pipe networks for solar energy facilities.**
- **Pipe networks for chilled water.**





Material Characteristics of PP–R

Table 1

Typical Properties	Method	Value	Unit
Physical			
Density	ISO1183	0.895-0.915	g/cm³
Melt flow rate (MFR)			
(230°C/2.16Kg)	ISO1133	≤0.5	g/10min
Mechanical			
Tensile Modulus (23°C,v=1mm/min,Secant)	ISO527-1,-2	>650	MPa
Tensile Stress at Yield (23°C,v=50mm/min)	ISO527-1,-2	>20	MPa
Breaking Elongation (23°C,v=50mm/min)	ISO527-1,-2	>400	%
Impact			
Charpy notched impact strength	ISO179		
(-20°C)		>1.5	kJ/m²
(23°C)		>40	kJ/m²

Chemical Resistance of PP–R Material

The chemical resistance data presented here is based on ASTM D543.

Rating system

This chart rates the chemical resistance of Pro-fax polypropylene resin according to the following code. Note: The user is advised to make his or her own tests to determine the suitabilitly of polypropylene in the particular environment.

A = Negligible effect

Should be suitable for all applications where these environmental conditions exist.

B = Limited absorption or attack

Should be suitable for most applications, but the user is advised to make his or her own tests to determine the suitability of polypropylene in the particular environment

C = Extensive absorption and/or rapid permeation

Should be suitable for applications where only intermittent service is involved, or where the swelling produced has no detrimental effect on the part. The usershould make his or her own tests to determine the suitability of polypropylene in the particular environment

D = Extensive attack

The specimen dissolves or disintegrates Polypropylene is not recommended

Table 2

Environment	Conc. %	Temp., ℃		
		20	60	100
Acetic acid (glacial)	97	A	B (80°C)	–
Acetic acid	50	A	A (80°C)	–
Acetic acid	40	A	–	–
Acetic acid	10			–
Acetone	100	A	A	–
Acetophenone	100	B	B	–
Acriflavine (2% solution in H_2O)	2	A	A	– (80°C)
Acrylic emulsions		A	A	–
Aluminum chloride		A	A	–
Aluminum fuoride		A	A	–
Aluminum sulfate		A	A	–
Alums (all types)		A	A	–
Ammonia (aqueous)	30	A	–	–
Ammonia gas (dry)		A	A	–
Ammonium carbonate	Satd.	A	A	–
Ammonium chloride	Satd.	A	A	–
Ammonium fuoride	20	A	A	–
Ammonium hydroxide	10	A	A	–
Ammonium metaphosphate	Satd.	A	A	–
Ammonium nitrate	Satd.	A	A	–
Ammonium persulfate	Satd.	A	A	–
Ammonium sulfate	Satd.	A	A	–
Ammonium sulfide	Satd.	A	A	–
Ammonium thiocyanate	Satd.	A	A	–
Amyl acetate	100	B	C	–
Amyl alcohol	100	A	B	–
Amyl chloride	100	C	C	–
Aniline	100	A	A	–
Anisole		B	B	–
Antimony chloride		A	A	–
Aviation fuel (115/145 octane)	100	B	C	–
Aviation turbine fuel	100	B	C	–
Barium carbonate	Satd.	A	A	–
Barium chloride	Satd.	A	A	–
Barium hydroxide		A	A	–
Barium sulfate	Satd.	A	A	–
Barium sulfide	Satd.	A	A	–
Beer		A	A	–
Benzene	100	B	C	C

Environment	Conc. %	Temp., ℃		
		20	60	100
Benzoic acid	A	A	–	–
Benzyl alcohol		A	A (80°C)	–
Bismuth carbonate	Satd.	A	A	–
Borax		A	A	–
Boric acid		A	A	–
Brine	Satd.	A	A	–
Bromine liquid	100	D	–	–
Bromine water	(a)	C	–	–
Butyl acetate	100	C	C	–
Butyl alcohol	100	A	A	–
Calcium carbonate	Satd.	A	A	–
Calcium chlorate	Satd.	A	A	–
Calcium chloride	50	A	A	–
Calcium hydroxide		A	A	–
Calcium hypochlorite bleach	20[a]	A	B	–
Calcium nitrate		A	A	–
Calcium phosphate	50	A	–	–
Calcium sulfate		A	A	–
Calcium sulfite		A	A	–
Carbon dioxide (dry)		A	A	–
Carbon dioxide (wet)		A	A	–
Carbon disulfide	100	B	C	–
Carbon monoxide		A	A	–
Carbon tetrachloride	100	C	C	C
Carbonic acid		A	A	–
Castor oil		A	–	–
Cetyl alcohol	100	A	–	–
Chlorine (gas)	100	D	D	–
Chlorobenzene	100	C	C	–
Chloroform	100	C	D	D
Chlorosulfonic acid	100	D	D	D
Chrome alum		A	D	–
Chromic acid	80[a]	A	–	–
Chromic acid	50[a]	A	A	–
Chromic acid	10[a]	A	A	–
Chromic/sulfuric acid		D	D	–
Cider		A	A	–
Citric acid	10	A	A	–
Copper chloride	Satd.	A	A	–
Copper cyanide	Satd.	A	A	–
Copper fluoride	Satd.	A	A	–

Environment	Conc. %	Temp.,℃		
		20	60	100
Copper nitrate	Satd.	A	A	–
Copper sulfate	Satd.	A	A	–
Cottonseed oil		A	A	–
Cuprous chloride	Satd.	A	A	–
Cyclohexanol	100	A	B	–
Cyclohexanone	100	B	C	–
Decalin	100	C	C	C
Detergents	2	A	A	A
Developers (photographic)		A	A	–
Dibutyl phthalate	100	A	B	D
Dichloroethylene	100	A	–	–
Diethanolamine	100	A	A	–
Diisooctyl phthalate	100	A	A	–
Emulsifiers				
Ethanolamine				
Ethyl acetate				
Ethyl alcohol		A	A (80°C)	–
Ethyl chloride	100	C	C	–
Ethylene dichloride	100	B	–	–
Ethylene glycol		A	A	–
Ethylene oxide	100	B (10°C)	–	–
Ethyl ether	100	B	–	–
Fatty acids(C_6)	100	A	A	–
Ferric chloride	Satd.	A	A	–
Ferric nitrate	Satd.	A	A	–
Ferric sulfate	Satd.	A	A	–
Ferrous chloride	Satd.	A	A	–
Ferrous sulfate	Satd.	A	A	–
Fluorosilicic acid		A	A	–
Formaldehyde	40	A	A	–
Formic acid	100	A	–	–
Formic acid	10	A	A	–
Fructose		A	A	–
Fruit juices		A	A	–
Furfural	100	C	C	–
Gas liquor		C	–	–
Gasoline	100	B	C	C
Gearbox oil	100	A	B	–
Gelatin		A	A	–
Glucose	20	A	A	–
Glycerin	100	A	A	A
Glycol		A	A	–
Hexane	100	A	B	–
Hydrobromic acid	50[a]	A	A	–
Hydrochloric acid	30[a]	A	B	D
Hydrochloric acid	20	A	A (80°C)	–
Hydrochloric acid	10	A	A (80°C)	B
Hydrochloric acid	2	A	A	A
50-50 HCl-HNO_3	(a)	B	D (80°C)	–
Hydrofluoric acid	40	A	–	–
Hydrofluoric acid	60[a]	A	A (40°C)	–
Hydrogen chloride gas (dry)	100	A	A	–
Hydrogen peroxide	30	A	–	D
Hydrogen peroxide	10	A	B	–
Hydrogen peroxide	3	A	–	–
Hydrogen sulfide		A	A	–
Hydroquinone		A	A	–
Inks		A	A	–
Iodine tincture		A	–	–
Isooctane	100	C	C	–
Isopropyl alcohol	100	A	A	–
Ketones		A	A	–
Lactic acid	20	A	A	–
Lanolin	100	A	A	–
Lead acetate	Satd.	A	A	–
Linseed oil	100	A	A	–
Lubricating oi	100	A	B	–
Magenta dye (aqueous solution)	2	A	A Some staining	–
Magnesium carbonate	Satd.	A	A	–

Environment	Conc. %	Temp., ℃		
		20	60	100
Magnesium chloride	Satd.	A	A	–
Magnesium hydroxide	Satd.	A	A	–
Magnesium nitrate	Satd.	A	A	–
Magnesium sulfate	Satd.	A	A	–
Magnesium sulfite	Satd.	A	B	–
Meat juices		A	A	
Mercuric chloride	40	A	A	–
Mercuric cyanide	Satd.	A	A	C
Mercurous nitrate	Satd.	A	A	–
Mercury	100	A	A	–
Methyl alcohol	100	A	A	–
Methylene chloride	100	A	–	–
Methyl ethyl ketone	100	A	B	–
Milk and its products		A	A	A
Mineral oil	100	A	B	–
Molasses		A	A	–
Motor oil	100	A	B	–
Naphthalene	100	A	A	A
Nickel chloride	Satd.	A	A	–
Nickel nitrate	Satd.	A	A	–
Nickel sulfate	Satd.	A	A	–
Nitric acid	fuming	D	D	D
Nitric acid	70[a]	C	D	–
Nitric acid	60	A	D (80°C)	–
Nitric acid	10	A	A	A
50-50 HNO_3-HCl	(a)	B	D (80°C)	–
50-50 HNO_3-H_2S0_4	(a)	C	D (80°C)	–
Nitrobenzene	100	A	A	–
Oleic acid		A	B	–
Oleum		–	–	D
Olive oil	100	A	A	–
Oxalic acid (aqueous)	50	A	B	–
Paraffin	100	A	B	–
Paraffin wax	100	A	A	–
Petrol	100	B	C	–
Petroleum ether (boiling point 100°-140°C)	100	C	C	–

Environment	Conc. %	Temp., ℃		
		20	60	100
Phenol	100	A	A	–
Phosphoric acid	95	A	A	–
Plating solutions, brass		A	A	–
Plating solutions, cadmium		A	A	–
Plating solutions, chromium		A	A	–
Plating solutions, copper		A	A	–
Plating solutions, gold		A	A	–
Plating solutions, indium		A	A	–
Plating solutions, lead		A	A	–
Plating solutions, nickel		A	A	–
Plating solutions, rhodium		A	A	–
Plating solutions, silver		A	A	–
Plating solutions, tin		A	A	–
Plating solutions, zinc		A	A	–
Potassium bicarbonate	Satd.	A	A	–
Potassium borate	1	A	A	–
Potassium bromate	10	A	A	–
Potassium bromide	Satd.	A	A	–
Potassium carbonate	Satd.	A	A	–
Potassium chlorate	Satd.	A	A	–
Potassium chloride	Satd.	A	A	–
Potassium chromate	40	A	A	–
Potassium cyanide	Satd.	A	A	–
Potassium dichromate	40	A	A	–
Potassium ferri-/ferrocyanide		A	A	–
Potassium fuoride		A	A	–
Potassium hydroxide	50	A	A	–
Potassium hydroxide	10	A	A	A
Potassium nitrate	Satd.	A	A	–
Potassium perborate	Satd.	A	A	–
Potassium perchlorate	10	A	A	–
Potassium permanganate	20	A	A	–
Potassium sulfate		A	A	–
Potassium sulfide		A	A	–
Potassium sulfite		A	A	–
Propyl alcohol	100	A	A	–
Pyridine	100	A	–	–
Silicone oil	100	A	A	–
Soap solution (concentrated)		A	A	–
Sodium acetate		A	A	–
Sodium bicarbonate	Satd.	A	A	–
Sodium bisulfate	Satd.	A	A	–

Environment	Conc. %	Temp., ℃		
		20	60	100
Sodium bisulfite	Satd.	A	A	–
Sodium borate		A	A	–
Sodium bromide oil solution		A	A	–
Sodium carbonate	Satd.	A	A	–
Sodium chlorate	Satd.	A	A	–
Sodium chloride	Satd.	A	A	A
Sodium chlorite	2	A	A (80°C)	–
Sodium chlorite	5	A	A (80°C)	–
Sodium chlorite	10	A (80°C)	A	–
Sodium chlorite	20	A (80°C)	A	–
Sodium cyanide	Satd.	A	A	–
Sodium dichromate	Satd.	A	A	–
Sodium ferricyanide	Satd.	A	A	–
Sodium ferrocyanicle	Satd.	A	A	–
Sodium fluoride	Satd.	A	A	–
Sodium hydroxide	50	A	A	–
Sodium hydroxide	10	A	A	A
Sodium hypochlorite	20	A	B	B
Sodium nitrate		A	A	–
Sodium nitrite		A	A	–
Sodium silicate		A	A	–
Sodium sulfate	Satd.	A	A	–
Sodium sulfide	25	A	A	–
Sodium sulfite	Satd.	A	A	–
Stannic chloride	Satd.	A	A	–
Stannous chloride	Satd.	A	A	–
Starch		A	A	–
Sugars and syrups		A	A	–
Sulfamic acid		A	A (80°C)	–
Sulfates of (Calcium and magnesium)		A	A	–
	Satd.			
Sulfates of (potassium and sodium)		A	A	–
Sulfur		A	A	–
Sulfuric acid	98[a]	C	–	D

Environment	Conc. %	Temp., ℃		
		20	60	100
Sulfuric acid	60	A	B (80°C)	–
Sulfuric acid	50	A	B	–
Sulfuric acid	10	A	A	A
50-50 H_2SO_4/HNO_3	(a)	C	D (80°C)	–
Tallow		A	A	–
Tannic acid	10	A	A	–
Tartaric acid		A	A	–
Tetrahydrofuran	100	C	C	C
Tetralin	100	C	C	C
Toluene	100	C	C	–
Transformer oil	100	A	C	–
Trichloroacetic acid	10	A	A	–
Trichloroethylene	100	A	A (80°C)	–
Turpentine	100	C	C	C
Urea		A	A	–
Urine		A	A	–
Water (distilled, soft, hard and vapor)		A	A	A
Wet chlorine gas		–	D (70°C)	–
Whiskey		A	A	A
White Paraffin	100	A	B (80°C)	–
White spirit	100	B	C	–
Wines		A	A	–
Xylene	100	C	C	C
Yeast		A	A	–
Zinc chloride	Satd.	A	A	–
Zinc oxide		A	A	–
Zinc sulfate	Satd.	A	A	–

(a) May produce cracking in material under stress