

TABLE OF FLUID COMPATIBILITIES OF PROCESS, MATERIALS SYSTEM

CHEMICAL	% concentration	°F temperature	CARBON STEEL	COPPER	RED BRASS
Acetaldehyde	100	70	A	E	E
Acetic Acid (aerated)	100	70	D	D	D
Acetic Anhydride	100	70	D	B	C
Acetone	100	70	A	A	A
Acetylene	100	70	A	E	E
Aluminum Chloride	10	70	D	D	D
Aluminum Hydroxide	10	70	B	B	B
Ammonia (Anhydrous)	100	70	A	A	A
Ammonium Chloride	10	70	D	D	D
Ammonium Sulfate	10	70	C	C	C
Ammonium Sulfite	10	70	D	B	B
Amyl Acetate	100	70	B	A	A
Aniline	100	70	A	D	D
Aroclor	100	70	B	A	A
Barium Chloride	30	70	B	B	B
Benzaldehyde	100	70	B	B	B
Benzene	100	70	A	A	A
Benzoic Acid	10	70	D	B	B
Boric Acid	10	70	D	B	B
Butadiene	100	70	A	A	A
Butane	100	70	A	A	A
Butanol	100	70	A	A	A
Butyl Acetate	100	70	A	B	B
Butyl Chloride	100	70	A	A	A
Calcium Chloride	20	70	B	B	B
Calcium Hydroxide	10	70	B	B	B
Carbon Dioxide (Wet)	100	70	C	C	C
Carbon Tetrachloride (dry)	100	70	B	B	B
Carbonic Acid	100	70	C	C	C
Chlorine Gas (dry)	100	70	B	B	B
Chloroformj (Dry)	100	70	B	B	B
Chromic Acid	20	70	D	D	D
Citric Acid	20	70	D	C	C
Creosote	100	70	B	B	B
Dibutylphthalate	100	70	A	A	A
Dichlorobenzene	0,1	70	B	B	B
Dichlorodifluoromethane (F-12)	100	70	A	A	A
Diethanolamine	100	85	A	B	B
Diethyl Ether	100	70	B	B	B
Diethylene Glycol	100	70	A	B	B
Diphenyl	100	160	B	B	B
Diphenyl Oxide	100	85	B	B	B
Ethane	100	70	A	A	A
Ethanolamine	100	70	B	B	B

Ether	100	70	B	B	B
Ethyl Acetate (Dry)	100	70	B	B	B
Ethyl Alcohol)	100	70	B	B	B
Ethyl Ether	100	70	B	B	B
Ethylene	100	70	A	A	A
Ethylene Glycol	100	70	B	B	B
Fatty Acids	100	400	D	D	D
Ferric Chloride	20	70	D	D	D
Ferric Sulfate	10	70	D	D	D
Ferrous Sulfate	10	70	D	B	B
Formaldehyde	50	200	D	B	B
Furfural	100	70	B	B	B
Glycerine	100	70	A	A	A
Hexane	100	70	A	A	A
Hydrochloric Acid (Aerated)	38	70	D	D	D
Hydrofluoric Acid (Aerated)	40	70	D	C	D
Iodine	20	70	D	D	D
Isopropanol	100	70	A	B	B
Lactic Acid	50	70	D	B	B
Linseed Oil	100	70	A	B	B
Lithium Chloride	30	200	B	B	B
Lithium Hydroxide	10	200	B	B	B
Magnesium Chloride	30	70	B	B	B
Magnesium Hydroxide	10	70	B	B	B
Magnesium Sulfate	30	200	B	B	B
Methane	100	70	A	A	A
Methallyamine	100	70	C	B	B
Methyl Alcohol	100	70	B	B	B
Methyl Chloride (dry)	100	70	A	A	A
Methylene Chloride (Dry)	100	70	B	B	B
Monochlorobenzene (Dry)	100	70	B	B	B
Monochlorodifluoro Methane (F-22)	100	70	A	A	A
Monoethanolamine	100	200	B	B	B
Naphtha	100	70	A	B	B
Naphthalene	100	70	A	B	B
Nikel Chloride	20	70	D	B	B
Nickel Sulfate	10	200	D	B	B
Nitric Acid	50	200	D	D	D
Nitrous Acid	10	70	D	D	D
Oleic Acid	100	70	B	B	B
Oxalic Acid	10	70	D	B	B
Perchloric Acid (Dry)	100	70	D	D	D
Perchloroethylene	100	70	A	B	B
Phenol	10	120	B	B	B
Phosphoric Acid (Aerated)	50	200	D	D	D
Phthalic Anhydride	100	300	B	B	B
Potassium Bicarbonate	30	200	B	B	B
Potassium Carbonate	40	200	B	B	B
Propylene Glycol	100	70	B	B	B
Pyridine	100	70	A	B	B
Silver Chloride	10	70	D	D	D
Silver Nitrate	10	70	D	D	D
Sodium Acetate	10	70	D	B	B

Sodium Hydroxide	50	300	D	D	D
Sodium Nitrate	40	70	B	B	B
Sodium Sulfate	10	200	B	B	B
Sulfur Dioxide (dry)	100	300	B	B	B
Sulfuric Acid (Aerated)	60	200	D	D	D
Toluene	100	200	A	A	A
Trichloroethylene (dry)	100	150	B	B	B
Turpentine	100	70	B	B	B
Vinyl Chloride (Dry)	100	70	A	B	B
Water (Fresh)	100	70	C	A	A
Water (Sea)	100	70	C	B	B
Xylene	100	200	B	A	A
Zinc Chloride	10	70	D	D	D
Zinc Sulfate	20	70	D	B	B

Legenda

- A EXCELLENT
- B GOOD
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CHEMICAL	ALUMINUM	304 STAINLESS STEEL	316 STAINLESS STEEL	NICKEL	MONEL
Acetaldehyde	A	A	A	A	A
Acetic Acid (aerated)	B	A	A	D	A
Acetic Anhydride	A	B	B	B	B
Acetone	A	A	A	B	A
Acetylene	A	A	A	A	A
Aluminum Chloride	D	D	D	C	B
Aluminum Hydroxide	B	B	B	B	B
Ammonia (Anhydrous)	A	A	A	B	A
Ammonium Chloride	C	B	B	B	B
Ammonium Sulfate	D	C	C	B	A
Ammonium Sulfite	B	C	C	D	D
Amyl Acetate	A	A	A	A	A
Aniline	D	A	A	B	B
Aroclor	A	B	B	A	A
Barium Chloride	B	B	B	B	B
Benzaldehyde	B	B	B	B	B
Benzene	B	B	B	B	B
Benzoic Acid	B	B	B	B	B
Boric Acid	C	A	A	B	B
Butadiene	A	A	A	A	A
Butane	A	A	A	A	A
Butanol	A	A	A	A	A
Butyl Acetate	A	B	B	A	B
Butyl Chloride	A	A	A	A	A
Calcium Chloride	B	C	B	A	A
Calcium Hydroxide	D	B	B	B	B
Carbon Dioxide (Wet)	B	A	A	A	A
Carbon Tetrachloride (dry)	B	B	B	A	A
Carbonic Acid	B	B	B	B	C
Chlorine Gas (dry)	C	B	B	B	B

Chloroformj (Dry)	B	B	B	A	A
Chromic Acid	D	C	B	D	D
Citric Acid	A	C	B	B	B
Creosote	B	B	B	B	B
Dibutylphthalate	B	B	B	B	B
Dichlorobenzene	B	B	B	B	B
Dichlorodifluoromethane (F-12)	A	A	B	B	B
Diethanolamine	A	A	A	A	A
Diethyl Ether	B	B	B	B	B
Diethylene Glycol	B	A	A	B	B
Diphenyl	A	B	B	B	B
Diphenyl Oxide	B	B	B	B	B
Ethane	A	A	A	A	A
Ethanolamine	B	A	B	B	B
Ether	B	B	B	B	B
Ethyl Acetate (Dry)	B	B	B	B	B
Ethyl Alcohol)	B	B	B	B	B
Ethyl Ether	B	B	B	B	B
Ethylene	A	A	A	A	A
Ethylene Glycol	B	B	B	B	B
Fatty Acids	A	D	A	B	C
Ferric Chloride	D	D	D	D	D
Ferric Sulfate	D	B	B	D	D
Ferrous Sulfate	B	B	B	D	D
Formaldehyde	C	B	B	B	B
Furfural	B	B	B	B	B
Glycerine	A	A	A	A	A
Hexane	A	A	A	A	A
Hydrochloric Acid (Aerated)	D	D	D	D	D
Hydrofluoric Acid (Aerated)	D	D	D	D	C
Iodine	D	D	D	D	D
Isopropanol	B	B	B	B	B
Lactic Acid	D	B	A	B	C
Linseed Oil	B	A	A	B	B
Lithium Chloride	D	B	A	A	A
Lithium Hydroxide	D	B	B	B	B
Magnesium Chloride	C	B	B	A	B
Magnesium Hydroxide	D	B	B	B	B
Magnesium Sulfate	C	A	A	B	B
Methane	A	A	A	A	A
Methallyamine	B	B	B	B	C
Methyl Alcohol	B	B	B	B	A
Methyl Chloride (dry)	E	A	A	B	B
Methylene Chloride (Dry)	B	B	B	B	B
Monochlorobenzene (Dry)	A	B	B	A	A
Monochlorodifluoro Methane (F-22)	A	A	A	A	A
Monoethanolamine	B	B	B	B	B
Naphtha	A	B	B	B	B
Naphthalene	B	A	A	A	A
Nikel Chloride	D	B	B	D	B
Nickel Sulfate	D	B	B	B	B
Nitric Acid	D	B	B	D	D
Nitrous Acid	D	B	B	D	D

Oleic Acid	B	B	B	A	A
Oxalic Acid	C	B	B	C	B
Perchloric Acid (Dry)	B	B	B	D	D
Perchloroethylene	B	B	B	A	A
Phenol	A	B	B	B	A
Phosphoric Acid (Aerated)	D	B	B	D	D
Phthalic Anhydride	B	B	B	B	B
Potassium Bicarbonate	D	B	B	B	B
Potassium Carbonate	D	B	B	B	B
Propylene Glycol	B	B	B	B	B
Pyridine	B	B	B	B	B
Silver Chloride	D	D	D	D	D
Silver Nitrate	D	B	B	D	D
Sodium Acetate	C	B	B	B	B
Sodium Hydroxide	D	D	D	A	B
Sodium Nitrate	B	A	A	B	B
Sodium Sulfate	A	B	A	B	B
Sulfur Dioxide (dry)	B	B	B	B	B
Sulfuric Acid (Aerated)	D	D	D	D	D
Toluene	A	A	A	A	A
Trichloroethylene (dry)	B	B	B	A	A
Turpentine	B	B	B	B	B
Vinyl Chloride (Dry)	A	B	A	A	A
Water (Fresh)	B	A	A	A	A
Water (Sea)	B	A	A	A	A
Xylene	B	A	A	A	A
Zinc Chloride	C	B	B	A	A
Zinc Sulfate	D	B	A	B	B

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CHEMICAL	INCONEL	HASTELLOY	TITANIUM	ZINCONIUM	TANTALUM
Acetaldehyde	A	A	B	.	A
Acetic Acid (aerated)	B	A	A	A	A
Acetic Anhydride	B	A	A	A	B
Acetone	A	B	A	.	A
Acetylene	A	A	A	.	A
Aluminum Chloride	D	A	A	A	A
Aluminum Hydroxide	B	B	.	.	B
Ammonia (Anhydrous)	B	B	A	.	A
Ammonium Chloride	B	B	A	A	A
Ammonium Sulfate	B	B	A	A	A
Ammonium Sulfite	D	.	A	.	A
Amyl Acetate	A	B	A	.	A
Aniline	B	B	A	.	A
Aroclor	A	A	A	.	A
Barium Chloride	B	B	A	A	A
Benzaldehyde	B	A	A	.	A

Benzene	B	B	A	.	A
Benzoic Acid	B	B	A	.	A
Boric Acid	B	A	A	.	A
Butadiene	A	A	A	.	A
Butane	A	A	A	.	A
Butanol	A	A	A	.	A
Butyl Acetate	A	B	A	.	A
Butyl Chloride	A	A	A	.	A
Calcium Chloride	A	B	A	A	A
Calcium Hydroxide	B	B	A	.	A
Carbon Dioxide (Wet)	A	A	A	.	A
Carbon Tetrachloride (dry)	A	B	A	A	A
Carbonic Acid	A	A	A	.	A
Chlorine Gas (dry)	A	B	I	A	A
Chloroformj (Dry)	B	B	A	A	A
Chromic Acid	B	B	B	A	A
Citric Acid	A	C	A	A	A
Creosote	B	B	A	.	A
Dibutylphthalate	B	B	A	.	A
Dichlorobenzene	B	B	B	.	A
Dichlorodifluoromethane (F-12)	B	A	A	.	A
Diethanolamine	A	A	A	.	A
Diethyl Ether	B	B	A	.	A
Diethylene Glycol	B	B	A	.	A
Diphenyl	B	B	A	.	A
Diphenyl Oxide	B	B	A	.	A
Ethane	A	A	A	.	A
Ethanolamine	B	B	B	.	A
Ether	B	B	A	.	A
Ethyl Acetate (Dry)	B	B	A	.	A
Ethyl Alcohol	B	A	A	A	A
Ethyl Ether	B	B	A	.	A
Ethylene	A	A	A	.	A
Ethylene Glycol	B	B	A	.	A
Fatty Acids	B	A	B	.	A
Ferric Chloride	D	B	A	D	A
Ferric Sulfate	D	A	A	.	A
Ferrous Sulfate	D	B	A	.	A
Formaldehyde	B	B	B	.	A
Furfural	B	B	A	.	A
Glycerine	A	A	A	.	A
Hexane	A	A	A	.	A
Hydrochloric Acid (Aerated)	D	B	D	D	A
Hydrofluoric Acid (Aerated)	D	A	D	D	D
Iodine	D	B	D	.	A
Isopropanol	B	B	A	.	A
Lactic Acid	A	A	A	A	A
Linseed Oil	.	B	A	.	A
Lithium Chloride	A	A	.	.	A
Lithium Hydroxide	B	B	.	.	A
Magnesium Chloride	A	A	A	A	A
Magnesium Hydroxide	B	B	A	.	B
Magnesium Sulfate	B	A	A	A	A

Methane	A	A	A	A	A
Methallyamine	B	B	B	.	A
Methyl Alcohol	B	A	A	A	A
Methyl Chloride (dry)	B	B	A	.	A
Methylene Chloride (Dry)	B	B	B	.	A
Monochlorobenzene (Dry)	A	B	B	.	A
Monochlorodifluoro Methane (F-22)	A	A	A	.	A
Monoethanolamine	B	.	.	.	A
Naphtha	B	B	B	.	A
Naphthalene	A	B	B	.	A
Nikel Chloride	D	A	A	A	A
Nickel Sulfate	B	B	B	A	A
Nitric Acid	D	D	A	B	A
Nitrous Acid	D	.	.	.	A
Oleic Acid	A	B	B	B	B
Oxalic Acid	B	B	D	B	A
Perchloric Acid (Dry)	D	.	.	.	A
Perchloroethylene	A	.	A	.	A
Phenol	B	A	A	.	A
Phosphoric Acid (Aerated)	B	A	C	D	B
Phthalic Anhydride	B	B	.	.	A
Potassium Bicarbonate	B	B	A	.	A
Potassium Carbonate	B	B	A	.	A
Propylene Glycol	B	B	A	.	A
Pyridine	B	B	B	.	A
Silver Chloride	C	B	B	.	A
Silver Nitrate	B	B	A	A	A
Sodium Acetate	B	B	B	.	A
Sodium Hydroxide	B	B	B	B	D
Sodium Nitrate	A	B	A	.	A
Sodium Sulfate	B	B	A	.	A
Sulfur Dioxide (dry)	B	B	A	.	A
Sulfuric Acid (Aerated)	D	B	D	A	A
Toluene	A	A	A	A	A
Trichloroethylene (dry)	B	A	A	A	A
Turpentine	B	B	B	.	A
Vinyl Chloride (Dry)	A	A	A	.	A
Water (Fresh)	A	A	A	A	A
Water (Sea)	B	B	A	A	A
Xylene	A	A	A	A	A
Zinc Chloride	D	B	A	A	A
Zinc Sulfate	A	B	A	.	A

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