






# CORROSION RESISTANT GUIDE

unit: °F(°C)

Chemicals	Molecular Formula	Density Wt%	FTF/FTB	CTF 151-201 NSF 302-402	CES 101-201	Classification
Hydrochloric Acid	HCl	20	176(80)	122(50)	122(50)	Inorganic Acid Gases
Perchloric Acid	HClO <sub>4</sub>	10	158(70)	122(50)	122(50)	
Chromic Acid	H <sub>2</sub> CrO <sub>4</sub>	20	140(60)	122(50) <sup>23</sup>	X	
Hydrofluosilic Acid	H <sub>2</sub> SiF <sub>6</sub>	10	140(60)	104(40)	104(40)*1	
Hydrocyanic Acid	HCN	ALL	176(80)	122(50)	122(50)	
Hydrobromic Acid	HBr	10	176(80)	122(50)	122(50)	
Nitric Acid	HNO <sub>3</sub>	10	158(70)	104(40)	122(50)	
Fuming Sulfuric Acid	H <sub>2</sub> SO <sub>4</sub> +xSO <sub>3</sub>		X	X	X	
Hydrofluoric Acid	HF	1	158(70)	104(40)	X	
Boric Acid	H <sub>3</sub> BO <sub>3</sub>	ALL	176(80)	122(50)	122(50)	
Hydrofluoric Anhydride	HF		X	X	X	
Sulfuric Anhydride	SO <sub>3</sub>		X	X	X	
Sulfuric Acid	H <sub>2</sub> SO <sub>4</sub>	40	176(80)	122(50)	122(50)	
Phosphoric Acid	H <sub>3</sub> PO <sub>4</sub>	30	176(80)	122(50)	122(50)	
Sulfurous Acid Gas	SO <sub>2</sub>	25	176(80)	122(50)	122(50)	
Carbon Monoxide	CO		176(80)	122(50)	122(50)	
Chlorine Gas	Cl <sub>2</sub>	5	176(80)	122(50)	X	
Ozone	O <sub>3</sub>	10ppm	122(50)	122(50)	122(50)	
Bromine	Br <sub>2</sub>		X	X	X	
Nitrogen Oxide	NO <sub>x</sub>	5	176(80)	122(50)	122(50)	
Hydrogen Sulfide	H <sub>2</sub> S	10	176(80)	122(50)	122(50)	
Acrylic Acid	CH <sub>2</sub> =CHCOOH	10	122(50)	122(50)	X	Organic Acid Gases
Adipic Acid	(CH <sub>2</sub> ) <sub>4</sub> (COOH) <sub>2</sub>	23	176(80)	122(50)	122(50)	
Oleic Acid	C <sub>17</sub> H <sub>33</sub> COOH	ALL	176(80)	122(50)	122(50)	
Formic Acid	HCOOH	10	158(70)	122(50)	122(50)	
Citric Acid	C <sub>3</sub> H <sub>4</sub> (OH)(COOH) <sub>3</sub>	25	176(80)	122(50)	122(50)	
Glycolic Acid	CH <sub>2</sub> OHCOOH	30	122(50)	122(50)	122(50)	
Acetic Acid	CH <sub>3</sub> COOH	25	176(80)	122(50)	122(50)	
Acetic Anhydride	(CH <sub>3</sub> CO) <sub>2</sub> O		X	X	X	
Oxalic Acid	(COOH) <sub>2</sub>	20	176(80)	122(50)	122(50)	
Tartaric Acid	(CHOHCOOH) <sub>2</sub>	ALL	176(80)	122(50)	122(50)	
Stearic Acid	C <sub>17</sub> H <sub>35</sub> COOH	ALL	176(80)	122(50)	122(50)	
Tannic Acid	C <sub>13</sub> H <sub>9</sub> O <sub>7</sub> COOH	ALL	176(80)	122(50)	122(50)	
Thioglycolic Acid	HSCH <sub>2</sub> COOH	ALL	X	X	X	
Lactic Acid	CH <sub>3</sub> CH(OH)COOH	ALL	176(80)	122(50)	122(50)	
Picric Acid	C <sub>6</sub> H <sub>2</sub> (NO <sub>2</sub> ) <sub>3</sub> OH	1	104(40)	104(40)	122(50)	
Benzene Sulfonic Acid	C <sub>6</sub> H <sub>5</sub> SO <sub>3</sub> H	10	140(60)	122(50)	122(50)	
Maleic Acid	(CHCOOH) <sub>2</sub>	ALL	176(80)	122(50)	122(50)	
Monochloroacetic Acid	CH <sub>2</sub> ClCOOH	25	104(40)	104(40)	122(50)	
Benzoic Acid	C <sub>6</sub> H <sub>5</sub> COOH	ALL	176(80)	122(50)	122(50)	
Butyric Acid	C <sub>3</sub> H <sub>7</sub> COOH	5	176(80)	122(50)	122(50)	
Ammonia (gas)	NH <sub>3</sub>	ALL	86(30)	86(30)	122(50)	Alkalis
Ammonium Hydroxide	NH <sub>4</sub> OH	20	140(60)	122(50)	122(50)	
Potassium Hydroxide	KOH	10	140(60)	122(50)	122(50)	
Calcium Hydroxide	Ca(OH) <sub>2</sub>	25	176(80)	122(50)	122(50)	
Sodium Hydroxide	NaOH	25	140(60)	122(50)	122(50)	
Barium Hydroxide	Ba(OH) <sub>2</sub>	10	158(70)	122(50)	122(50)	
Chlorine Water		Saturation	176(80)	X	X	Bleaches
Hydrogen Peroxide	H <sub>2</sub> O <sub>2</sub>	30	140(60)	122(50)	X	
Hypochlorous Acid	HClO	10	140(60)	122(50)	122(50) <sup>22</sup>	
Calcium Hypochlorit	Ca(ClO) <sub>2</sub>	ALL	140(60)	122(50)	122(50) <sup>22</sup>	
Sodium Hypochlorite	NaClO	15	140(60)	122(50)	122(50) <sup>22</sup>	
Chlorine Dioxide	ClO <sub>2</sub>	15	176(80)	122(50)	X	

- Numbers shown in the table are the applicable temperature.
- Numbers in parenthesis are the applicable temperature at normal conditions.
- CES, NSF, CTF, and FTB models are not listed in this brochure.

Note 1: Be careful when choosing CES I O 1 - 20 I for HF applications that the maximum speed differs with that for normal use.  
 Note2: The maximum applicable concentration is 500ppm if there is occurrence of mist install a mist separator. To suppress the generation of chlorine limit use within a range of PH8.5-10. Please contact us for applications different than stated above.  
 Note3: Not applicable to the CTF Model.

-  Solvent. Heat and Acid resistant specification
-  Chromic acid resistant specification
-  Hypochlorous acid specification
-  Hydrofluoric acid specification
-  Separately can be handed with the CRS model.

Chemicals	Molecular Formula	Density Wt%	FTF/FTB	CTF 151-201 NSF 302-402	CES 101-201	Classification
Sodium Nitrite	NaNO <sub>2</sub>	ALL	176(80)	122(50)	122(50)	Salts
Sodium Sulfite	Na <sub>2</sub> SO <sub>3</sub>	ALL	176(80)	122(50)	122(50)	
Aluminum Chloride	AlCl <sub>3</sub>	ALL	176(80)	122(50)	122(50)	
Ammonium Chloride	NH <sub>4</sub> Cl	ALL	176(80)	122(50)	122(50)	
Calcium Chloride	CaCl <sub>2</sub>	ALL	176(80)	122(50)	122(50)	
Ferric Chloride	FeCl <sub>3</sub>	ALL	176(80)	122(50)	122(50)	
Copper Chloride	CuCl <sub>2</sub>	ALL	176(80)	122(50)	122(50)	
Nickel Chloride	NiCl <sub>2</sub>	ALL	176(80)	122(50)	122(50)	
Barium Chloride	BaCl <sub>2</sub>	ALL	176(80)	122(50)	122(50)	
Potassium Permanganate	KMnO <sub>4</sub>	10	176(80)	122(50)	X	
Potassium Dichromate	K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	20	176(80)	122(50)	X	
Potassium Bicarbonate	KHCO <sub>3</sub>	50	176(80)	122(50)	122(50)	
Ammonium Nitrate	NH <sub>4</sub> NO <sub>3</sub>	ALL	176(80)	122(50)	122(50)	
Silver Nitrate	AgNO <sub>3</sub>	ALL	176(80)	122(50)	122(50)	
Sodium Carbonate	Na <sub>2</sub> CO <sub>3</sub>	35	176(80)	122(50)	122(50)	
Magnesium Carbonate	MgCO <sub>3</sub>	ALL	158(70)	122(50)	122(50)	
Sodium Sulfide	Na <sub>2</sub> S	ALL	176(80)	122(50)	122(50)	
Zinc Sulfide	ZnSO <sub>4</sub>	ALL	176(80)	122(50)	122(50)	
Ammonium Sulfide	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	20	176(80)	122(50)	122(50)	
Potassium Sulfide	K <sub>2</sub> SO <sub>4</sub>	ALL	176(80)	122(50)	122(50)	
Ferric Sulfide	Fe(SO <sub>4</sub> ) <sub>3</sub>	ALL	176(80)	122(50)	122(50)	
Copper Sulfide	CuSO <sub>4</sub>	ALL	176(80)	122(50)	122(50)	
Magnesium Sulfide	MgSO <sub>4</sub>	ALL	176(80)	122(50)	122(50)	
Acrylonitrile	CH <sub>2</sub> =CHCN		X	X	X	Solvents & Organic Compounds
Acetaldehyde	CH <sub>3</sub> CHO		X	X	X	
Acetonitrile	CH <sub>3</sub> CN		X	X	X	
Acetophenone	C <sub>6</sub> H <sub>5</sub> COCH <sub>3</sub>		X	X	X	
Acetone	CH <sub>3</sub> COCH <sub>3</sub>		X	X	X	
Aniline	C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub>		X	X	X	
Isopropylamine	(CH <sub>3</sub> ) <sub>2</sub> CHNH <sub>2</sub>	ALL	122(50)	122(50)	X	
Isopropyl Alcohol	(CH <sub>3</sub> ) <sub>2</sub> CHOH	ALL	122(50)	122(50)	122(50)	
Ethyl Alcohol	C <sub>2</sub> H <sub>5</sub> OH	50	122(50)	122(50)	122(50)	
Ethyl Ether	C <sub>2</sub> H <sub>5</sub> OC <sub>2</sub> H <sub>5</sub>		X	X	X	
Ethylene Oxide	CH <sub>2</sub> CH <sub>2</sub> O		X	X	X	
Ethylene Glycol	HOCH <sub>2</sub> OH <sub>2</sub> OH	ALL	176(80)	122(50)	122(50)	
Ethylene Chloride	C <sub>1</sub> CH <sub>2</sub> CH <sub>2</sub> Cl		X	X	X	
Methylene Chloride	CH <sub>2</sub> Cl <sub>2</sub>		X	X	X	
Gasoline		ALL	140(60)	122(50)	X	
Glycerin	C <sub>3</sub> H <sub>5</sub> (OH) <sub>3</sub>	5	176(80)	122(50)	122(50)	
Cresol	CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> OH	5	X	X	122(50)	
Chloroform	CHCl <sub>3</sub>		X	X	X	
Ethyl Acetate	CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>		X	X	X	
Methyl Acetate	CH <sub>3</sub> COOCH <sub>3</sub>		X	X	X	
Diethyl Ketone	C <sub>2</sub> H <sub>5</sub> COC <sub>2</sub> H <sub>5</sub>		X	X	X	
Dimethylamine	(CH <sub>3</sub> ) <sub>2</sub> NH		X	X	X	
Ethyl Bromide	C <sub>2</sub> H <sub>5</sub> Br		X	X	X	
Trichlorobenzene	C <sub>6</sub> H <sub>3</sub> Cl <sub>3</sub>		X	X	X	
Toluene	C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>	ALL	122(50)	122(50)	X	
Naphtha		ALL	104(40)	104(40)	X	
Sulfur Dioxide	SO <sub>2</sub>		X	X	X	
Pyridine	C <sub>5</sub> H <sub>5</sub> N		X	X	X	
Phenol Sulfonic Acid	C <sub>6</sub> H <sub>4</sub> (OH)(SO <sub>3</sub> H)		X	X	X	
Heptane	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>5</sub> CH <sub>3</sub>	10	140(60)	122(50)	122(50)	
Benzaldehyde	C <sub>6</sub> H <sub>5</sub> CHO		X	X	X	
Benzene	C <sub>6</sub> H <sub>6</sub>	ALL	122(50)	122(50)	X	
Formaldehyde	HCHO	10	158(70)	122(50)	122(50)	
Methyl Alcohol	CH <sub>3</sub> OH	50	122(50)	122(50)	122(50)	