

SF₆ Gas density transmitter Low cost version for bulk quantities



APPLICATIONS

- Reading of SF₆ gas density
- Robust and harsh primary sensor
- 2 loop powered 4-20mA output
- Internal ASIC for temperature conversion
- Suitable to work with pure SF₆ or mix
- Suitable for indoor or outdoor, IP67 protection
- Industrial, medical or aerospace fields
- Specifically designed for MV application where cost is a driver
- Compatibility with corrosive fluids
- Primary element deposited on ceramic
- monolithic block

HIGHLIGHTS

- Absolute compensated pressure reading
- High accuracy over a wide temperature range
- Excellent long term stability
- Quick response time
- Factory calibration by laser trimming and automated process

High voltage or medium voltage circuit breakers commonly used for distribution and transmission are reliable if they are able to operate in steady and controlled conditions.

The use of SF₆ as quenching gas is extremely important to guarantee a safe operation during the life of equipment.

In order to have continuous check of gas filling and immediate warning in case of leakage the EMD transmitter is suitable to be connected to most standard monitoring systems.

It is ready to operate immediately after installation because of our technology based on ceramic primary element capable of reading the temperature and pressure of gas and calculate density.

All the materials used, such as thick ceramic and stainless steel are insensitive to chemical attack of corrosive and polluted gases.

The case is very robust and it is tested to face heavy duty conditions, so all the inner parts are immersed into resin to guarantee resistance to moisture and vibrations.

Density calculation is based on measurement of two physical data: pressure and temperature; proprietary algorithm is used to convert these data into density and can be customized by changing some coefficients to meet specific request.

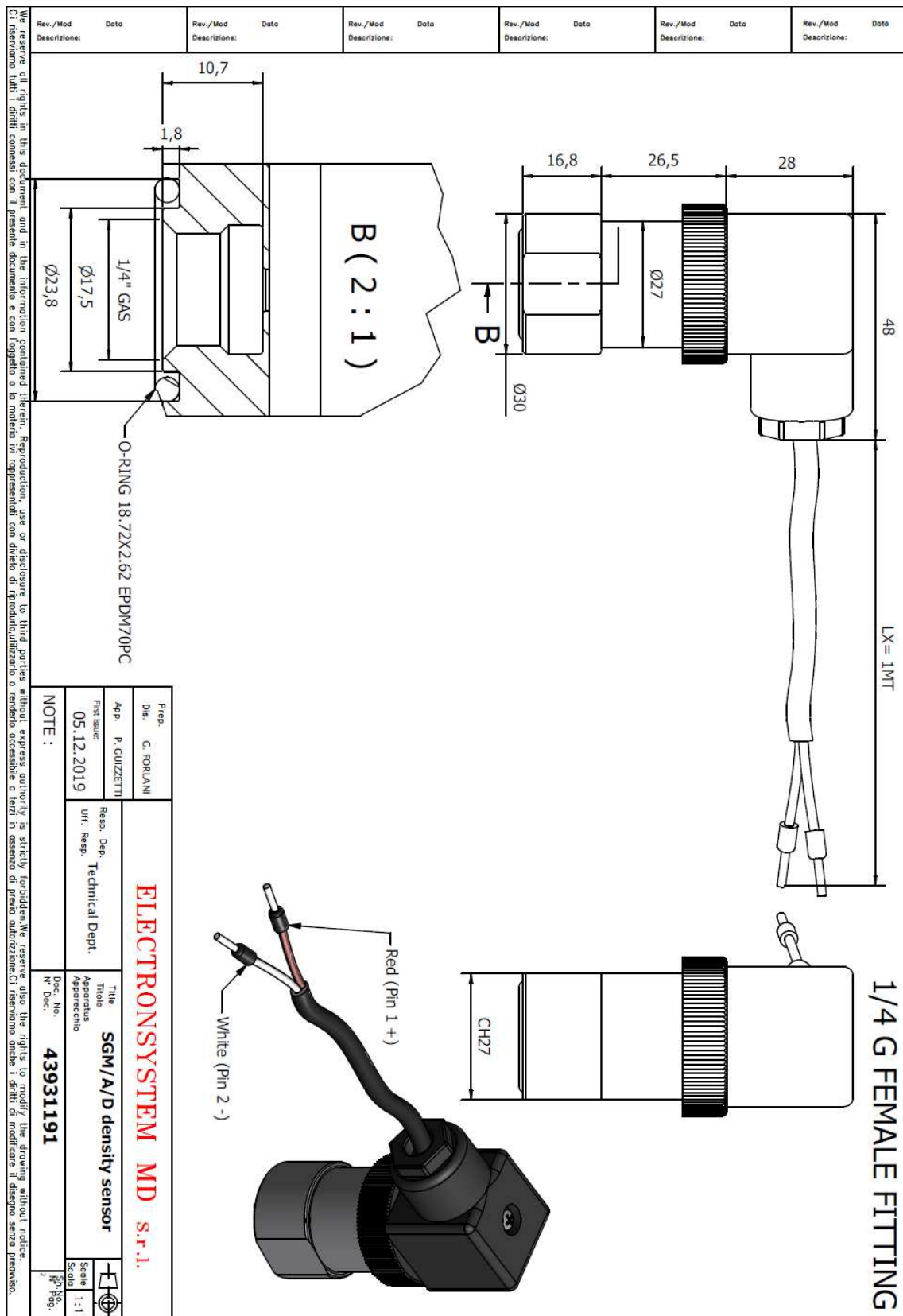
All specs are subject to change without notice

SF₆ Gas density transmitter

Low cost version for bulk quantities

All specs are subject to change without notice

SF₆ Gas density transmitter Low cost version for bulk quantities



All specs are subject to change without notice

SF₆ Gas density transmitter

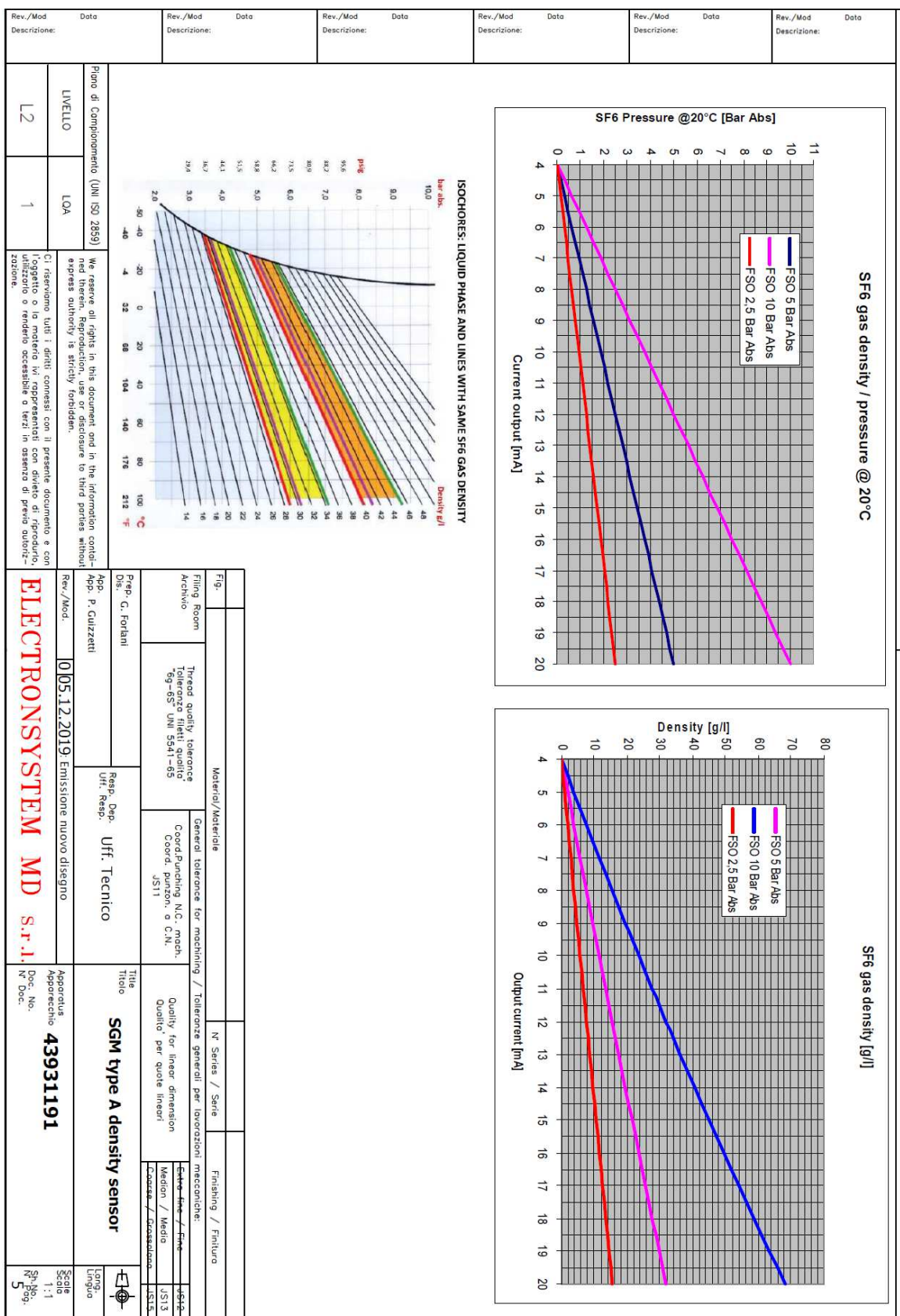
Low cost version for bulk quantities

Rev./Mod Descrizione:	Data	Rev./Mod Descrizione:	Data	Rev./Mod Descrizione:	Data	Rev./Mod Descrizione:	Data	Rev./Mod Descrizione:	Data	Rev./Mod Descrizione:	Data
<p>TECHNICAL FEATURES: DESCRIPTION: TEMPERATURE COMPENSATED SF₆ GAS DENSITY TRANSMITTER</p> <p>1 Materials:</p> <p>1.1 Housing material : AISI 316</p> <p>1.2 Inner o. rings material : EPDM/70 peroxide cured</p> <p>1.3 Primary sensing element: Ceramic</p> <p>1.4 Cable connection material: aluminium alloy nickel-plated</p> <p>1.5 Conformity to 2002/95/CE (RoHS)</p> <p>2 Electrical data of sensors</p> <p>2.1 Electrical data analog version</p> <p>2.1.1 Output signal : 4 - 20 mA 2 wires loop system (see diagram 1)</p> <p>2.1.2 Input voltage : 15-30 Vdc</p> <p>2.1.3 Rioad: Rin < 250 ohm</p> <p>2.1.4 Input protection : overvoltage supressor and reverse voltage diode</p> <p>2.1.5 Response time : < 30 msec.</p> <p>2.1.6 Resolution : < 0.1% of full scale</p> <p>2.1.7 Stability : < 0.2% of full scale per year</p> <p>2.1.8 Accuracy : < ± 1% @ T=0÷40°C (± 0.3%/10°C extended temp. range)</p> <p>2.1.9 Repeativity : < 10⁻³</p> <p>2.1.10 Isolation: max 250Vac 50Hz against mass</p> <p>2.1.11 Resistance of insulation : > 10Mohm</p> <p>2.4.12 Terminal block : connector DIN 43650 MPM 4 poles connector</p> <p>3 Output range:</p> <p>3.1 Pressure: 0 - 2.5, 0 - 5 or 0 - 10 Bar ABS @20°C compensated</p> <p>3.2 Density: 15,33g/l @ 2.5 Bar ABS, 31,56g/l @ 5 Bar ABS, 66,86g/l @ 10 Bar ABS</p> <p>3.3 Temperature: -40 - 80°C</p> <p>4 Electromagnetic protection:</p> <p>4.1 EN61000-4-2: ESD air 15kV</p> <p>4.2 EN61000-4-3: Radiated immunity AM 10V/m 80...1000MHz, PM 10V/m 900...2700MHz with 10m cord</p> <p>4.3 EN61000-4-4: Burst 4kV withstand of the communication & power supply interfaces with 10m cord</p> <p>4.4 EN61000-4-5: Surge 4kV withstand on the shield of 10m cord</p> <p>4.5 EN61000-4-6: Conducted immunity 10V/m</p> <p>4.6 EN61000-6-4: Radiated disturbances 30MHz-1000MHz class B</p> <p>5 Working conditions:</p> <p>5.1 Mechanical stresses:</p> <p>Shockproof 30G on 3 axys</p> <p>5.2 MTBF indoor: 20 years</p> <p>5.3 Max allowable pressure: 2 X FS</p> <p>6 Environmental conditions:</p> <p>Operating temperature:</p> <p>Standard : -25°C to +80°C (LT version: -40°C to +80°C)</p> <p>Transport and storage : -60°C to 85°C</p> <p>Relative air humidity in yearly average <80%, occasionally 100%</p> <p>Solar radiation: <= 1000 W/mq</p> <p>Wind: <= 34 m/s</p> <p>Altitude: <= 2000 m</p> <p>6.1 Pollution Class III IEC 60815, table 1</p> <p>6.2 Gas Media: SF₆, pure>99% , other medias such as N₂/SF₆ are allowable</p> <p>6.3 Corrosion class (according to DIN EN ISO 12944-6)</p> <p>a) Indoor: C4, high</p> <p>b) Outdoor: C5-M/I high</p> <p>6.4 Protection degree (DIN EN 60529): IP65; IP67 on request</p> <p>7 Leakage rate</p> <p>7.1 Leakage rate: < 1x10⁻⁹ mbar x l/s.</p> <p>7.2 Leakage test with helium gas</p> <p>8 Weight : ≈ 250 gr</p>											
<p>NOTE :</p>											
<p>Prep. C. FORLANI</p> <p>Dis. P. GUZZETTI</p> <p>First issue: 05.12.2019</p> <p>Resp. Dep. Technical Dept.</p> <p>Uff. Resp.</p> <p>Title SGM type A density sensor</p> <p>Approbato</p> <p>Doc. No. 43931191</p> <p>Scale 1:1</p> <p>Sh. No. 1</p> <p>Page 1</p>											

All specs are subject to change without notice

SF₆ Gas density transmitter

Low cost version for bulk quantities



All specs are subject to change without notice

SF₆ Gas density transmitter

Low cost version for bulk quantities

Rev./Mod	Data	Rev./Mod	Data	Rev./Mod	Data	Rev./Mod	Data	Rev./Mod	Data																																																																																																								
Descrizione:		Descrizione:		Descrizione:		Descrizione:		Descrizione:																																																																																																									
The reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden. We reserve also the rights to modify the drawing without notice. Ci riserviamo tutti i diritti connessi con il presente documento e con l'oggetto e la materia in rappresentazione con diritto di riproduzione, utilizzo o disclosure a terzi in assenza di previa autorizzazione. Ci riserviamo anche i diritti di modificare il disegno senza preavviso.																																																																																																																	
Ratings - Chemical Effect A - Excellent B - Good/ Minor Effect, slight corrosion, or discoloration.																																																																																																																	
<table><tr><th>CHEMICAL</th><th>COMPATIBILITY</th></tr><tr><td>Acetic Acid</td><td>A - Excellent</td></tr><tr><td>Acetic Acid 20%</td><td>A - Excellent</td></tr><tr><td>Acetic Acid 80%</td><td>A - Excellent</td></tr><tr><td>Acetic Acid, Glacial</td><td>A - Excellent</td></tr><tr><td>Acetic Anhydride</td><td>A - Excellent</td></tr><tr><td>Acetone</td><td>A - Excellent</td></tr><tr><td>Alcohols, Amyl</td><td>A - Excellent</td></tr><tr><td>Alcohols, Benzyl</td><td>A - Excellent</td></tr><tr><td>Alcohols, Butyl</td><td>A - Excellent</td></tr><tr><td>Alcohols, Ethyl</td><td>A - Excellent</td></tr><tr><td>Alcohols, Isopropyl</td><td>A - Excellent</td></tr><tr><td>Alcohols, Methyl</td><td>A - Excellent</td></tr><tr><td>Alcohols, Propyl</td><td>A - Excellent</td></tr><tr><td>Aluminum Chloride</td><td>A - Excellent</td></tr><tr><td>Aluminum Chloride 20%</td><td>A - Excellent</td></tr><tr><td>Aluminum Sulfate</td><td>A - Excellent</td></tr><tr><td>Ammonia 10%</td><td>A - Excellent</td></tr><tr><td>Ammonia, liquid</td><td>A - Excellent</td></tr><tr><td>Ammonium Carbonate</td><td>A - Excellent</td></tr><tr><td>Ammonium Chloride</td><td>A - Excellent</td></tr><tr><td>Ammonium Hydroxide</td><td>A - Excellent</td></tr><tr><td>Ammonium Nitrate</td><td>A - Excellent</td></tr><tr><td>Ammonium Persulfate</td><td>A - Excellent</td></tr><tr><td>Ammonium Sulfate</td><td>A - Excellent</td></tr><tr><td>Amyl Acetate</td><td>A - Excellent</td></tr><tr><td>Amyl Alcohol</td><td>A - Excellent</td></tr><tr><td>Amyl Chloride</td><td>A - Excellent</td></tr><tr><td>Aniline</td><td>A - Excellent</td></tr><tr><td>Antimony Trichloride</td><td>B - Good</td></tr><tr><td>Barium Carbonate</td><td>A - Excellent</td></tr><tr><td>Barium Chloride</td><td>A - Excellent</td></tr><tr><td>Barium Hydroxide</td><td>A - Excellent</td></tr><tr><td>Barium Sulfate</td><td>A - Excellent</td></tr><tr><td>Benzaldehyde</td><td>A - Excellent</td></tr><tr><td>Benzene</td><td>A - Excellent</td></tr><tr><td>Benzene Sulfonic Acid</td><td>A - Excellent</td></tr><tr><td>Benzoic Acid</td><td>A - Excellent</td></tr><tr><td>Benzol</td><td>A - Excellent</td></tr><tr><td>Boric Acid</td><td>A - Excellent</td></tr><tr><td>Bromine</td><td>A - Excellent</td></tr><tr><td>Calcium Carbonate</td><td>A - Excellent</td></tr><tr><td>Calcium Chlorate</td><td>A - Excellent</td></tr><tr><td>Calcium Chloride</td><td>A - Excellent</td></tr><tr><td>Calcium Hydroxide</td><td>A - Excellent</td></tr><tr><td>Calcium Hypochlorite</td><td>A - Excellent</td></tr><tr><td>Calcium Nitrate</td><td>A - Excellent</td></tr><tr><td>Calcium Sulfate</td><td>A - Excellent</td></tr><tr><td>Carbolic Acid (Phenol)</td><td>A - Excellent</td></tr></table>										CHEMICAL	COMPATIBILITY	Acetic Acid	A - Excellent	Acetic Acid 20%	A - Excellent	Acetic Acid 80%	A - Excellent	Acetic Acid, Glacial	A - Excellent	Acetic Anhydride	A - Excellent	Acetone	A - Excellent	Alcohols, Amyl	A - Excellent	Alcohols, Benzyl	A - Excellent	Alcohols, Butyl	A - Excellent	Alcohols, Ethyl	A - Excellent	Alcohols, Isopropyl	A - Excellent	Alcohols, Methyl	A - Excellent	Alcohols, Propyl	A - Excellent	Aluminum Chloride	A - Excellent	Aluminum Chloride 20%	A - Excellent	Aluminum Sulfate	A - Excellent	Ammonia 10%	A - Excellent	Ammonia, liquid	A - Excellent	Ammonium Carbonate	A - Excellent	Ammonium Chloride	A - Excellent	Ammonium Hydroxide	A - Excellent	Ammonium Nitrate	A - Excellent	Ammonium Persulfate	A - Excellent	Ammonium Sulfate	A - Excellent	Amyl Acetate	A - Excellent	Amyl Alcohol	A - Excellent	Amyl Chloride	A - Excellent	Aniline	A - Excellent	Antimony Trichloride	B - Good	Barium Carbonate	A - Excellent	Barium Chloride	A - Excellent	Barium Hydroxide	A - Excellent	Barium Sulfate	A - Excellent	Benzaldehyde	A - Excellent	Benzene	A - Excellent	Benzene Sulfonic Acid	A - Excellent	Benzoic Acid	A - Excellent	Benzol	A - Excellent	Boric Acid	A - Excellent	Bromine	A - Excellent	Calcium Carbonate	A - Excellent	Calcium Chlorate	A - Excellent	Calcium Chloride	A - Excellent	Calcium Hydroxide	A - Excellent	Calcium Hypochlorite	A - Excellent	Calcium Nitrate	A - Excellent	Calcium Sulfate	A - Excellent	Carbolic Acid (Phenol)	A - Excellent						
CHEMICAL	COMPATIBILITY																																																																																																																
Acetic Acid	A - Excellent																																																																																																																
Acetic Acid 20%	A - Excellent																																																																																																																
Acetic Acid 80%	A - Excellent																																																																																																																
Acetic Acid, Glacial	A - Excellent																																																																																																																
Acetic Anhydride	A - Excellent																																																																																																																
Acetone	A - Excellent																																																																																																																
Alcohols, Amyl	A - Excellent																																																																																																																
Alcohols, Benzyl	A - Excellent																																																																																																																
Alcohols, Butyl	A - Excellent																																																																																																																
Alcohols, Ethyl	A - Excellent																																																																																																																
Alcohols, Isopropyl	A - Excellent																																																																																																																
Alcohols, Methyl	A - Excellent																																																																																																																
Alcohols, Propyl	A - Excellent																																																																																																																
Aluminum Chloride	A - Excellent																																																																																																																
Aluminum Chloride 20%	A - Excellent																																																																																																																
Aluminum Sulfate	A - Excellent																																																																																																																
Ammonia 10%	A - Excellent																																																																																																																
Ammonia, liquid	A - Excellent																																																																																																																
Ammonium Carbonate	A - Excellent																																																																																																																
Ammonium Chloride	A - Excellent																																																																																																																
Ammonium Hydroxide	A - Excellent																																																																																																																
Ammonium Nitrate	A - Excellent																																																																																																																
Ammonium Persulfate	A - Excellent																																																																																																																
Ammonium Sulfate	A - Excellent																																																																																																																
Amyl Acetate	A - Excellent																																																																																																																
Amyl Alcohol	A - Excellent																																																																																																																
Amyl Chloride	A - Excellent																																																																																																																
Aniline	A - Excellent																																																																																																																
Antimony Trichloride	B - Good																																																																																																																
Barium Carbonate	A - Excellent																																																																																																																
Barium Chloride	A - Excellent																																																																																																																
Barium Hydroxide	A - Excellent																																																																																																																
Barium Sulfate	A - Excellent																																																																																																																
Benzaldehyde	A - Excellent																																																																																																																
Benzene	A - Excellent																																																																																																																
Benzene Sulfonic Acid	A - Excellent																																																																																																																
Benzoic Acid	A - Excellent																																																																																																																
Benzol	A - Excellent																																																																																																																
Boric Acid	A - Excellent																																																																																																																
Bromine	A - Excellent																																																																																																																
Calcium Carbonate	A - Excellent																																																																																																																
Calcium Chlorate	A - Excellent																																																																																																																
Calcium Chloride	A - Excellent																																																																																																																
Calcium Hydroxide	A - Excellent																																																																																																																
Calcium Hypochlorite	A - Excellent																																																																																																																
Calcium Nitrate	A - Excellent																																																																																																																
Calcium Sulfate	A - Excellent																																																																																																																
Carbolic Acid (Phenol)	A - Excellent																																																																																																																
<table><tr><th>CHEMICAL</th><th>COMPATIBILITY</th></tr><tr><td>Carbon Dioxide (wet)</td><td>A - Excellent</td></tr><tr><td>Carbon Tetrachloride</td><td>A - Excellent</td></tr><tr><td>Carbon Tetrachloride (dry)</td><td>A - Excellent</td></tr><tr><td>Carbon Tetrachloride (wet)</td><td>A - Excellent</td></tr><tr><td>Carbonic Acid</td><td>A - Excellent</td></tr><tr><td>Chlorine Water</td><td>A - Excellent</td></tr><tr><td>Chlorobenzene (Mono)</td><td>A - Excellent</td></tr><tr><td>Chlorobromomethane</td><td>A - Excellent</td></tr><tr><td>Chloroform</td><td>A - Excellent</td></tr><tr><td>Chlorosulfonic Acid</td><td>A - Excellent</td></tr><tr><td>Chromic Acid 10%</td><td>A - Excellent</td></tr><tr><td>Chromic Acid 30%</td><td>A - Excellent</td></tr><tr><td>Chromic Acid 5%</td><td>A - Excellent</td></tr><tr><td>Chromic Acid 50%</td><td>A - Excellent</td></tr><tr><td>Cider</td><td>A - Excellent</td></tr><tr><td>Citric Acid</td><td>A - Excellent</td></tr><tr><td>Copper Chloride</td><td>A - Excellent</td></tr><tr><td>Copper Oxide</td><td>A - Excellent</td></tr><tr><td>Copper Sulfate</td><td>A - Excellent</td></tr><tr><td>Copper Sulfate 5%</td><td>A - Excellent</td></tr><tr><td>Cyclohexanone</td><td>A - Excellent</td></tr><tr><td>Detergents</td><td>A - Excellent</td></tr><tr><td>Dichloroethane</td><td>A - Excellent</td></tr><tr><td>Ethanol</td><td>A - Excellent</td></tr><tr><td>Ethanolamine</td><td>A - Excellent</td></tr><tr><td>Ethyl Acetate</td><td>A - Excellent</td></tr><tr><td>Ethyl Chloride</td><td>A - Excellent</td></tr><tr><td>Ethylene Dichloride</td><td>A - Excellent</td></tr><tr><td>Ethylene Glycol</td><td>A - Excellent</td></tr><tr><td>Fatty Acids</td><td>A - Excellent</td></tr><tr><td>Ferric Sulfate</td><td>A - Excellent</td></tr><tr><td>Ferrous Sulfate</td><td>A - Excellent</td></tr><tr><td>Freon 113</td><td>A - Excellent</td></tr><tr><td>Freon TF</td><td>A - Excellent</td></tr><tr><td>Freon 11</td><td>A - Excellent</td></tr><tr><td>Fruit Juice</td><td>A - Excellent</td></tr><tr><td>Gasoline (high-aromatic)</td><td>A - Excellent</td></tr><tr><td>Gasoline, leaded, ref.</td><td>A - Excellent</td></tr><tr><td>Glycerin</td><td>A - Excellent</td></tr><tr><td>Hydrogen Peroxide 100%</td><td>A - Excellent</td></tr><tr><td>Hydrogen Sulfide (aque)</td><td>A - Excellent</td></tr><tr><td>INK</td><td>A - Excellent</td></tr><tr><td>Kerosene</td><td>A - Excellent</td></tr><tr><td>ketones</td><td>A - Excellent</td></tr><tr><td>Lactic Acid</td><td>A - Excellent</td></tr><tr><td>Lead Acetate</td><td>A - Excellent</td></tr><tr><td>Live Ca(OH)2 Calcium Hydroxide</td><td>A - Excellent</td></tr><tr><td>Live NaOH Sodium Hydroxide</td><td>A - Excellent</td></tr><tr><td>Magnesium Carbonate</td><td>A - Excellent</td></tr><tr><td>Magnesium Chloride</td><td>A2 - Excellent</td></tr></table>										CHEMICAL	COMPATIBILITY	Carbon Dioxide (wet)	A - Excellent	Carbon Tetrachloride	A - Excellent	Carbon Tetrachloride (dry)	A - Excellent	Carbon Tetrachloride (wet)	A - Excellent	Carbonic Acid	A - Excellent	Chlorine Water	A - Excellent	Chlorobenzene (Mono)	A - Excellent	Chlorobromomethane	A - Excellent	Chloroform	A - Excellent	Chlorosulfonic Acid	A - Excellent	Chromic Acid 10%	A - Excellent	Chromic Acid 30%	A - Excellent	Chromic Acid 5%	A - Excellent	Chromic Acid 50%	A - Excellent	Cider	A - Excellent	Citric Acid	A - Excellent	Copper Chloride	A - Excellent	Copper Oxide	A - Excellent	Copper Sulfate	A - Excellent	Copper Sulfate 5%	A - Excellent	Cyclohexanone	A - Excellent	Detergents	A - Excellent	Dichloroethane	A - Excellent	Ethanol	A - Excellent	Ethanolamine	A - Excellent	Ethyl Acetate	A - Excellent	Ethyl Chloride	A - Excellent	Ethylene Dichloride	A - Excellent	Ethylene Glycol	A - Excellent	Fatty Acids	A - Excellent	Ferric Sulfate	A - Excellent	Ferrous Sulfate	A - Excellent	Freon 113	A - Excellent	Freon TF	A - Excellent	Freon 11	A - Excellent	Fruit Juice	A - Excellent	Gasoline (high-aromatic)	A - Excellent	Gasoline, leaded, ref.	A - Excellent	Glycerin	A - Excellent	Hydrogen Peroxide 100%	A - Excellent	Hydrogen Sulfide (aque)	A - Excellent	INK	A - Excellent	Kerosene	A - Excellent	ketones	A - Excellent	Lactic Acid	A - Excellent	Lead Acetate	A - Excellent	Live Ca(OH)2 Calcium Hydroxide	A - Excellent	Live NaOH Sodium Hydroxide	A - Excellent	Magnesium Carbonate	A - Excellent	Magnesium Chloride	A2 - Excellent		
CHEMICAL	COMPATIBILITY																																																																																																																
Carbon Dioxide (wet)	A - Excellent																																																																																																																
Carbon Tetrachloride	A - Excellent																																																																																																																
Carbon Tetrachloride (dry)	A - Excellent																																																																																																																
Carbon Tetrachloride (wet)	A - Excellent																																																																																																																
Carbonic Acid	A - Excellent																																																																																																																
Chlorine Water	A - Excellent																																																																																																																
Chlorobenzene (Mono)	A - Excellent																																																																																																																
Chlorobromomethane	A - Excellent																																																																																																																
Chloroform	A - Excellent																																																																																																																
Chlorosulfonic Acid	A - Excellent																																																																																																																
Chromic Acid 10%	A - Excellent																																																																																																																
Chromic Acid 30%	A - Excellent																																																																																																																
Chromic Acid 5%	A - Excellent																																																																																																																
Chromic Acid 50%	A - Excellent																																																																																																																
Cider	A - Excellent																																																																																																																
Citric Acid	A - Excellent																																																																																																																
Copper Chloride	A - Excellent																																																																																																																
Copper Oxide	A - Excellent																																																																																																																
Copper Sulfate	A - Excellent																																																																																																																
Copper Sulfate 5%	A - Excellent																																																																																																																
Cyclohexanone	A - Excellent																																																																																																																
Detergents	A - Excellent																																																																																																																
Dichloroethane	A - Excellent																																																																																																																
Ethanol	A - Excellent																																																																																																																
Ethanolamine	A - Excellent																																																																																																																
Ethyl Acetate	A - Excellent																																																																																																																
Ethyl Chloride	A - Excellent																																																																																																																
Ethylene Dichloride	A - Excellent																																																																																																																
Ethylene Glycol	A - Excellent																																																																																																																
Fatty Acids	A - Excellent																																																																																																																
Ferric Sulfate	A - Excellent																																																																																																																
Ferrous Sulfate	A - Excellent																																																																																																																
Freon 113	A - Excellent																																																																																																																
Freon TF	A - Excellent																																																																																																																
Freon 11	A - Excellent																																																																																																																
Fruit Juice	A - Excellent																																																																																																																
Gasoline (high-aromatic)	A - Excellent																																																																																																																
Gasoline, leaded, ref.	A - Excellent																																																																																																																
Glycerin	A - Excellent																																																																																																																
Hydrogen Peroxide 100%	A - Excellent																																																																																																																
Hydrogen Sulfide (aque)	A - Excellent																																																																																																																
INK	A - Excellent																																																																																																																
Kerosene	A - Excellent																																																																																																																
ketones	A - Excellent																																																																																																																
Lactic Acid	A - Excellent																																																																																																																
Lead Acetate	A - Excellent																																																																																																																
Live Ca(OH)2 Calcium Hydroxide	A - Excellent																																																																																																																
Live NaOH Sodium Hydroxide	A - Excellent																																																																																																																
Magnesium Carbonate	A - Excellent																																																																																																																
Magnesium Chloride	A2 - Excellent																																																																																																																
<table><tr><th>CHEMICAL</th><th>COMPATIBILITY</th></tr><tr><td>Magnesium Hydroxide</td><td>A - Excellent</td></tr><tr><td>Magnesium Nitrate</td><td>A - Excellent</td></tr><tr><td>Magnesium Sulfate</td><td>A - Excellent</td></tr><tr><td>Mercuric Chloride (dilute)</td><td>A - Excellent</td></tr><tr><td>Mercuric Chloride</td><td>A - Excellent</td></tr><tr><td>Mercuric Oxide</td><td>A - Excellent</td></tr><tr><td>Mercurous Nitrate</td><td>A - Excellent</td></tr><tr><td>Mercury</td><td>A - Excellent</td></tr><tr><td>Methanol (Methyl Alcohol)</td><td>A - Excellent</td></tr><tr><td>Methyl Alcohol 10%</td><td>A - Excellent</td></tr><tr><td>Methyl Ethyl Ketone</td><td>A - Excellent</td></tr><tr><td>Milk</td><td>A - Excellent</td></tr><tr><td>Molasses</td><td>A - Excellent</td></tr><tr><td>Motor oil</td><td>A - Excellent</td></tr><tr><td>Naphthalene</td><td>A - Excellent</td></tr><tr><td>Nickel Chloride</td><td>A - Excellent</td></tr><tr><td>Nickel Nitrate</td><td>A - Excellent</td></tr><tr><td>Nickel Sulfate</td><td>A - Excellent</td></tr><tr><td>Nitric Acid (20%)</td><td>A - Excellent</td></tr><tr><td>Nitric Acid (50%)</td><td>A - Excellent</td></tr><tr><td>Nitric Acid (5-10%)</td><td>A - Excellent</td></tr><tr><td>Nitric Acid (Concentrated)</td><td>A - Excellent</td></tr><tr><td>Nitric Acid</td><td>A - Excellent</td></tr><tr><td>Oil Castor</td><td>A - Excellent</td></tr><tr><td>Oil Cottonseed</td><td>A - Excellent</td></tr><tr><td>Oil Linseed</td><td>A - Excellent</td></tr><tr><td>Oil Mineral</td><td>A - Excellent</td></tr><tr><td>Oil Olive</td><td>A - Excellent</td></tr><tr><td>Oil Acid</td><td>A - Excellent</td></tr><tr><td>Oxalic Acid (cold)</td><td>A - Excellent</td></tr><tr><td>Paraffin</td><td>A - Excellent</td></tr><tr><td>Perchloroethylene</td><td>A - Excellent</td></tr><tr><td>Phenol (12%)</td><td>A - Excellent</td></tr><tr><td>Phenol (Carbolic Acid)</td><td>A - Excellent</td></tr><tr><td>Phosphoric Acid (3-4%)</td><td>A - Excellent</td></tr><tr><td>Phosphoric Acid (5-10%)</td><td>A - Excellent</td></tr><tr><td>Photographic Developer</td><td>A - Excellent</td></tr><tr><td>Plating Solutions, Indium Sulfamate Plating R.T.</td><td>A - Excellent</td></tr><tr><td>Plating Solutions, Lead Fluoborate Plating</td><td>A - Excellent</td></tr><tr><td>Plating Solutions, Rhodium Plating 120°F</td><td>A - Excellent</td></tr><tr><td>Potassium Bicarbonate</td><td>A - Excellent</td></tr><tr><td>Potassium Chlorate</td><td>B - Good</td></tr><tr><td>Potassium Dichromate</td><td>B - Good</td></tr><tr><td>Potassium Ferricyanide</td><td>B - Good</td></tr><tr><td>Potassium Ferrioxalate</td><td>B - Good</td></tr><tr><td>Potassium Iodide</td><td>B - Good</td></tr><tr><td>Potassium Nitrate</td><td>B - Good</td></tr><tr><td>Potassium Oxalate</td><td>A - Excellent</td></tr><tr><td>Potassium Permanganate</td><td>A - Excellent</td></tr><tr><td>Potassium Sulfate</td><td>A - Excellent</td></tr><tr><td>Potassium Sulfide</td><td>A - Excellent</td></tr></table>										CHEMICAL	COMPATIBILITY	Magnesium Hydroxide	A - Excellent	Magnesium Nitrate	A - Excellent	Magnesium Sulfate	A - Excellent	Mercuric Chloride (dilute)	A - Excellent	Mercuric Chloride	A - Excellent	Mercuric Oxide	A - Excellent	Mercurous Nitrate	A - Excellent	Mercury	A - Excellent	Methanol (Methyl Alcohol)	A - Excellent	Methyl Alcohol 10%	A - Excellent	Methyl Ethyl Ketone	A - Excellent	Milk	A - Excellent	Molasses	A - Excellent	Motor oil	A - Excellent	Naphthalene	A - Excellent	Nickel Chloride	A - Excellent	Nickel Nitrate	A - Excellent	Nickel Sulfate	A - Excellent	Nitric Acid (20%)	A - Excellent	Nitric Acid (50%)	A - Excellent	Nitric Acid (5-10%)	A - Excellent	Nitric Acid (Concentrated)	A - Excellent	Nitric Acid	A - Excellent	Oil Castor	A - Excellent	Oil Cottonseed	A - Excellent	Oil Linseed	A - Excellent	Oil Mineral	A - Excellent	Oil Olive	A - Excellent	Oil Acid	A - Excellent	Oxalic Acid (cold)	A - Excellent	Paraffin	A - Excellent	Perchloroethylene	A - Excellent	Phenol (12%)	A - Excellent	Phenol (Carbolic Acid)	A - Excellent	Phosphoric Acid (3-4%)	A - Excellent	Phosphoric Acid (5-10%)	A - Excellent	Photographic Developer	A - Excellent	Plating Solutions, Indium Sulfamate Plating R.T.	A - Excellent	Plating Solutions, Lead Fluoborate Plating	A - Excellent	Plating Solutions, Rhodium Plating 120°F	A - Excellent	Potassium Bicarbonate	A - Excellent	Potassium Chlorate	B - Good	Potassium Dichromate	B - Good	Potassium Ferricyanide	B - Good	Potassium Ferrioxalate	B - Good	Potassium Iodide	B - Good	Potassium Nitrate	B - Good	Potassium Oxalate	A - Excellent	Potassium Permanganate	A - Excellent	Potassium Sulfate	A - Excellent	Potassium Sulfide	A - Excellent
CHEMICAL	COMPATIBILITY																																																																																																																
Magnesium Hydroxide	A - Excellent																																																																																																																
Magnesium Nitrate	A - Excellent																																																																																																																
Magnesium Sulfate	A - Excellent																																																																																																																
Mercuric Chloride (dilute)	A - Excellent																																																																																																																
Mercuric Chloride	A - Excellent																																																																																																																
Mercuric Oxide	A - Excellent																																																																																																																
Mercurous Nitrate	A - Excellent																																																																																																																
Mercury	A - Excellent																																																																																																																
Methanol (Methyl Alcohol)	A - Excellent																																																																																																																
Methyl Alcohol 10%	A - Excellent																																																																																																																
Methyl Ethyl Ketone	A - Excellent																																																																																																																
Milk	A - Excellent																																																																																																																
Molasses	A - Excellent																																																																																																																
Motor oil	A - Excellent																																																																																																																
Naphthalene	A - Excellent																																																																																																																
Nickel Chloride	A - Excellent																																																																																																																
Nickel Nitrate	A - Excellent																																																																																																																
Nickel Sulfate	A - Excellent																																																																																																																
Nitric Acid (20%)	A - Excellent																																																																																																																
Nitric Acid (50%)	A - Excellent																																																																																																																
Nitric Acid (5-10%)	A - Excellent																																																																																																																
Nitric Acid (Concentrated)	A - Excellent																																																																																																																
Nitric Acid	A - Excellent																																																																																																																
Oil Castor	A - Excellent																																																																																																																
Oil Cottonseed	A - Excellent																																																																																																																
Oil Linseed	A - Excellent																																																																																																																
Oil Mineral	A - Excellent																																																																																																																
Oil Olive	A - Excellent																																																																																																																
Oil Acid	A - Excellent																																																																																																																
Oxalic Acid (cold)	A - Excellent																																																																																																																
Paraffin	A - Excellent																																																																																																																
Perchloroethylene	A - Excellent																																																																																																																
Phenol (12%)	A - Excellent																																																																																																																
Phenol (Carbolic Acid)	A - Excellent																																																																																																																
Phosphoric Acid (3-4%)	A - Excellent																																																																																																																
Phosphoric Acid (5-10%)	A - Excellent																																																																																																																
Photographic Developer	A - Excellent																																																																																																																
Plating Solutions, Indium Sulfamate Plating R.T.	A - Excellent																																																																																																																
Plating Solutions, Lead Fluoborate Plating	A - Excellent																																																																																																																
Plating Solutions, Rhodium Plating 120°F	A - Excellent																																																																																																																
Potassium Bicarbonate	A - Excellent																																																																																																																
Potassium Chlorate	B - Good																																																																																																																
Potassium Dichromate	B - Good																																																																																																																
Potassium Ferricyanide	B - Good																																																																																																																
Potassium Ferrioxalate	B - Good																																																																																																																
Potassium Iodide	B - Good																																																																																																																
Potassium Nitrate	B - Good																																																																																																																
Potassium Oxalate	A - Excellent																																																																																																																
Potassium Permanganate	A - Excellent																																																																																																																
Potassium Sulfate	A - Excellent																																																																																																																
Potassium Sulfide	A - Excellent																																																																																																																
<table><tr><th>CHEMICAL</th><th>COMPATIBILITY</th></tr><tr><td>Propylene Glycol</td><td>A - Excellent</td></tr><tr><td>Pyridine</td><td>A - Excellent</td></tr><tr><td>Soap Solutions</td><td>A - Excellent</td></tr><tr><td>Sodium Acetate</td><td>A - Excellent</td></tr><tr><td>Sodium Bicarbonate</td><td>A - Excellent</td></tr><tr><td>Sodium Bisulfate</td><td>A - Excellent</td></tr><tr><td>Sodium Sulfate</td><td>A - Excellent</td></tr><tr><td>Sodium Sulfide</td><td>A - Excellent</td></tr><tr><td>Sodium Borate (Borax)</td><td>A - Excellent</td></tr><tr><td>Sodium Carbonate</td><td>A - Excellent</td></tr><tr><td>Sodium Chlorate</td><td>A - Excellent</td></tr><tr><td>Sodium Chloride</td><td>A - Excellent</td></tr><tr><td>Sodium Cyanide</td><td>A - Excellent</td></tr><tr><td>Sodium Ferrocyanide</td><td>A - Excellent</td></tr><tr><td>Sodium Fluoride</td><td>A - Excellent</td></tr><tr><td>Sodium Hydroxide (20%)</td><td>A - Excellent</td></tr><tr><td>Sodium Hydroxide (50%)</td><td>A - Excellent</td></tr><tr><td>Sodium Hydroxide (80%)</td><td>A - Excellent</td></tr><tr><td>Sodium Hypochlorite (4-20%)</td><td>A - Excellent</td></tr><tr><td>Sodium Hypochlorite (100%)</td><td>A - Excellent</td></tr><tr><td>Sodium Nitrate</td><td>A - Excellent</td></tr><tr><td>Sodium Silicate</td><td>A - Excellent</td></tr><tr><td>Sodium Sulfate</td><td>A - Excellent</td></tr><tr><td>Sodium Sulfide</td><td>A - Excellent</td></tr><tr><td>Stannous Chloride</td><td>A - Excellent</td></tr><tr><td>Starch</td><td>A - Excellent</td></tr><tr><td>Sulfuric Acid (<10%)</td><td>A - Excellent</td></tr><tr><td>Sulfuric Acid (10-75%)</td><td>A - Excellent</td></tr><tr><td>Sulfuric Acid (75-100%)</td><td>A - Excellent</td></tr><tr><td>Sulfuric Acid (hot concentrated)</td><td>A - Excellent</td></tr><tr><td>Tannic Acid</td><td>A - Excellent</td></tr><tr><td>Tartaric Acid</td><td>A - Excellent</td></tr><tr><td>Tetrahydrofuran</td><td>A - Excellent</td></tr><tr><td>Toluene (Toluol)</td><td>A - Excellent</td></tr><tr><td>Trichloroacetic Acid</td><td>A - Excellent</td></tr><tr><td>Trichloroethylene</td><td>A - Excellent</td></tr><tr><td>Triethanolamine</td><td>B - Good</td></tr><tr><td>Turpentine</td><td>A - Excellent</td></tr><tr><td>Urea</td><td>B - Good</td></tr><tr><td>Vegetable Juice</td><td>A - Excellent</td></tr><tr><td>Vinegar</td><td>A - Excellent</td></tr><tr><td>Vinyl Chloride</td><td>B - Good</td></tr><tr><td>Water, Acid Mine</td><td>A - Excellent</td></tr><tr><td>Water, Deionized</td><td>B - Good</td></tr><tr><td>Water, Fresh</td><td>A - Excellent</td></tr><tr><td>Water, Salt</td><td>B - Good</td></tr><tr><td>Weed Killers</td><td>B - Good</td></tr><tr><td>Whiskey & Wines</td><td>A - Excellent</td></tr><tr><td>Xylene</td><td>A - Excellent</td></tr></table>										CHEMICAL	COMPATIBILITY	Propylene Glycol	A - Excellent	Pyridine	A - Excellent	Soap Solutions	A - Excellent	Sodium Acetate	A - Excellent	Sodium Bicarbonate	A - Excellent	Sodium Bisulfate	A - Excellent	Sodium Sulfate	A - Excellent	Sodium Sulfide	A - Excellent	Sodium Borate (Borax)	A - Excellent	Sodium Carbonate	A - Excellent	Sodium Chlorate	A - Excellent	Sodium Chloride	A - Excellent	Sodium Cyanide	A - Excellent	Sodium Ferrocyanide	A - Excellent	Sodium Fluoride	A - Excellent	Sodium Hydroxide (20%)	A - Excellent	Sodium Hydroxide (50%)	A - Excellent	Sodium Hydroxide (80%)	A - Excellent	Sodium Hypochlorite (4-20%)	A - Excellent	Sodium Hypochlorite (100%)	A - Excellent	Sodium Nitrate	A - Excellent	Sodium Silicate	A - Excellent	Sodium Sulfate	A - Excellent	Sodium Sulfide	A - Excellent	Stannous Chloride	A - Excellent	Starch	A - Excellent	Sulfuric Acid (<10%)	A - Excellent	Sulfuric Acid (10-75%)	A - Excellent	Sulfuric Acid (75-100%)	A - Excellent	Sulfuric Acid (hot concentrated)	A - Excellent	Tannic Acid	A - Excellent	Tartaric Acid	A - Excellent	Tetrahydrofuran	A - Excellent	Toluene (Toluol)	A - Excellent	Trichloroacetic Acid	A - Excellent	Trichloroethylene	A - Excellent	Triethanolamine	B - Good	Turpentine	A - Excellent	Urea	B - Good	Vegetable Juice	A - Excellent	Vinegar	A - Excellent	Vinyl Chloride	B - Good	Water, Acid Mine	A - Excellent	Water, Deionized	B - Good	Water, Fresh	A - Excellent	Water, Salt	B - Good	Weed Killers	B - Good	Whiskey & Wines	A - Excellent	Xylene	A - Excellent				
CHEMICAL	COMPATIBILITY																																																																																																																
Propylene Glycol	A - Excellent																																																																																																																
Pyridine	A - Excellent																																																																																																																
Soap Solutions	A - Excellent																																																																																																																
Sodium Acetate	A - Excellent																																																																																																																
Sodium Bicarbonate	A - Excellent																																																																																																																
Sodium Bisulfate	A - Excellent																																																																																																																
Sodium Sulfate	A - Excellent																																																																																																																
Sodium Sulfide	A - Excellent																																																																																																																
Sodium Borate (Borax)	A - Excellent																																																																																																																
Sodium Carbonate	A - Excellent																																																																																																																
Sodium Chlorate	A - Excellent																																																																																																																
Sodium Chloride	A - Excellent																																																																																																																
Sodium Cyanide	A - Excellent																																																																																																																
Sodium Ferrocyanide	A - Excellent																																																																																																																
Sodium Fluoride	A - Excellent																																																																																																																
Sodium Hydroxide (20%)	A - Excellent																																																																																																																
Sodium Hydroxide (50%)	A - Excellent																																																																																																																
Sodium Hydroxide (80%)	A - Excellent																																																																																																																
Sodium Hypochlorite (4-20%)	A - Excellent																																																																																																																
Sodium Hypochlorite (100%)	A - Excellent																																																																																																																
Sodium Nitrate	A - Excellent																																																																																																																
Sodium Silicate	A - Excellent																																																																																																																
Sodium Sulfate	A - Excellent																																																																																																																
Sodium Sulfide	A - Excellent																																																																																																																
Stannous Chloride	A - Excellent																																																																																																																
Starch	A - Excellent																																																																																																																
Sulfuric Acid (<10%)	A - Excellent																																																																																																																
Sulfuric Acid (10-75%)	A - Excellent																																																																																																																
Sulfuric Acid (75-100%)	A - Excellent																																																																																																																
Sulfuric Acid (hot concentrated)	A - Excellent																																																																																																																
Tannic Acid	A - Excellent																																																																																																																
Tartaric Acid	A - Excellent																																																																																																																
Tetrahydrofuran	A - Excellent																																																																																																																
Toluene (Toluol)	A - Excellent																																																																																																																
Trichloroacetic Acid	A - Excellent																																																																																																																
Trichloroethylene	A - Excellent																																																																																																																
Triethanolamine	B - Good																																																																																																																
Turpentine	A - Excellent																																																																																																																
Urea	B - Good																																																																																																																
Vegetable Juice	A - Excellent																																																																																																																
Vinegar	A - Excellent																																																																																																																
Vinyl Chloride	B - Good																																																																																																																
Water, Acid Mine	A - Excellent																																																																																																																
Water, Deionized	B - Good																																																																																																																
Water, Fresh	A - Excellent																																																																																																																
Water, Salt	B - Good																																																																																																																
Weed Killers	B - Good																																																																																																																
Whiskey & Wines	A - Excellent																																																																																																																
Xylene	A - Excellent																																																																																																																
<div><div><div>Prep.</div><div>Dis. G. FORLANI</div></div><div><div>App. P. GUZZETTI</div><div>Resp. Dep. Technical Dept.</div></div><div><div>First Issue: 05.12.2019</div><div>Uff. Resp.</div></div><div><div>NOTE :</div><div></div></div></div> <div><div><div><div><div></div><div>Doc. No.</div><div>43931191</div></div><div><div>Titolo</div><div>SGM type A density sensor</div></div><div><div>Appartene</div><div>App. Specchio</div></div></div><div><div>Scale</div><div>1:1</div></div><div><div><div><div></div><div>SP-30.</div><div>7</div><div>89g.</div></div><div>7</div></div></div></div></div> <div><div><div><div></div><div>ELECTRONSYSTEM MD S.r.l.</div></div><div><div></div><div></div></div></div></div>																																																																																																																	

All specs are subject to change without notice

SF₆ Gas density transmitter **Low cost version for bulk quantities**

STORAGE

If the complex must be storage before use, please keep dry and repaired.

Do not leave outdoor.

Device is strongly sensitive to humidity hence avoid to store where relative humidity is more than 90%

STORAGE TEMPERATURE: -30°C ÷ +70°C

RELATIVE HUMIDITY: max 90% @ +40°C

MAINTENANCE

Maintenance of transmitter must be done compulsory in factory. We recommend every 5 years to send back transmitter for calibration check and inspection.

WARRANTY

Device is covered by 24 months after installation or max 36 months after delivery.

In case of service the transmitter must be sent back to factory for inspection.

SF₆ Gas density transmitter Low cost version for bulk quantities

WARNINGS

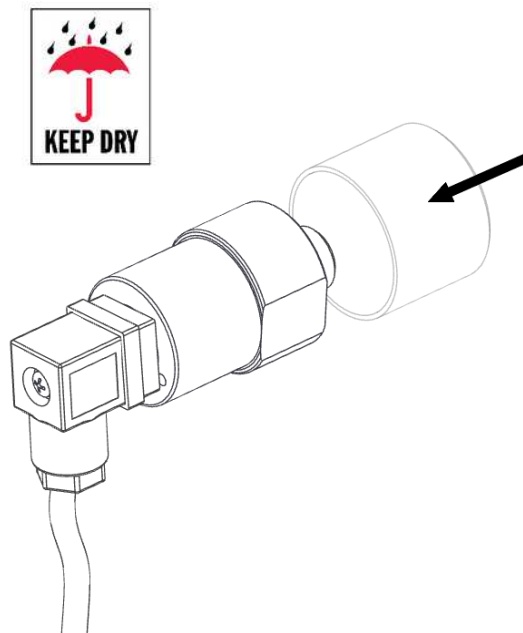
CAUTION

Do not drop or hit the transmitter. The sensor is fragile and may break from sudden shock.
When transporting the transmitter, use the original shipping box from Electronsistem MD.

NOTE

Keep the transmitter dry and clean.

Do not remove the transparent transport protection caps before you are ready to install the transmitter.



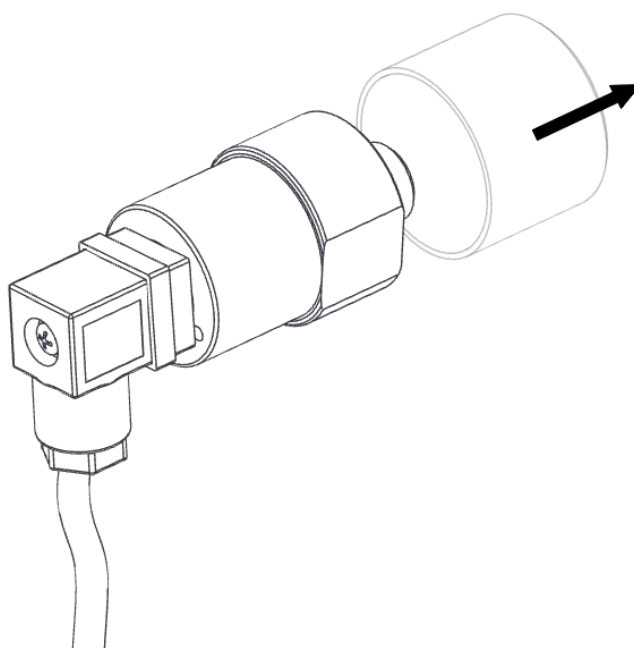
NOTE

Connect the transmitter directly to the main gas volume, not behind a sampling line because this is the area where high humidity tends to accumulate and where the temperature of gas is not the image of gas near breaker.

The use of original cable wiring is advised to have the better protection performances.

**SF₆ Gas density transmitter
Low cost version for bulk quantities****INSTALLATION**

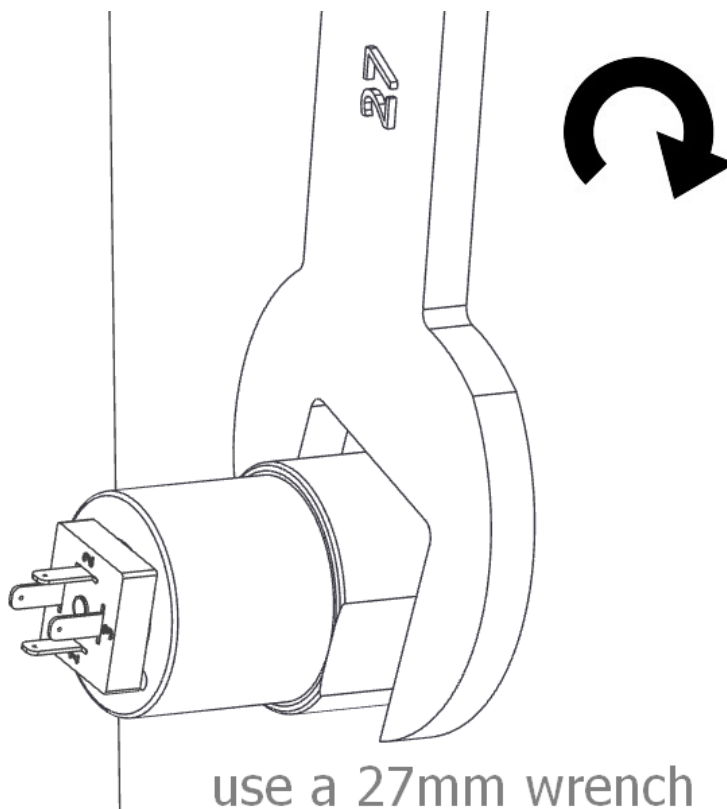
1. Remove the transparent transport cap when you are ready to install the transmitter. Check o-ring is clean without dust and properly assembled.



All specs are subject to change without notice

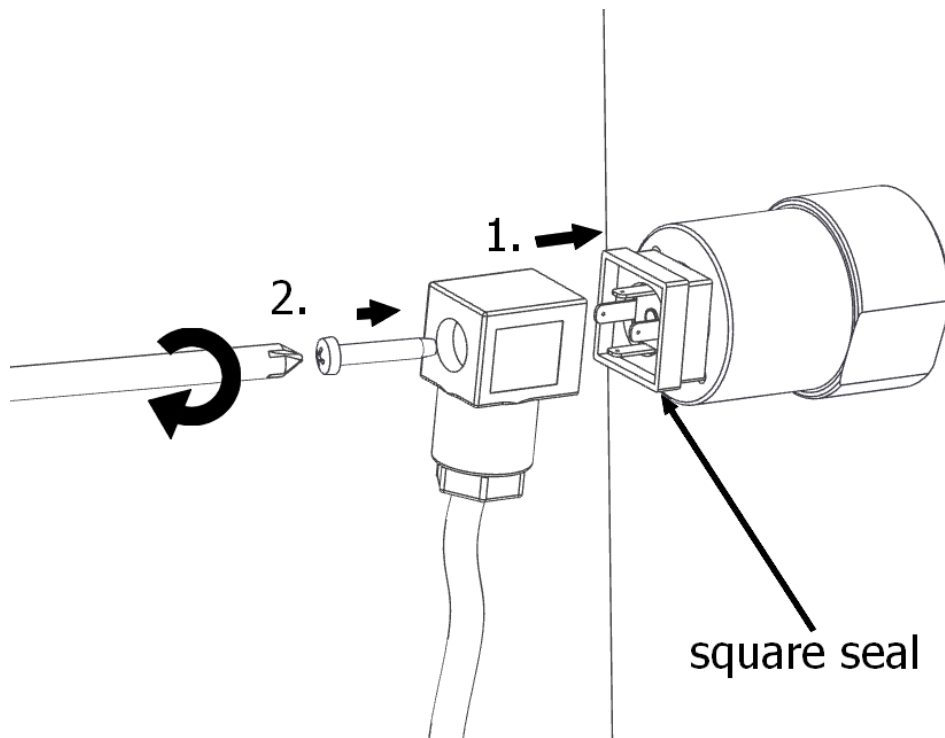
SF₆ Gas density transmitter Low cost version for bulk quantities

2. Install the transmitter to the mechanical coupling and tighten gently by hand. Then use a 27mm wrench to tighten the connection. Use a sufficient force to achieve a tight installation (recommended 10-15Nm) . The system must be leak-free for accurate measurement.



SF₆ Gas density transmitter Low cost version for bulk quantities

3. Connect proper wiring into the output port checking the correct polarization of the connector and checking the presence of the squared seal.
Then insert the screw supplied and tight the screw with a screwdriver



DISCLAIMER NOTE:

While we provide application assistance it is up to the customer to determine the suitability for its use.

Specification may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However we assume no responsibility for its use.

The quality of ElectronsistemMD products is guaranteed by a Quality, Safety and Environmental management system certified by DNV according to ISO 9001, ISO 18001 and ISO 14001. Electronsistem MD works in partnership with its customers in designing customized executions in order to meet specific requirements, please contact us.

All specs are subject to change without notice