# **Ion Selective Electrodes**

OAKTON has a large selection of Ion Selective Electrodes (ISE) to suit a wide variety of applications. Each electrode has a typical response time of 20 to 30 seconds but will vary with solution concentration. All electrodes are refillable and include 15 mL of electrolyte and filling pipette. Solid state electrodes also include polishing strips. Gas sensing electrodes also include replacement membranes. OAKTON offers three electrode types: Membrane/Solid State, Gas Sensing, and Glass bulb.

NOTE: Electrodes do NOT include calibration standard or Ion Strength Adjusters (ISA)—These must be made by the user or purchased separately.

# **Electrode Types**

Membrane and Solid State—There are three types of membrane and solid state electrodes

#### Economy epoxy body double-junction

• Outer reference chamber is silver-free—resists contamination



#### Glass body double-junction

- Improved seal—glass seal provides enhanced electrode performance and reliability
- Outer reference chamber is silver-free—resists contamination

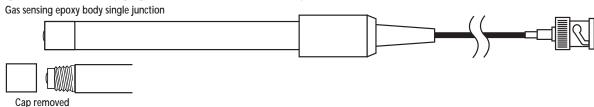


### Spring-loaded single-junction

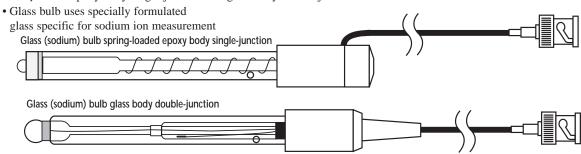
- · Produces higher flow of electrolyte
- · Great for viscous fluids
- Press cap to flush electrolyte—
  cleans/refreshes reference junction when flushed
  Spring-loaded epoxy body single-junction

Gas Sensing—single-junction, epoxy body

- Removable cap with membrane and fill solution
- Gas diffuses across membrane until partial pressure of gas is equal on both sides. Sensor detects change in fill solution composition that is directly proportional to the concentration of gas



Glass (sodium) Bulb—epoxy body single-junction and glass body double-junction



# **Solution Kits**

### Ammonia NH<sub>3</sub>

This ISE features a gas sensing membrane. Measuring range is 1.0 to  $5 \times 10^{-7}$  M and 17,000 to 0.01 ppm. Interfering ions include volatile amines. Ideal for high purity power station water, fish tanks, sea water, waste water, plating baths, air/stack gases, and biological samples.

**Temperature range:** 0 to 50°C (32 to 122°F) **pH range:** above pH 11

Model. no.	Туре	Price
WD-35802-00	Gas Sensing single-junction, epoxy body	

WD-35802-50 Ammonia NH<sub>3</sub> solution kit

WD-35803-50 ISA, 10 M NaOH, 5 x 100 mL bottles

**WD-35803-01 Calibration solution,** 1000 ppm NH<sub>3</sub> as nitrogen 475 mL

WD-35803-71 Replacement electrolyte,

0.1 M NH<sub>4</sub>Cl, 60 mL

### Ammonium NH<sub>4</sub>+

These ISE feature polymer membrane sensors. Measuring range is 1.0 to  $5 \times 10^{-6}$  M and 18,000 to 0.1 ppm. Interfering ions include  $K^+$ . Ideal for boiler feed water, natural water and fertilizers. User must supply calibration standard.

**Temperature range:** 0 to 50°C (32 to 122°F) **pF** 

pH range: 4 to 10 pH

Model. no.	Туре	Price
WD-35812-02	Economy double-junction epoxy body	
WD-35802-02	Spring-loaded single-junction epoxy body	
WD-35802-03	Glass body double-junction	

WD-35802-52 Ammonium NH<sub>4</sub><sup>+</sup> solution kit,

for single-junction ISE

WD-35802-53 Ammonium NH<sub>4</sub><sup>+</sup> solution kit,

for double-junction ISE

WD-35803-53 ISA, 5 M NaCl, 475 mL

WD-35803-77 Replacement electrolyte for single-junction ISE, 0.1 M NaCl saturated with AgCl, 60 mL

WD-35803-78 Replacement electrolyte for double-junction ISE, 0.1 M NaCl, 60 mL

### Bromide Br-

These ISE feature solid state sensors. Measuring range is 1.0 to 5 x  $10^{-6}$  M and 79,000 to 0.4 ppm. Interfering ions include  $I^-$ ,  $CN^-$ ,  $S^{-2}$ , high  $Cl^-$  or high  $NH_3$ . Ideal for water, wine, soil, plant tissue, blood electrolytes and clinical analysis.

**Temperature range:** 0 to 80°C (32 to 176°F) **pH range:** 2 to 14 pH

Model. no.	Туре	Price
WD-35812-04	Economy double-junction epoxy body	
WD-35802-04	Spring-loaded single-junction epoxy body	
WD-35802-05	Glass body double-junction	

WD-35802-54 Bromide Br solution kit,

for single-junction ISE

WD-35802-55 Bromide Br solution kit,

for double-junction ISE

**WD-35803-51 ISA,** 5 M NaNO<sub>3</sub>, 475 mL

WD-35803-03 Calibration solution, 1000 ppm Br<sup>-</sup>, 475 mL

WD-35803-81 Replacement electrolyte for single-junction ISE, 1 M KNO<sub>3</sub> with 0.1 M KCl, 60 mL

**WD-35803-75 Replacement electrolyte** for double-junction ISE, 1 M KNO<sub>3</sub>, 60 mL

# Cadmium Cd+2

These ISE feature solid state sensors. Measuring range is 0.1 to  $1 \times 10^{-7}$  M and 11,200 to 0.01 ppm. Interfering ions include Ag<sup>+</sup>, Hg<sup>+2</sup>, Cu<sup>+2</sup>, high Pb<sup>+2</sup> or high Fe<sup>+2</sup>. Ideal for plating baths. User must supply calibration standard.

**Temperature range:** 0 to 80°C (32 to 176°F)

pH range: 2 to 12 pH

Model. no.	Type	Price
WD-35812-06	Economy double-junction epoxy body	
WD-35802-06	Spring-loaded single-junction epoxy body	
WD-35802-07	Glass body double-junction	

WD-35802-56 Cadmium Cd<sup>+2</sup> solution kit,

for single-junction ISE

WD-35802-57 Cadmium Cd<sup>+2</sup> solution kit, for double-junction ISE

WD-35803-51 ISA, 5 M NaNO<sub>3</sub>, 475 mL

WD-35803-81 Replacement electrolyte for single-junction ISE, 1 M KNO<sub>3</sub> with 0.1 M KCl, 60 mL

WD-35803-75 Replacement electrolyte for double-junction ISE, 1 M KNO<sub>3</sub>, 60 mL

### Calcium Ca+2

These ISE feature polymer membrane sensors. Measuring range is 1.0 to  $5 \times 10^{-6}$  M and 40,000 to 0.2 ppm. Interfering ions include  $Cu^{+2}$ ,  $Hg^{+2}$ ,  $N^{i+2}$  and  $Pb^{+2}$ . Ideal for water softening systems, boiler feed water, drinking/mineral water, blood electrolytes, clinical analysis, and food applications.

**Temperature range:** 0 to 50°C (32 to 122°F) **pH range:** 3 to 10 pH

Model. no.	Туре	Price
WD-35812-08	Economy double-junction epoxy body	
WD-35802-08	Spring-loaded single-junction epoxy body	
WD-35802-09	Glass body double-junction	

WD-35802-58 Calcium Ca+2 solution kit,

for single-junction ISE

WD-35802-59 Calcium Ca<sup>+2</sup> solution kit,

for double-junction ISE

WD-35803-52 ISA, 4 M KCl, 475 mL

WD-35803-05 Calibration solution,  $1000 \text{ ppm Ca}^{+2}$ , 475 mL

**WD-35803-73 Replacement electrolyte** for single-junction ISE, 4 M KCl saturated with AgCl, 60 mL

WD-35803-74 Replacement electrolyte for double-junction ISE, 4 M KCl, 60 mL

# Carbon Dioxide CO<sub>2</sub> and Carbonate CO<sub>3</sub>-2

This ISE features gas sensing membrane. Measuring range is  $1 \times 10^{-2}$  to  $1 \times 10^{-4}$  M and 440 to 4.4 ppm. Interfering ions include volatile weak acids. Ideal for soft drinks/carbonated beverages, wine, fermentation processes, bacterial cultures.

**Temperature range:** 0 to 50°C (32 to 122°F) **pH range:** 4.8 to 5.2 pH

Model. no.	Туре	Price
WD-35802-10	Gas Sensing single-junction, epoxy body	

WD-35802-60 Carbon Dioxide  $CO_2$  and Carbonate  $CO_3^{-2}$  solution kit

WD-35803-55 ISA, 1 M Citrate Buffer, 475 mL

WD-35803-07 Calibration solution, 1000 ppm CO<sub>2</sub>, 475 mL

WD-35803-70 Replacement electrolyte,

0.1 M NaHCO<sub>3</sub>, 60 mL

#### Chloride Cl

These ISE feature solid state sensors. Measuring range is 1.0 to 5 x 10<sup>-5</sup> M and 35,500 to 1.8 ppm. Interfering ions include OH<sup>-</sup>, S<sup>-2</sup>, Br<sup>-</sup>, I<sup>-</sup> and CN<sup>-</sup>. Ideal for river/tap water, plant tissue, soils, boiler feed water, blood electrolytes, clinical analysis, sweat, urine, cement, plating baths, and food samples.

**Temperature range:** 0 to 80°C (32 to 176°F) **pH range:** 2 to 12 pH

Model. no.	Type	Price
WD-35812-12	Economy double-junction epoxy body	
WD-35802-12	Spring-loaded single-junction epoxy body	
WD-35802-13	Glass body double-junction	

WD-35802-62 Chloride Cl<sup>-</sup> solution kit,

for single-junction ISE

WD-35802-63 Chloride Cl<sup>-</sup> solution kit,

for double-junction ISE

WD-35803-51 ISA, 5 M NaNO<sub>3</sub>, 475 mL

WD-35803-09 Calibration solution, 1000 ppm Cl<sup>-</sup>, 475 mL

WD-35803-81 Replacement electrolyte for single-junction ISE, 1 M KNO<sub>3</sub> with 0.1 M KCl, 60 mL

WD-35803-75 Replacement electrolyte for double-junction ISE, 1 M KNO<sub>3</sub>, 60 mL

# Copper Cu+2

These ISE feature solid state sensors. Measuring range is 0.1 to  $1 \times 10^{-8} \, \text{M}$  and 6350 to 6.4 x  $10^{-4} \, \text{ppm}$ . Interfering ions include  $Ag^{+2}$ ,  $Hg^{+2}$ , high  $Cl^-$ ,  $Br^-$ ,  $Fe^{+2}$  and  $Cd^{+2}$ . Ideal for plating baths and water.

**Temperature range:** 0 to 80°C (32 to 176°F) **pH range:** 2 to 12 pH

Model. no.	Туре	Price
WD-35812-14	Economy double-junction epoxy body	
WD-35802-14	Spring-loaded single-junction epoxy body	
WD-35802-15	Glass body double-junction	

WD-35802-64 Copper Cu<sup>+2</sup> solution kit,

for single-junction ISE

WD-35802-65 Copper Cu<sup>+2</sup> solution kit,

for double-junction ISE

WD-35803-51 ISA, 5 M NaNO<sub>3</sub>, 475 mL

WD-35803-11 Calibration solution, 1000 ppm Cu<sup>+2</sup>, 475 mL

WD-35803-81 Replacement electrolyte for single-junction ISE, 1 M KNO<sub>3</sub> with 0.1 M KCl, 60 mL

WD-35803-75 Replacement electrolyte for double-junction ISE, 1 M KNO<sub>3</sub>, 60 mL

### Cyanide CN

These ISE feature solid state sensors. Measuring range is 0.01 to  $5 \times 10^{-6} \, \text{M}$  and 260 to 0.13 ppm. Interfering ions include S<sup>-</sup>, I<sup>-</sup>, Br<sup>-</sup> and Cl<sup>-</sup>. Ideal for plating baths, waste water and plant tissue. User must supply calibration standard.

**Temperature range:** 0 to 80°C (32 to 176°F) **pH range:** 11 to 13 pH

Model. no.	Туре	Price
WD-35812-16	Economy double-junction epoxy body	
WD-35802-16	Spring-loaded single-junction epoxy body	
WD-35802-17	Glass body double-junction	

WD-35802-66 Cyanide CN solution kit,

for single-junction ISE

WD-35802-67 Cyanide CN<sup>-</sup> solution kit,

for double-junction ISE

WD-35803-50 ISA, 10 M NaOH, 5 x 100 mL bottles

WD-35803-81 Replacement electrolyte for single-junction ISE, 1 M KNO<sub>3</sub> with 0.1 M KCl, 60 mL

WD-35803-75 Replacement electrolyte for double-junction ISE, 1 M KNO $_3$ , 60 mL

#### Fluoride F

These ISE feature solid state sensors. Measuring range saturated to  $1 \times 10^{-6} \, \mathrm{M}$  and saturated to  $0.02 \, \mathrm{ppm}$ . Interfering ions include  $\mathrm{OH^{-}}$ . Ideal for drinking/natural water, wastewater, air/stack gases, acids, sea water minerals, soils, food, biological fluids, toothpaste/mouthwash, coal, carbonated beverages, and bone.

**Temperature range:** 0 to 80°C (32 to 176°F)

pH range: 5 to 8 pH

Model. no.	Туре	Price
WD-35812-18	Economy double-junction epoxy body	
WD-35802-18	Spring-loaded single-junction epoxy body	
WD-35802-19	Glass body double-junction	

WD-35802-68 Fluoride F solution kit,

for single-junction ISE

WD-35802-69 Fluoride F- solution kit,

for double-junction ISE

WD-35803-58 ISA, TISAB I, 1 gallon

WD-35803-13 Calibration solution, 1000 ppm F<sup>-</sup>, 475 mL

WD-35803-73 Replacement electrolyte for single-junction ISE, 4 M KCl saturated with AgCl, 60 mL

WD-35803-74 Replacement electrolyte for double-junction ISE, 4 M KCl, 60 mL

### Fluoroborate BF<sub>4</sub>

These ISE feature polymer membrane sensors. Measuring range is 1 to 7 x  $10^{-6}$  M and 10,800 to 0.1 ppm as B. Interfering ions include  $CIO_4$ , I and CN. Ideal for plating baths (boron analysis).

**Temperature range:** 0 to 50°C (32 to 122°F) **pH range:** 2.5 to 11 pH

Model. no.	Туре	Price
WD-35812-20	Economy double-junction epoxy body	
WD-35802-20	Spring-loaded single-junction epoxy body	
WD-35802-21	Glass body double-junction	

WD-35802-70 Fluoroborate BF<sub>4</sub><sup>-</sup> solution kit,

for single-junction ISE

WD-35802-71 Fluoroborate BF<sub>4</sub> solution kit,

for double-junction ISE

**WD-35803-60 ISA,** 2 M (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, 475 mL

WD-35803-15 Calibration solution,  $1000 \text{ ppm BF}_4$ -, 475 mL

WD-35803-80 Replacement electrolyte for single-junction ISE, 0.1 M (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> with 0.01 M KCl, 60 mL

WD-35803-79 Replacement electrolyte for double-junction ISE,  $0.1~\mathrm{M}~(\mathrm{NH_4})_2\mathrm{SO}_4,\,60~\mathrm{mL}$ 

#### Iodide I-

These ISE feature solid state sensors. Measuring range is 1.0 to 5 x  $10^{-8}$  M and 127,000 to 6 x  $10^{-3}$  ppm. Interfering ions include S<sup>-2</sup>, CN<sup>-</sup>, NH<sub>3</sub>, S<sub>2</sub>O<sub>3</sub><sup>-2</sup>, Cl<sup>-</sup> and Br<sup>-</sup>. Ideal for milk, feeds, plants and pharmaceuticals.

**Temperature range:** 0 to 80°C (32 to 176°F)

pH range: 0 to 14 pH

Model. no.	Туре	Price
WD-35812-22	Economy double-junction epoxy body	
WD-35802-22	Spring-loaded single-junction epoxy body	
WD-35802-23	Glass body double-junction	

WD-35802-72 Iodide I solution kit, for single-junction ISE

WD-35802-73 Iodide I<sup>-</sup> solution kit, for double-junction ISE

**WD-35803-51 ISA,** 5 M NaNO<sub>3</sub>, 475 mL

WD-35803-17 Calibration solution, 1000 ppm I<sup>-</sup>, 475 mL

**WD-35803-81 Replacement electrolyte** for single-junction ISE, 1 M KNO<sub>3</sub> with 0.1 M KCl, 60 mL

WD-35803-75 Replacement electrolyte for double-junction ISE, 1 M KNO<sub>3</sub>, 60 mL

#### Lead Pb+2

These ISE feature solid state sensors. Measuring range is 0.1 to  $1 \times 10^{-6}$  M and 20,700 to 0.2 ppm. Interfering ions include  $Ag^{+2}$ ,  $Hg^{+2}$ ,  $Cu^{+2}$ , high  $Cd^{+2}$  and high  $Fe^{+2}$ . Ideal for plating baths and organic compounds.

**Temperature range:** 0 to 80°C (32 to 176°F) **pH range:** 3 to 10 pH

Model. no.	Туре	Price
WD-35812-24	Economy double-junction epoxy body	
WD-35802-24	Spring-loaded single-junction epoxy body	
WD-35802-25	Glass body double-junction	

WD-35802-74 Lead Pb<sup>+2</sup> solution kit, for single-junction ISE

WD-35802-75 Lead Pb<sup>+2</sup> solution kit, for double-junction ISE

WD-35803-56 ISA, 5 M NaClO<sub>4</sub>, 475 mL

WD-35803-20 Calibration solution, 1000 ppm Pb<sup>+2</sup>, 475 mL

WD-35803-81 Replacement electrolyte for single-junction ISE, 1 M KNO<sub>3</sub> with 0.1 M KCl, 60 mL

WD-35803-75 Replacement electrolyte for double-junction ISE, 1 M KNO<sub>3</sub>, 60 mL

## Nitrate NO<sub>3</sub>

These ISE feature polymer membrane sensors. Measuring range is 1.0 to  $7 \times 10^{-6}$  M and 62,000 to 0.5 ppm. Interfering ions include  $CIO_4$ -, I-, CN- and  $BF_4$ -. Ideal for surface/drinking water, sewage effluent, soil extracts, fertilizers, soils, plant tissue, meat potatoes, spinach, beets, baby food.

**Temperature range:** 0 to 50°C (32 to 122°F) **pH range:** 2.5 to 11 pH

Model. no.	Туре	Price
WD-35812-30	Economy double-junction epoxy body	
WD-35802-30	Spring-loaded single-junction epoxy body	
WD-35802-31	Glass body double-junction	

WD-35802-78 Nitrate NO<sub>3</sub> solution kit,

for single-junction ISE

WD-35802-79 Nitrate NO<sub>3</sub> solution kit,

for double-junction ISE

WD-35803-60 ISA, 2 M (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, 475 mL

WD-35803-24 Calibration solution, 1000 ppm NO<sub>3</sub>-, 475 mL

WD-35803-80 Replacement electrolyte for single-junction ISE, 0.1 M (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> with 0.01 M KCl, 60 mL

WD-35803-79 Replacement electrolyte for double-junction ISE, 0.1 M (NH $_4$ ) $_2$ SO $_4$ , 60 mL

# Nitrogen Oxide NO<sub>x</sub>

This ISE features a gas sensing membrane. Measuring range is  $5 \times 10^{-3}$  to  $5 \times 10^{-6}$  M and 220 to 0.2 ppm. Interfering ions include  $CO_2$ ,  $SO_2$ , HF and acetic acid. Ideal for air and stack gases.

**Temperature range:** 0 to 50°C (32 to 122°F) **pH range:** 1.1 to 1.7 pH

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Model. no.	Туре	Price
WD-35802-32	Gas Sensing single-junction, epoxy body	

WD-35802-82 Nitrogen oxide  $NO_x$  solution kit

WD-35803-57 ISA, 2 M sulfate buffer, 475 mL

WD-35803-26 Calibration solution, 1000 ppm NO<sub>2</sub>-, 475 mL

WD-35803-72 Replacement electrolyte, 0.1 M NaNO<sub>3</sub>, 60 mL

#### Perchlorate ClO<sub>4</sub>

These ISE feature polymer membrane sensors. Measuring range is 1 to 7 x  $10^{-6}$  M and 98,000 to 0.7 ppm. No significant interfering ions. Ideal for explosives and solid propellants.

**Temperature range:** 0 to 50°C (32 to 122°F) **pH range:** 2.5 to 11 pH

Model. no.	Туре	Price
WD-35812-34	Economy double-junction epoxy body	
WD-35802-34	Spring-loaded single-junction epoxy body	
WD-35802-35	Glass body double-junction	

WD-35802-84 Perchlorate ClO<sub>4</sub><sup>-</sup> solution kit,

for single-junction ISE

WD-35802-85 Perchlorate ClO<sub>4</sub>- solution kit,

for double-junction ISE

WD-35803-60 ISA, 2 M (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, 475 mL

WD-35803-28 Calibration solution, 1000 ppm ClO<sub>4</sub><sup>-</sup>, 475 mL

WD-35803-80 Replacement electrolyte for single-junction ISE,  $0.1~M~(NH_4)_2SO_4$  with 0.01~M~KCl, 60~mL

WD-35803-79 Replacement electrolyte for double-junction ISE,  $0.1~M~(NH_4)_2SO_4,~60~mL$ 

#### Potassium K<sup>+</sup>

These ISE feature polymer membrane sensors. Measuring range is 1 to 1 x  $10^{-6}$  M and 39,000 to 0.04 ppm. Interfering ions include Cs<sup>+</sup> and NH<sub>4</sub><sup>+</sup>. Ideal for waste water, river/tap water, blood electrolytes, clinical analysis, saliva, serum fertilizers, soils, and wines.

**Temperature range:** 0 to 50°C (32 to 122°F) **pH range:** 2 to 12 pH

Model. no.	Туре	Price
WD-35812-38	Economy double-junction epoxy body	
WD-35802-38	Spring-loaded single-junction epoxy body	
WD-35802-39	Glass body double-junction	

WD-35802-88 Potassium K<sup>+</sup> solution kit,

for single-junction ISE

WD-35802-89 Potassium K+solution kit,

for double-junction ISE

WD-35803-53 ISA, 5 M NaCl, 475 mL

WD-35803-30 Calibration solution, 1000 ppm K<sup>+</sup>, 475 mL

WD-35803-77 Replacement electrolyte for single-junction ISE, 0.1 M NaCl saturated with AgCl, 60 mL

WD-35803-78 Replacement electrolyte for double-junction ISE, 0.1 M NaCl, 60 mL

## Silver/Sulfide Ag<sup>+</sup>/S<sup>-2</sup>

These ISE feature solid state sensors. Measuring range is for  $Ag^+=1$  to  $1 \times 10^{-7}$  M and 107,900 to 0.01 ppm; for  $S^{-2}=1$  to  $1 \times 10^{-7}$  M and 32,100 to 0.003 ppm. Interfering ions include  $Hg^{+2}$ . Ideal for sewage effluent, soils, sediments, plating baths and photographic fixing solution. User must supply solutions for sulfide.

**Temperature range:** 0 to 80°C (32 to 176°F) **pH range:** 2 to 12 pH

Model. no.	Туре	Price
WD-35812-40	Economy double-junction epoxy body	
WD-35802-40	Spring-loaded single-junction epoxy body	
WD-35802-41	Glass body double-junction	

WD-35802-90 Silver solution kit, for single-junction ISE

WD-35802-91 Silver solution kit, for double-junction ISE

WD-35803-51 ISA, 5 M NaNO<sub>3</sub>, 475 mL

WD-35803-32 Calibration solution, 1000 ppm Ag<sup>+</sup>, 475 mL

WD-35803-81 Replacement electrolyte for single-junction ISE, 1 M KNO<sub>3</sub> with 0.1 M KCl, 60 mL

WD-35803-75 Replacement electrolyte for double-junction ISE, 1 M KNO<sub>3</sub>, 60 mL

#### Sodium Na+

These ISE feature glass bulb sensors. Measuring range is 1 to  $1 \times 10^{-5}$  M and 23,000 to 0.2 ppm. Interfering ions include H<sup>+</sup>, K<sup>+</sup> and Li<sup>+</sup>. Ideal for steam condensates in power plants, blood electrolytes, clinical analysis, serum, foods, wine, glass and sea water.

**Temperature range:** 0 to 50°C (32 to 122°F)

**pH range:** 5 to 10 pH

Model. no.	Туре	Price
WD-35812-42	Economy double-junction epoxy body	
WD-35802-42	Spring-loaded single-junction epoxy body	
WD-35802-43	Glass body double-junction	

WD-35802-92 Sodium Na+ solution kit, for single-junction ISE

WD-35802-93 Sodium Na<sup>+</sup> solution kit, for double-junction ISE

WD-35803-54 ISA, 4 M NH<sub>4</sub>Cl/NH<sub>4</sub>OH, 475 mL

WD-35803-34 Calibration solution, 1000 ppm Na<sup>+</sup>, 475 mL

WD-35803-76 Replacement electrolyte for single-junction ISE, 0.1 M NH₄Cl saturated with AgCl, 60 mL

WD-35803-82 Replacement electrolyte for double-junction ISE, 0.1 M NH<sub>4</sub>Cl, 60 mL

### Surfactant X+, X-

These ISE feature polymer membrane sensors. Measuring range is  $5 \times 10^{-2}$  to  $1 \times 10^{-5}$  M and 12,000 to 1.0 ppm. Interfering ions include similar types of surfactants. Ideal for detergents, dishwashing liquids, cleaning supplies, and food products. For titration only.

**Temperature range:** 0 to 50°C (32 to 122°F)

pH range: 2 to 12 pH

Model. no.	Туре	Price
WD-35812-44	Economy double-junction epoxy body	
WD-35802-44	Spring-loaded single-junction epoxy body	
WD-35802-45	Glass body double-junction	

WD-35802-94 Surfactant X<sup>+</sup>, X<sup>-</sup> solution kit, for single-junction ISE

WD-35802-95 Surfactant X<sup>+</sup>, X<sup>-</sup> solution kit, for double-junction ISE

WD-35803-59 ISA, TritonX-100, 475 mL

WD-35803-35 Titrant, 0.05 M hyamine, 475 mL

WD-35803-73 Replacement electrolyte for single-junction ISE, 4 M KCl saturated with AgCl, 60 mL

WD-35803-74 Replacement electrolyte for double-junction ISE, 4 M KCl, 60 mL

# Water hardness Ca<sup>+2</sup>, Mg<sup>+2</sup>

These ISE feature polymer membrane sensors. Measuring range is 1 to 5 x  $10^{-5}$  M and 40,000 to 0.4 ppm. Interfering ions include  $Cu^{+2}$ ,  $Zn^{+2}$ ,  $Ni^{+2}$  and  $Fe^{+2}$ . Ideal for water softening systems, boiler feed water, drinking/mineral water, blood electrolytes, clinical analysis, and food applications.

**Temperature range:** 0 to 50°C (32 to 122°F)

pH range: 5 to 10 pH

Model. no.	Туре	Price
WD-35812-48	Economy double-junction epoxy body	
WD-35802-48	Spring-loaded single-junction epoxy body	
WD-35802-49	Glass body double-junction	

WD-35802-98 Water hardness  $Ca^{+2}$ ,  $Mg^{+2}$  solution kit, for single-junction ISE

WD-35802-99 Water hardness  $Ca^{+2}$ ,  $Mg^{+2}$  solution kit, for double-junction ISE

WD-35803-52 ISA, 4 M KCl, 475 mL

WD-35803-05 Calibration solution, 1000 ppm Ca<sup>+2</sup>, 475 mL

**WD-35803-73 Replacement electrolyte** for single-junction ISE, 4 M KCl saturated with AgCl, 60 mL

**WD-35803-74 Replacement electrolyte** for double-junction ISE, 4 M KCl, 60 mL

#### Accessories

WD-35613-60 ISE labware kit, contains beakers, volumetric flask, pipette and pipette bulb needed for serial dilution of ISE standards and ISA additions

WD-35617-50 Electrode holder, 6" base. Holds up to four standard size electrodes and one ATC probe. The heavy base allows the holder to pivot 360°. Flexible arm moves electrode sideways or up and down. 9"L x 15"W x 10"H (boxed)