

**Solution Kits** sold separately below include all of the solutions needed for accurate measurements. Each kit includes one reference filling pipette, one 60-mL bottle of reference fill solution, one 475-mL bottle of 1000 ppm standard solution, and one 475-mL bottle of ionic strength adjustor (except models 27502-69 and 27502-91, which come in a one-gallon bottle).

Replacement ionic strength adjustors come in 475-mL bottles (except model 27503-58, which comes in a one-gallon bottle).



Solution kit 27502-63 and ISA bottle 27503-51

| Ion                                    | Standards and fill solution kits         |                                                                                                      |       | Replacement ionic strength adjustors <sup>†</sup> |                                                       |       |
|----------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------|-------------------------------------------------------|-------|
|                                        | Catalog number                           | Formulations for fill/standard solutions                                                             | Price | Catalog number                                    | Solution formulation                                  | Price |
| NH <sub>3</sub>                        | See adjacent ad for ordering information |                                                                                                      |       |                                                   |                                                       |       |
| NH <sub>4</sub> <sup>+</sup>           | <a href="#">GH-27502-53</a>              | 0.1 M NaCl/<br>1000 ppm as N                                                                         |       | <a href="#">GH-27503-53</a>                       | 5 M NaCl                                              |       |
| Br <sup>-</sup>                        | <a href="#">GH-27502-55</a>              | 1 M KNO <sub>3</sub> /<br>1000 ppm as Br <sup>-</sup>                                                |       | <a href="#">GH-27503-51</a>                       | 5 M NaNO <sub>3</sub>                                 |       |
| Cd <sup>+</sup>                        | <a href="#">GH-27502-57</a>              | 1 M KNO <sub>3</sub> <sup>‡</sup>                                                                    |       | <a href="#">GH-27503-51</a>                       | 5 M NaNO <sub>3</sub>                                 |       |
| Ca <sup>+2</sup>                       | <a href="#">GH-27502-59</a>              | 4 M KCl/<br>1000 ppm as Ca <sup>+2</sup>                                                             |       | <a href="#">GH-27503-52</a>                       | 4 M KCl                                               |       |
| Cl <sup>-</sup>                        | <a href="#">GH-27502-63</a>              | 1 M KNO <sub>3</sub> /<br>1000 ppm as Cl <sup>-</sup>                                                |       | <a href="#">GH-27503-51</a>                       | 5 M NaNO <sub>3</sub>                                 |       |
| Cu <sup>+2</sup>                       | <a href="#">GH-27502-65</a>              | 1 M KNO <sub>3</sub> /<br>1000 ppm as Cu <sup>+2</sup>                                               |       | <a href="#">GH-27503-51</a>                       | 5 M NaNO <sub>3</sub>                                 |       |
| CN <sup>-</sup>                        | —                                        | —                                                                                                    |       | —                                                 | —                                                     |       |
| F <sup>-</sup>                         | <a href="#">GH-27502-69</a>              | 4 M KCl/<br>1000 ppm as F <sup>-</sup>                                                               |       | <a href="#">GH-27503-58</a>                       | TiSAB I                                               |       |
| I <sup>-</sup>                         | <a href="#">GH-27502-73</a>              | 1 M KNO <sub>3</sub> /<br>1000 ppm as I <sup>-</sup>                                                 |       | <a href="#">GH-27503-51</a>                       | 5 M NaNO <sub>3</sub>                                 |       |
| Pb <sup>+2</sup>                       | —                                        | —                                                                                                    |       | <a href="#">GH-27503-56</a>                       | 5 M NaClO <sub>4</sub>                                |       |
| NO <sub>3</sub> <sup>-</sup>           | <a href="#">GH-27502-79</a>              | 0.1 M (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> /<br>1000 ppm as NO <sub>3</sub> <sup>-</sup>  |       | <a href="#">GH-27503-60</a>                       | 2 M (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>   |       |
| ClO <sub>4</sub> <sup>-</sup>          | <a href="#">GH-27502-85</a>              | 0.1 M (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> /<br>1000 ppm as ClO <sub>4</sub> <sup>-</sup> |       | <a href="#">GH-27503-60</a>                       | 2 M (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>   |       |
| K <sup>+</sup>                         | <a href="#">GH-27502-89</a>              | 0.1 M NaCl/<br>1000 ppm as K <sup>+</sup>                                                            |       | <a href="#">GH-27503-53</a>                       | 5 M NaCl                                              |       |
| Ag <sup>+</sup> /<br>S <sup>-2</sup>   | <a href="#">GH-27502-91</a>              | 1 M KNO <sub>3</sub> /<br>1000 ppm as Ag <sup>+</sup>                                                |       | <a href="#">GH-27503-51</a>                       | 5 M NaNO <sub>3</sub>                                 |       |
| Na <sup>+</sup>                        | <a href="#">GH-27502-93</a>              | 0.1 M NH <sub>4</sub> Cl/<br>1000 ppm as Na <sup>+</sup>                                             |       | <a href="#">GH-27503-54</a>                       | 4 M NH <sub>4</sub> Cl with<br>4 M NH <sub>4</sub> OH |       |
| X <sup>+</sup> /X <sup>-</sup>         | <a href="#">GH-27502-95</a>              | 0.05 M Hyamine®<br>and 0.01 M SLS <sup>††</sup>                                                      |       | —                                                 | —                                                     |       |
| Ca <sup>+2</sup> /<br>Mg <sup>+2</sup> | <a href="#">GH-27502-99</a>              | 4 M KCl/<br>1000 ppm as Ca <sup>+2</sup>                                                             |       | <a href="#">GH-27503-52</a>                       | 4 M KCl                                               |       |

<sup>†</sup>A 475-mL bottle of ionic strength adjustor is supplied with kit.

<sup>‡</sup>Customer-formulated standard solution required. <sup>††</sup>None required.

## Cole-Parmer® Ammonia Ion-Selective Electrodes

### Combines reference electrode and half-cell

- Fast and accurate readings in less than 30 seconds
- Save money with easily changeable membranes
- Measure concentrations to 17,000 ppm

Single-junction ammonia electrodes feature durable, epoxy bodies. The electrode with loose membranes is for users who prefer that style of installation. The electrode with pre-membraned caps makes electrode membrane replacement easier. Use electrodes with almost any existing meter.

**What's included:** 3.3-ft (1-m) cable and BNC connector, 15 mL of electrolyte, replacement membrane, and filling pipette. Order standards, ionic strength adjustors, and fill solution separately below.

Cole-Parmer®

“Excellent performance.”



27512-00 with membrane cap

| Type                                    | Concentration range                                | Temp/ pH range <sup>†</sup> | Interferences   | Catalog number              | Price |
|-----------------------------------------|----------------------------------------------------|-----------------------------|-----------------|-----------------------------|-------|
| <b>Electrode with loose membranes</b>   |                                                    |                             |                 |                             |       |
| Gas sensing                             | 5 x 10 <sup>-7</sup> to 1.0 M (0.01 to 17,000 ppm) | 0 to 50°C/ above 11         | Volatile amines | <a href="#">GH-27502-00</a> |       |
| <b>Electrode with pre-membraned cap</b> |                                                    |                             |                 |                             |       |
| Gas sensing                             | 5 x 10 <sup>-7</sup> to 1.0 M (0.01 to 17,000 ppm) | 0 to 50°C/ above 11         | Volatile amines | <a href="#">GH-27512-00</a> |       |

<sup>†</sup>Optimal pH range for direct measurement

#### Accessories

**GH-27503-00 Ammonia standard,**  
0.1 M NH<sub>4</sub>Cl, 475-mL bottle

**GH-27503-93 Ammonia standard,**  
1000 ppm ammonia as nitrogen, 475-mL bottle

**GH-27503-94 Ammonia standard,**  
100 ppm ammonia as nitrogen, 475-mL bottle

**GH-05730-51 Ionic strength adjustor,**  
NaOH and EDTA, 475-mL bottle

**GH-27503-71 Ammonia fill solution,**  
0.1 M NH<sub>4</sub>Cl, 125-mL bottle

**GH-27503-95 Replacement membranes.**

Ten membrane tapes, one O-ring, and tweezers

**GH-27512-95 Replacement membrane caps**  
for 27512-00. Pack of 3