



Backpack Lab™



Backpack Lab™

Backpack Lab™ Water Quality Educational Test Kit Includes:

- 110 tests each for acidity and alkalinity, 100 tests for carbon dioxide, dissolved oxygen, hardness, nitrate and phosphate
- **pHep®4**: water-resistant pH/temperature tester by **HANNA instruments®**
- **DiST®5**: water-resistant conductivity and TDS tester by **HANNA instruments®**
- Secchi disc for turbidity
- Backpack-style carrying case which holds all the components of the kit
- Extensive teachers manual with a curriculum that meets the National Science Teachers Association Standard
- Overhead transparencies with summaries of each parameter
- Laminated instruction cards with step-by-step field test procedures
- Lab activity worksheets with instructions, goals, hypothesis, testing procedure results and comments
- A glossary of key terms for classroom display

Everything students need to know about environmental water parameters all in one backpack!

HANNA instruments® is now offering a new series of test kits for use by educators and environmental science students. These portable kits are specifically designed for teachers to get the most out of their classroom time with well-constructed lessons and activities.

The backpack is designed with all the necessary components in one place, reducing the chance of misplacing an item.

The durable backpack is ideal to take out in the field for on-site measurements. The components are tied together by an extensive teachers manual that includes information about each parameter, classroom activities which are designed to introduce students to each parameter, and detailed field-testing procedures.

HANNA instruments® parameter test kits and pocket testers, provide teachers with a valuable tool in helping students assess the water quality of streams, rivers and lakes.

The **HANNA instruments® Backpack Lab™** is an example of our innovation and desire to respond to the needs of our customers.

Backpack Lab™

Backpack Lab™ Soil Quality Educational Test Kit Includes:

- Agriculture combination test kit for testing nitrogen, phosphorous, potassium and pH, with enough materials for 50 tests for each parameter
- **pHep®4**: water-resistant pH/temperature tester by **HANNA instruments®**
- **DiST®5**: water-resistant conductivity and TDS tester by **HANNA instruments®**
- **HANNA instruments®** HI 145 digital thermometer
- Backpack-style carrying case which holds all the components of the kit
- Extensive teachers manual with a curriculum that meets the National Science Teachers Association Standard
- Overhead transparencies with summaries of each parameter
- Laminated instruction cards with step-by-step field test procedures
- Lab activity worksheets with instructions, goals, hypothesis, testing procedure results and comments
- A glossary of key terms for classroom display



Explore three macronutrients and three parameters using test kits and meters!

HANNA instruments® introduces the second kit specifically assembled for educator and environmental science student use.

Using the popular **HANNA instruments®** Agriculture Combination Test Kit as its foundation, the Soil Quality Education Test Kit is designed to provide a complete unit for teachers to introduce students to important chemical tests to evaluate soil quality and fertility, and relate these measurements to the principles of plant metabolism. The components are tied together by an extensive Teacher's Guide that includes in-depth background information about each parameter, classroom activities designed to introduce students to each parameter, and detailed field-testing procedures.

By combining **HANNA instruments®** expertise in developing and manufacturing testing products for industrial applications, this kit addresses important issues related to soil quality and modern agricultural practices. Real-world examples help students to understand the relevance of macronutrients and other parameters in everyday life. The kit is an in-depth introduction to major soil quality topics, all presented in an easy-to-use format that makes lessons understandable.

Specifications

HI 3817BP Backpack Lab™

| Parameter | Code | Method | Range | Smallest Increment | Method | Number of Tests | Weight |
|---|---------|--------------|---------------|--------------------|-------------------------------------|-----------------|--------|
| Acidity (CaCO ₃) | HI 3820 | Titration | 0-100 mg/L | 1 mg/L | Methyl-orange | 110 | 910 g |
| | | | 0-500 mg/L | 5 mg/L | Phenolphthalein | | |
| Alkalinity (CaCO ₃) P & Total | HI 3811 | Titration | 0-100 mg/L | 1 mg/L | Phenolphthalein/ Bromphenol blue | 110 | 460 g |
| | | | 0-300 mg/L | 3 mg/L | | | |
| Carbon Dioxide (CO ₂) | HI 3818 | Titration | 0.0-10.0 mg/L | 0.1 mg/L | Phenolphthalein | 110 | 460 g |
| | | | 0.0-50.0 mg/L | 0.5 mg/L | | | |
| | | | 0-100 mg/L | 1 mg/L | | | |
| Oxygen, Dissolved | HI 3810 | Titration | 0.0-10.0 mg/L | 0.1 mg/L | Modified Winkler | 110 | 910 g |
| Hardness (CaCO ₃) | HI 3812 | Titration | 0.0-30.0 mg/L | 0.3 mg/L | EDTA | approx. 100 | 460 g |
| | | | 0-300 mg/L | 3 mg/L | | | |
| Nitrate (NO ₃ N) | HI 3874 | Colorimetric | 0-50 mg/L | 10 mg/L | Cadmium reduction | 100 | 156 g |
| Phosphate (Orthophosphate PO ₄ ³⁻) | HI 3833 | Colorimetric | 0-5 mg/L | 1 mg/L | Ascorbic acid | 100 | 160 g |

pHep®4

| Parameter | Code | Range | Resolution | Accuracy | Calibration | Battery Life | Weight |
|-------------|----------|-----------------|------------|----------|-------------|-------------------|--------|
| pH | HI 98127 | -2.0 to 16.0 pH | 0.1 pH | ±0.1 | Automatic | approx. 300 hours | 85 g |
| Temperature | | -5.0 to 60.0°C | 0.1°C | ±0.5°C | | | |

DiST®5

| Parameter | Code | Range | Resolution | Accuracy | Calibration | Battery Life | Weight |
|-------------|----------|-----------------|------------|----------|-------------|-------------------|--------|
| EC | HI 98311 | 0 to 3999 µS/cm | 1 µS/cm | ±2% F.S. | Automatic | approx. 100 hours | 85 g |
| TDS | | 0 to 2000 ppm | 1 ppm | ±2% F.S. | | | |
| Temperature | | 0.0 to 60.0°C | 0.1°C | ±0.5°C | | | |

HI 3896BP Backpack Lab™

| Parameter | Code | Method | Range | Chemical Method | Number of Tests | Peso |
|------------|---------|---------------|-----------------------------|-------------------|-----------------|--------|
| Nitrogen | HI 3896 | Colorimetric | Traces, low, medium, high | Ned | 50 | 1320 g |
| Phosphorus | | Colorimetric | Traces, low, medium, high | Ascorbic acid | 50 | |
| Potassium | | Turbidimetric | Traces, low, medium, high | Tetraphenylborate | 50 | |
| pH | | Colorimetric | 4 to 9 pH (1 pH increments) | pH indicators | 50 | |

HI 145-00 Specifications

| | Range | Resolution | Accuracy | Probe | Battery Life | Weight |
|-------------|----------------|--|---|--|---------------------|--------|
| Temperature | -50.0 to 220°C | 0.1°C (-50.0 to 199.9°C) 1°C (200 to 220°C) | ±0.3°C (-20 to 90°C) ±0.4 F.S. (outside) | Stainless steel, 125 x 5mm (5 x 0.2") | approx. 10000 hours | 65 g |

pHep®4

| Parameter | Code | Range | Resolution | Accuracy | Calibration | Battery Life | Weight |
|-------------|----------|-----------------|------------|----------|-------------|-------------------|--------|
| pH | HI 98127 | -2.0 to 16.0 pH | 0.1 | ±0.1 | Automatic | approx. 300 hours | 85 g |
| Temperature | | -5.0 to 60.0°C | 0.1°C | ±0.5°C | | | |

DiST®5

| Parameter | Code | Range | Resolution | Accuracy | Calibration | Battery Life | Weight |
|-------------|----------|-----------------|------------|----------|-------------|-------------------|--------|
| EC | HI 98311 | 0 to 3999 µS/cm | 1 µS/cm | ±2% F.S. | Automatic | approx. 100 hours | 85 g |
| TDS | | 0 to 2000 ppm | 1 ppm | ±2% F.S. | | | |
| Temperature | | 0.0 to 60.0°C | 0.1°C | ±0.5°C | | | |