

NOWPak[®] and PDMPak[®] Liner-Based Bottle Systems

User Guide



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INTRODUCTION

The NOWPak® liner-based bottle system and PDMPak® liner-based bottle system for pressurized applications are leading containment and dispense systems that help ensure chemicals are protected throughout the filling, shipping, and dispensing operations. The systems include a container that consists of a flexible liner inside a rigid overpack, a package closure, and a variety of dispense connector options.

USER GUIDE INTENDED AUDIENCE

This user guide is intended for end users who store and handle NOWPak bottle systems or PDMPak bottle systems for pressurized applications that are pre-filled with chemical by the chemical supplier, sealed with a closure, and packaged in a UN-rated box.

PRODUCT FEATURES

Our double containment NOWPak systems and PDMPak systems consist of a rigid HDPE overpack and choice of flexible liners that are particle tested and certified. The systems dispense chemical through a sealed pathway from liner to dispense tool, maintaining chemical integrity by protecting the chemical from external contamination.

After the bottles are filled with chemical, they are sealed with a SmartCap™ closure or other Entegris closure. SmartCap closures have a breakseal design that eliminates the need to remove the closure prior to installing the ErgoNOW™ bottle system key-coded dispense connector. The closure breakseal is exposed when the closure tear tab is removed and the

dispense connector probe penetrates the breakseal upon installation. The SmartCap closures have a key code feature that uniquely identifies the chemical in the bottle.



SmartCap closure.

ErgoNOW dispense connector.

The Entegris ErgoNOW dispense connector has a corresponding key code that helps ensure the correct chemical is being dispensed. The connector will securely snap into place on the bottle system and closure only when the key code of the SmartCap closure and ErgoNOW connector match, preventing dispensing the wrong material.

NOWPak bottles are single-use systems designed to be recycled after use. After the chemical is completely dispensed, the dispense connector is removed, and a SmartCap closure plug is installed to prevent chemical fumes or leakage and enable safe bottle recycling.

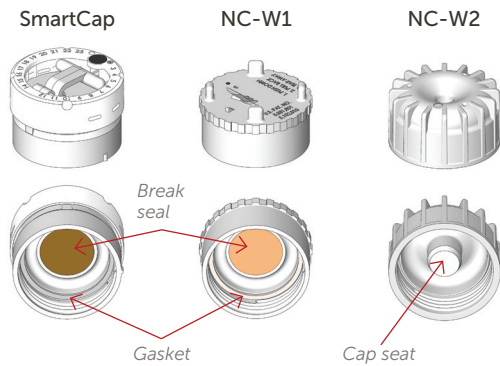


SmartCap closure plug.

For additional information about our complete product portfolio, specifications, and ordering information, visit our [website](#).

SEALING NOWPAK AND PDMPAK BOTTLE SYSTEMS

NOWPak bottle systems are filled with chemical and then sealed with a connector by the chemical supplier. Entegris offers a variety of closure options as shown below. Entegris has an established closure torquing specification of 80 to 85 in•lbs and capping procedures to help ensure safe transport of the bottles from the chemical supplier to the point of use. Entegris document [NOWPak System Capping and Torquing Procedures](#), provides detailed instructions on proper capping and torquing procedures.



Entegris closure types.

The most used closure is the SmartCap closure, which offers unique key coding that helps ensure the chemical in the bottle matches the dispense connector for dispensing onto the tool. SmartCap closures are available with a choice of three break-seal options: SC-, SCD-, and SCG-.

SmartCap and IntelliCap™ breakseal options

Breakseal options	Wetted surface	Nonwetted surface
SC-XX-YY-ZZ SmartCap and TC-W1-XX IntelliCap	 PTFE surface	 Laminate construction
SCD-XX-YY-ZZ SmartCap	 PTFE surface	 Donut style, laminate construction
SCG-XX-YY-ZZ SmartCap	 PTFE surface	 Donut style, laminate construction

After the closure is applied, a shipping ring (NA-46-250) is applied over the closure. The shipping ring helps prevent leakage by maintaining the integrity of the bottle closure seal and reduces potential shipping damage.

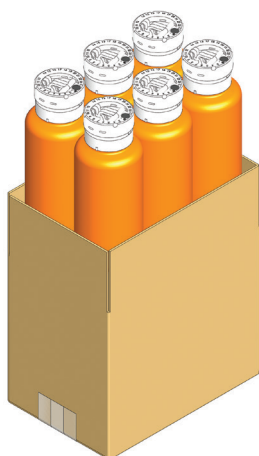


NA-46-250 shipping ring.

PACKAGING AND SHIPPING

NOWPak and PDMPak bottles have UN-rated boxes that protect the bottles during shipment. UN-rated boxes meet the U.S. Department of Transportation's Title 49 CFR, Performance Oriented Packaging Standards, Section 178.

Filled and sealed bottles are loaded into the UN-rated boxes in an upright position as shown.



NA-11-01-6 box with 1-liter NOWPak bottles.

Chemical suppliers may also use additional packaging such as bags to further protect individual bottles.

UN Shipping Boxes

UN 4G rated shipping box part number	Bottles per box	Bottle type
NA-11-01-1	1	1 L NOWPak bottle
NA-11-01-6	6	1 L NOWPak bottles
NA-11-02-1	1	2.5 L NOWPak bottle
NA-11-04-1	1	4 L NOWPak bottle
NA-11-04-4	4	4 L NOWPak bottles
NA-11-05-1	1	10 L NOWPak bottle
NA-11-05-2	2	10 L NOWPak bottles

Japanese UN Shipping Boxes

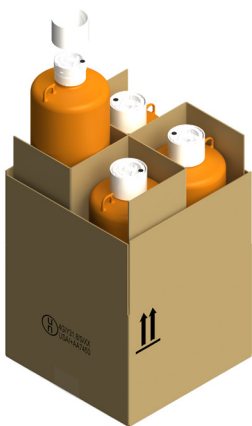
UN 4G rated shipping box part number	Bottles per box	Bottle type
NA-74-01-6	6	1 L NOWPak bottles
NA-74-04-1	1	4 L NOWPak bottle
NA-74-04-4	4	4 L NOWPak bottles
NA-74-05-1	1	10 L NOWPak bottle
NA-74-05-2	2	10 L NOWPak bottles
NA-113-04-1	1	4 L PDMPak bottle
NA-113-04-4	4	4 L PDMPak bottles

STORAGE

ORIENTATION

NOWPak and PDMPak bottles are constructed of high-density polyethylene (HDPE) which resists breakage even if dropped or struck. Store filled bottles in an upright position. Never store filled NOWPak bottles or boxes in a sideways position. Box exteriors are marked with arrows to indicate the proper orientation of the box during shipping and storage.

! IMPORTANT! Filled NOWPak and PDMPak bottle systems should always be stored and transported in an upright position.



NA-11-04-4 shipping box.

TEMPERATURE RANGE FOR STORING AND HANDLING

Entegris recommends storage conditions with a temperature range from ambient temperatures of 15° to 25°C (59° to 77°F) to -20°C (-4°F).

When bottles are stored at -20°C (-4°F), Entegris recommends allowing the bottles to warm to 5°C (41°F) or higher prior to handling or moving the bottles into place on the production tool.

UNPACKING AND HANDLING

NOWPak and PDMPak bottle systems have a handle located on the top of the bottle. When lifting bottles from the packaging and transporting them, it is important to use the handle and support the bottle from underneath as needed. The NOWPak or PDMPak bottle may also be enclosed in protective packaging such as a sealed bag. To avoid disturbing the closure and its seal, use precaution when locating the handle through the product packaging, and support the bottle from underneath.

Never lift the NOWPak or PDMPak bottle by gripping the closure.

! IMPORTANT! Always lift NOWPak bottles or PDMPak bottles by the handle located on the top of the bottle system.



PREPARING BOTTLES FOR USE

NOWPak bottles sealed with a SmartCap closure do not require the cap be removed prior to installing the dispense connector. SmartCap closures have a breakseal design that is exposed when the closure tear tab is removed. The chemical seal remains intact until the dispense connector probe penetrates the breakseal.



SmartCap closure.



Tear tab removal tool.

PRESSURIZATION

NOWPak bottles are not pressure rated vessels. Maximum pressurization is 34 kPa (5 psig) for a maximum of two minutes.

PDMPak bottles are designed for applications that require indirect pressurization during the dispense process. Maximum operating pressure is 103.4 kPa (15.0 psig).

DISPENSE CONNECTOR INSTALLATION

Operators should wear personal protective equipment (PPE) when performing the dispense connector installation.

⚠ WARNING: Always use PPE such as gloves and protective eyewear when performing operations where there may be exposure to chemical.

ErgoNOW dispense connectors are available in two types: PD- and PL- connectors. The appropriate type depends on whether dispense is performed by pressurized gas or pump (with pressure assist available).

PD-type connectors are used with PDMPak bottles in applications where compressed gas, (usually CDA or N₂) enters the ErgoNOW connector through the gas inlet fitting.

PL-type connectors are used in applications where a pump is used to draw liquid out of the bottle through the liquid outlet fitting. The gas inlet fitting allows ambient air to flow freely into the NOWPak bottle, to the outside of the liner. As chemical is pumped from the bottle, incoming gas causes the liner to collapse.

Additional, more detailed information regarding connector installation and maintenance is available in the ErgoNOW dispense connector user guide.

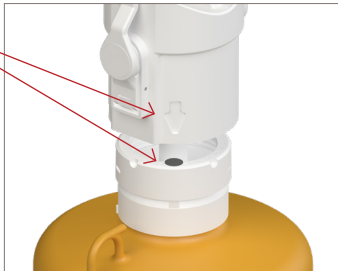
⚠ IMPORTANT! PD-type connectors must only be used with PDMPak bottles. The maximum operating pressure is 103.4 kPa (15.0 psig).



DISPENSE CONNECTOR INSTALLATION PROCESS

1. Remove the tear tab from the SmartCap closure.
2. Rotate and align the connector arrow with the SmartCap closure proximity sensor magnet.

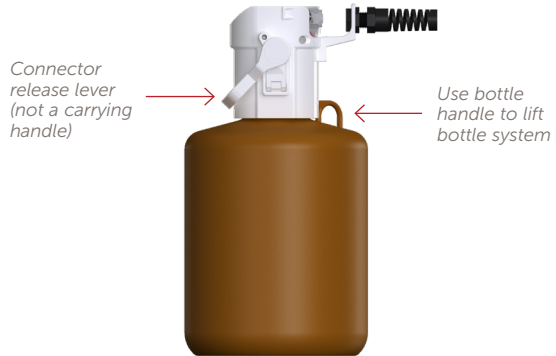
Align arrow and proximity sensor magnet



3. With the connector probe in a vertical orientation and at a 90° angle to the breakseal, push the probe downward to engage the SmartCap and penetrate the breakseal.
4. Push the connector body downward until it locks into position over the top of the SmartCap.



IMPORTANT! Always position the ErgoNOW connector and probe in a vertical position and at a 90° angle to the closure breakseal when lowering into place on the NOWPak bottle and SmartCap closure.



WARNING: Do not use the ErgoNOW connector body or the connector's release lever to lift or carry the bottle. This could cause the bottle to release from the connector and result in a chemical spill.

CHANGING OUT BOTTLES

Operators should wear PPE such as gloves and protective eye wear when performing dispense connector removal and replacement.

WARNING: Always use PPE such as gloves and protective eyewear when performing operations where there may be exposure to chemical.

NOWPAK OR PDMPAK BOTTLE REPLACEMENT

1. When the NOWPak or PDMPak bottle system is empty, remove the ErgoNOW dispense connector. Pull the ergonomic release lever into a vertical position while supporting the bottle with the other hand. The push-off cams in the ErgoNOW connector break the seal between the bottle and the connector. (Do not lift the ErgoNOW connector away from the bottle yet.)



2. Allow the release lever to return to the original position.



3. Remove the connector by grasping the connector body (not the handle) with one hand and securing the bottle with the other hand, lifting the connector straight up off the bottle.



- !** **IMPORTANT!** Do not use release lever on the ErgoNOW connector as a handle. Only use it to release the seal between the bottle and the connector. Never lift the ErgoNOW connector away from the bottle by the handle; this may result in an uncontrolled release of chemical toward the operator or the surrounding environment.

4. Verify the new bottle SmartCap key code matches the dispense connector key code.
5. Replace the NOWPak bottle, pull the SmartCap tear tab away.
6. Reinstall the ErgoNOW connector by pushing it directly down on top of the connector in a vertical orientation and at a 90° angle to the closure breakseal.

Detailed ErgoNOW installation, removal, and maintenance information is available in the ErgoNOW connector user guide.

PRODUCT DISPOSAL

Once the dispense connector is removed, the bottles can be sealed by using a SmartCap closure plug, part number NA-65-100, to seal the closure breakseal opening.



NA-65-100 SmartCap closure plug.

Unused chemical should be properly and safely disposed following local regulations and procedures for disposal of hazardous materials.

Once liners are removed, the NOWPak and PDMPak HDPE overpacks can be recycled.

LIMITED WARRANTY

Entegris' products are subject to the Entegris, Inc. General Limited Warranty. To view and print this information, visit [entegris.com](https://www.entegris.com) and select the [Legal & Trademark Notices](#) link in the footer. Entegris does not warrant any failure in the case of customers using unapproved foreign components.

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