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Data Sheet 30270U

IC-Na and IC-Na Plus Devices

Introduction

Maxi-Clean™ and Extract-Clean™ IC Devices are solid-phase extraction devices used to eliminate matrix interferences from samples prior to analyses by ion chromatography. Each device consists of either 0.5mL or 1.5mL of polystyrene-based packing sandwiched between polyethylene frits within an injection-molded medical-grade polypropylene housing (**Figure 1**).
Samples and wash solvents are passed through the packing using a luer hub syringe (for Maxi-Clean™ devices) or a vacuum manifold (for Extract-Clean™ devices). As sample comes in contact with the packing, specific chemical interactions take place which selectively retain certain components of the matrix in the device while the remaining components pass through the device outlet. The chemical characteristics of the packing dictate which sample components are retained. Seven chemistries are currently available.

Successful application of IC devices requires:

1) proper conditioning of the device prior to sample application,
2) application of the sample at a rate slow enough to allow the chemical interaction to take place while the sample is in the device, and
3) control of sample size to keep within the device's capacity.

The following information provides general recommendations for the use of IC-Na devices. This procedure may be modified to accommodate samples with different characteristics.

General Information

Maxi-Clean™ and Extract-Clean™ IC-Na devices provide a reliable method for the removal of cations from samples where the pH changes induced by solid-phase extraction resin in the hydrogen form are not appropriate. They may also be useful for pre-concentrating cations or removal of cations from matrix interferences, for example from samples that contain high concentrations of anions, prior to cation analysis on an anion column. IC-Na devices contain either 0.5mL or 1.5mL of sulfonic acid cation exchange resin in the Na^+ form. The sodium contained on the packing will be displaced by the cations from the sample. The amount of cations removed is equivalent to the amount of soduim displaced from the resin. Anions from the sample will pass through the device unchanged.

Flow Rate

The devices have a number of flow-dependent parameters that may affect results. In general, high flow rates, particularly in the sample loading step, will decrease the performance while low flow rates will improve the extraction process. Low flow rates allow the sample to diffuse into the packing thus increasing capacity and improving the effeciency. The recommended flow rate for sample loading is 1mL/minute or less.

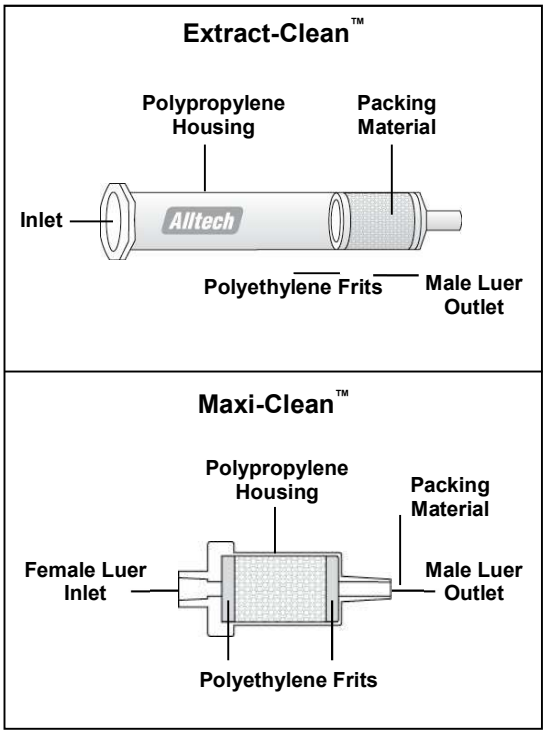

Figure 1

Sample Mass

The internal volumes of the different devices include the flow passages and interstitial packing volume. Although it is possible to recover all but 100µL (for the 0.5mL devices) or 150µL (for the 1.5mL devices) of sample with an air purge, best results are obtained when the sample volume greatly exceeds the internal volume of the cartridge.

Device	Bed Size	Internal Volume
Maxi-Clean™:	0.5mL	300µL
Maxi-Clean™ Plus:	1.5mL	650µL
Extract-Clean™:	0.5mL	2.5mL
Extract-Clean™ Plus:	1.5mL	1.5mL

General Procedure

1. **Precondition the Device.** Pass 5 to 10mL of IC grade water through the device. This removes interstitial contaminants and wets the packed bed. For trace analysis work, repeat the rinsing procedure until the eluant is free from interferences.
2. **Load the Sample.** Load the entire sample at 1mL/minute or less. The total amount of cations contained in the sample should not exceed the device capacity and preferably should be below 50% of total capacity. Discard the first 1mL of eluate. Collect the remaining eluate for analysis.

Applications

Brier, R.A. and Ravichandran, R. K., The Pittsburgh Conference, Chicago, IL, March 4, 1991; Paper No. 232.

Other IC Devices

Device	Retains
IC-RP:	Hydrophobic Components
IC-OH:	Anions (pH increase)
IC-H:	Cations (pH reduction)
IC-Ag:	Chloride, Iodide, Bromide
IC-Ba:	Sulfate
IC-Na:	Cations (no pH change)
IC-Chelate:	Polyvalent Metal Ions
IC-Mixed Mode RP-OH:	Hydrophobic Components and Anions (pH increase)
IC-Mixed Mode RP-H:	Hydrophobic Components and Cations (pH reduction)

IC-Na Devices

Description	Volume	Qty	Part No.
Maxi-Clean™ IC-Na	0.5mL	50	**5122580**
Maxi-Clean™ IC-Na Plus	1.5mL	25	**5122574**
Extract-Clean™ IC-Na	0.5mL	50	**5122912**
Extract-Clean™ IC-Na Plus	1.5mL	30	**5122037**

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