ENVIRONMENTAL EXPRESS

SimpleDist System: Frequently Asked Questions

How does the system work?

For Ammonia:

25 mls of sample is reacted with borate buffer in the boiling tube. The sample is then heated at a temperature of 135ºC for 60 minutes. Ammonia is released from the sample and pulled by vacuum into the collection trap containing a catch solution of either 0.04N H_2SO_4 or Boric Acid.

For Cyanide:

50 mls of sample is reacted with 18N H_2SO_4 in the boiling tube. The sample is then heated at a temperature of 125ºC for 60 minutes. Cyanide is released as HCN gas which is pulled by vacuum into the collection trap containing 0.25N NaOH.

What is the basic procedure?

1. Add the sample to the boiling tube.
2. Screw on cap and insert funnel.
3. Add the catch solution to the trap and attach it to the glassware and tubing.
4. Turn on the vacuum.
5. Add the appropriate reagents through the funnel.
6. Turn on the HotBlock to either 135ºC or 125°C and allow samples to reach temperature (~30 minutes).
7. Hold temperature for 60 minutes.
8. Turn off HotBlock and allow samples to cool. Leave on the vacuum while cooling.
9. After samples cooled, remove the trap and pour the distilled sample into a container for analysis.
10. Close all vacuum valves and turn off vacuum pump.

Why is there no chiller water system?

The distilled ammonia or cyanide is collected in the trap and does not require the use of a chiller or any water lines. The sample solution boils in the boiling tube and the ammonia or cyanide gas is released and pulled by vacuum to the collection trap (containing the appropriate catch solution). The sample is held in place in the trap by a hydrophobic frit which prevents it from traveling back into the boiling tube.

Does this mean that the water (steam) can carry over to the collection tube during distillation?

No, the water does not carry over with the ammonia or cyanide because it will be blocked by the hydrophobic frit of the trap.

How long does it take to distill a set of samples?

The complete procedure takes approximately 1.5 hours, 30 minutes for the block to heat and 60 minutes for complete distillation.

What temperature is used?

125º C is used for Cyanide distillations while 135ºC is used for Ammonia distillations

How are interferences in my samples addressed using the SimpleDist System?

The Simple Dist uses the exact same chemicals to counteract various interferences for ammonia and cyanide distillations that are recommended by the EPA and Standard Methods methodology. Refer to the appropriate method for a list of those reagents.

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Can this unit be used for a soil matrix?
The Simple Dist System is applicable for the determination of total ammonia and cyanide in drinking, ground, surface, and saline waters, as well as, domestic and industrial wastes, and soils. If testing solid samples, weigh 1g (or less) to the nearest 0.01g, and dilute to the appropriate volume.

Is the SimpleDist EPA approved?
The Simple Dist uses the same chemistry as the current Standard Methods and EPA Methods. It employs the same reagents in the same concentrations as the approved methods. It is not a change in method, merely a change in apparatus to achieve the distillation. All of the chemistry is in exact coordination with the approved methods.

Can Phenols or Sulfides be distilled with the SimpleDist?
Some customers have successfully distilled phenol with the SimpleDist. Currently we do not promote the system for those distillations. Sulfides should not be attempted.

What does the SimpleDist System include?
- Block and Manifold: Catalog # C6000 for $5400 - Includes: 12-place Block,12-place Manifold, 12 sets of boiling tubes, 12 closures, tubing, 12 tubing adaptors, 12 two-port inserts, tube rack, pack of disposable reagent addition tubes and pack of collection traps.
- Manifold 18 place: Catalog # C6200 for $2495 - Includes: 18-place Manifold, 18 sets of boiling tubes, 18 closures, tubing, 18 tubing adaptors, 18 two-port inserts, pack of disposable reagent addition tubes and pack of collection traps.
- Manifold 12 place: Catalog # C6210 for $1995 - Includes: 12-place Manifold, 12 sets of boiling tubes, 12 closures, tubing, 12 tubing adaptors, 12 two-port inserts, pack of disposable reagent addition tubes and pack of collection traps.

What parts of the system are consumables and how much do they cost?
The only true consumable that must be replaced with each sample is the collection traps (part # C6100) which are $150 for a pack of 100. A free starter pack (100 traps) is included with the system. The lab may choose to replace the reagent delivery tube every time as well, but other customers are reporting getting several uses from it. The inlet port cap and the cap o-ring should be replaced, but infrequently.

What is the warranty of the system?
The system can be purchased from Environmental Express and is covered under a 1-year warranty. If the system fails to adequately perform specified laboratory distillations under normal laboratory use, then the item is fully covered for a period of one year from the date of shipment. This warranty extends to parts, labor, and any approved transportation charges.

What are the specifications for the vacuum pump?
The system requires a standard vacuum pump to maintain ~15” Hg. This product can be added to the order and is Item #C5205.

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