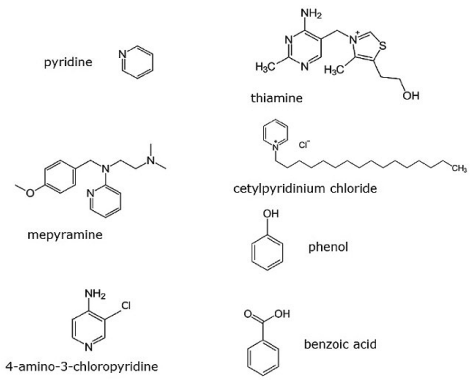
RSA™
REDUCED SURFACE ACTIVITY GLASS

APPLICATION NOTE

Compound-Dependent Vial Adsorption Studies

Comparison to conventional glass



Percent Loss of Each Analyte in Both Vials

analyte	Regular Glass	RSA Glass
phenol	0.0	0.0
benzoic acid	0.0	0.0
pyridine	3.5	0.2
4-amino-3-chloropyridine	9.1	0.6
mepyramine	13.1	0.7
thiamine	32.6	3.1
cetylpyridinium chloride	52.7	9.8

Notes: Studies of different compounds illustrate how the analyte loss was due to interaction with anionic hydroxyl groups on the glass surface; neutral and acidic compounds (phenol and benzoic acid) showed no loss whereas every compound containing one or more amine did.

Method Conditions

Item: RSA™, glass vials and caps

Column: Diamond Hydride™, 4µm, 100Å

Catalog No.: 70000-7.5P (column)
40018-75P (column)
9509S-1WCP-RS (vials)

Specifications: Reduced surface activity glass, clear, write on, screw thread, 100/pk.

Dimensions: 12 x 32 mm (2 mL)

Mobile Phase: Various isocratic settings were used

Flow rate: 1.0 mL/min

Sample: 5.0ppm reference standards in DI H_2O diluent. Portions of the same samples were transferred to the two vial types and injected into an HPLC initially and after four hours. Peak areas were recorded and compared to initial injections to calculate percent recovery.

Discussion

Various test solutes are investigated in this study in order to determine the role that functional groups play in analyte loss to the vial. Percent loss increased in order of increasing number of amine groups and was greatest with permanently cationic species (thiamine and cetylpyridinium chloride). Furthermore, percent loss was significantly lower using RSA glass vials, which show how the surface chemistry has real end-user advantages for the analytical laboratory. This is due to the fact that RSA glass does not have the many surface hydroxyl groups found in conventional glass.

MANUFACTURED BY:
MICROSOLV TECHNOLOGY CORPORATION
9158 Industrial Blvd NE
Leland, NC 28451
p: 1.732.380.8900
f: 1.910.769.9435
customers@mtc-usa.com
www.Cogent-HPLC.com