



14,383-9 Hammett Indicator Set

500mg of each

contents listed below:

No.	Indicator	Strength Basic
1	4-Phenylazoaniline	+2.8
2	4-(Phenylazo)diphenylamine	+1.5
3	4-Nitroaniline	+1.1
4	2-Nitroaniline	-0.2
5	4-Chloro-2-nitroaniline	-0.9
6	4-Nitrodiphenylamine	-2.4
7	2,4-Dichloro-6-nitroaniline	-3.2
8	4-Nitroazobenzene	-3.3
9	2,6-Dinitro-4-methylaniline	-4.3
10	2,4-Dinitroaniline	-4.4
11	<i>N,N</i> -Dimethyl-2,4,6-trinitroaniline solution in conc. H ₂ SO ₄	-4.7
12	Chalcone	-5.6
13	2-Benzoylnaphthalene	-5.9
14	4-Benzoylbiphenyl	-6.2
15	2-Bromo-4,6-dinitroaniline	-6.6
16	Anthraquinone	-8.1
17	2,4,6-Trinitroaniline, solution in conc. H ₂ SO ₄	-9.3

Professor L.P. Hammett and coworkers¹ developed a series of 17 simple basic indicators by means of which acidity in any solvent as well as acidity lying in the range of dilute aqueous solutions to pure sulfuric acid may be determined. In our laboratories, we have also found these indicators useful in determining the choice of Friedel-Crafts catalysts.² While some of these 17 indicators are commercially available, others are quite difficult to prepare, and the preparation and purification of all present a tedious task. Thus, we make the set of all 17 available to research chemists.

HANDLING

All of the compounds in the kit should be handled in a chemical fume hood. Wear safety goggles and rubber gloves. Some of the compounds in the kit will, on contact, irritate the eyes, skin, and mucous membranes; these materials carry the label warning: Irritant! The additional protection of an organic vapor respirator with a dust pre-filter is advised for those materials bearing the label warnings: Highly Toxic! (or Severe Poison!) Poison! and Toxic!

EMERGENCY PROCEDURES

Fire

Extinguish with water spray, foam, dry powder, or carbon dioxide.

Skin and eye contact

Flush eyes and skin well with water. Remove contaminated clothing. Wash out mouth if ingested. Consult a physician.

Spill

Wear safety goggles. Cautiously mix with solid sodium bicarbonate, sweep up, wrap in paper and burn in an incinerator. Wash the spill site well.

WASTE DISPOSAL

Materials supplied in sulfuric acid solution

Pour the solution slowly into a stirred ice-water mixture, neutralize to pH 7 and filter off any suspended solid. The aqueous solution may be run down the drain with excess water. The organic solids should be treated as follows.

Solid materials

Dissolve in a flammable solvent and incinerate; or mix with solid sodium bicarbonate, wrap in paper and burn in an incinerator.

Observe all federal, state, and local regulations.

1. Hammett, L.P.; Deyrup, A.J. *J. Am. Chem. Soc.* **1932**, *54*, 2721; Hammett, L.P.; Paul M.A. *ibid.* **1934**, *56*, 827.

2. Bader, A.R. *J. Am. Chem. Soc.* **1957**, *79*, 6164.

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