

350 Phen PHENOLS

0.2 - 1 ppm \ 180 Tests

Oxidative Coupling Reaction with MBTH

- Fill 16mmØ tube with 1 spoon of ϕ -1
- Dissolve in a fully extended syringe (3.2ml) of sample
- Add 1 drop of ϕ -2 and mix
- Set aside for 5'
- Add 1 spoon of ϕ -3 and dissolve
- Add 2 drops of ϕ -4 and mix
- Switch on the Photometer 660
- Enter and press for 350 Phen
- Set filter as indicated to 525nm and press
- Insert tube with plain water and press
- Insert tube with prepared sample and press
- Record as Phenol ppm (mg/l) representing phenols as a group

Phenols constitute a group of biocides which include a number of well-known disinfectants. Among these are *Thymol* (2-Isopropyl-5-methylphenol), for internal application, as well as *Chloroxylenol* (3,5-Dimethyl-5-chlorophenol, "Dettol"), the *Cresols* (Methylphenols) and unsubstituted *Phenol* (Carbolic acid) for external use. They are to be found in the effluents of countries where their extended use in cleaning preparations is commonplace. Another source arises from the extraction and distillation of coal-tar. The Ruhr river in Germany carried a level of 0.1ppm until the early 50s, a value that is still to be found in parts of Eastern Europe. It is difficult to assign realistic tolerance-levels on the basis of pollution. Neither is it possible to differentiate between the few dozen potentially occurring Phenols colorimetrically, nor are their respective toxicities known with any degree of certainty, which is further complicated by the possibility of chlorination to the more toxic Chloro-phenols. This has often resulted in the setting of very low levels that represent an indicator function rather than an actual health-hazard. *Hünig & Fritsch* (1957) obtained colours by the oxidative coupling reaction of Phenols with 3-Methyl-2-benzothiazolinone-hydrazone (MBTH, ϕ -1). *Umeda* (1963) optimized the oxidation by the introduction of Ce-IV (ϕ -2). Phenol is taken as the representative substance of the group. Off-colours from orange to violet indicate substituted Phenols. In the presence of aldehydes, transient blue to green colours are possible that are destroyed by shaking with Reagent ϕ -3. The USA are among the major users of phenolic detergents, so that the EPA's limit of 0.3ppm for tap water seems realistic. This cannot be said for EU-suggestions like 0.0005ppm that are neither justified nor measurable.

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