

**16.16.03**

**AOAC Official Method 959.14  
Urine Stains on Foods and Containers**

**Xanthidrol Test for Urea**

**First Action 1959**

**Final Action 1996**

(Not applicable in presence of dried skim milk. Applicable to fluorescing urine residues on materials without significant amounts of interfering substances.)

Place portion of stained cloth, ca 3 mm sq (stain located by fluorescence) on microscope slide. Add drop of CH<sub>3</sub>COOH (2 + 1) and stir. (Or instead of cutting out a patch of cloth, rinse stained material with H<sub>2</sub>O or other suitable solvent such as CH<sub>3</sub>COOH, acetone, or hot alcohol, evaporate solution to dryness, dissolve residue in little CH<sub>3</sub>COOH [2 + 1], and place drop on slide.)

Transfer droplet with stirring rod to another place on slide and dilute with drop of CH<sub>3</sub>COOH (2 + 1). To both drops add very small amount of xanthidrol and stir into solution. If urea is present, crystals of dioxanthyliurea form very shortly. Examine with

magnification of ca 100–120 (higher power may be used for closer examination if crystals formed are quite small). Use of polarizing microscope is desirable but not essential.

Crystals may be either or both of 2 kinds, depending on concentration of urea present: (1) most prevalent are clusters of narrow feather-blades of low birefringence which form throughout solution at ca 1:200 to 1:25 000 concentration (under low power they may appear to be needles or threads); (2) straight needles, often in sheaves or clusters, of much greater birefringence, forming chiefly at or near edge as drop evaporates, at concentrations from 1:50 to 1:1000. Both kinds have negative elongation (observed with polarizing microscope, using red plate). Crystals should be noted before drop dries, but remain when it dries. Response is given by fresh urine solids content of 4 g in drop. Conduct test from portion of test material other than fluorescent spot as blank.

Reference: *JAOAC* **42**, 473(1959).

CAS-57-13-6 (urea)