CLAIMS

1. A method for quantifying an amount of ammonium bicarbonate in a solid sample of ammonium carbamate comprising:

a. measuring an FT-IR spectrum of said sample;

b. calculating an IR band maximum for a first band that is common to ammonium carbamate and ammonium bicarbonate and for a second band that is unique to ammonium carbamate;

c. calculating a ratio of said maximum of said second band to said maximum of said first band; and

d. calculating a concentration of ammonium bicarbonate in said sample from a calibration curve relating said concentration to said ratio.

2. The method according to claim 1, wherein said measuring the FT-IR spectrum of said sample comprises measuring a attenuated total reflectance of the solid sample when pressed against a crystal.

3. The method according to claim 2, wherein said crystal is a diamond crystal.

4. The method according to claim 1, wherein said first band is 2781-2875 cm^{-1}.

5. The method according to claim 1, wherein said second band is 3423-3500 cm^{-1}.

6. The method according to claim 1, wherein said maximum for a first band and said maximum for a second band are each corrected by subtracting an average absorbance in a background band.

7. The method according to claim 6, wherein said background band is 3870-3999 cm^{-1}.

8. The method according to claim 1, wherein said calibration curve is constructed by:

a. preparing a plurality of calibration samples comprising known quantities of ammonium carbamate and ammonium bicarbonate;

b. measuring an FT-IR spectrum of each of said plurality of calibration samples;

c. for each of said plurality of calibration samples, calculating an IR band maximum for said first band and for said second band;

d. for each of said plurality of calibration samples, calculating a ratio of said maximum of said second band to said maximum of said first band; and

e. creating a regression curve of bicarbonate composition as a function of said ratio.

9. The method according to claim 8, wherein said regression curve is a second-order polynomial curve.

10. The method according to claim 8, wherein a regression coefficient of said regression curve is at least 0.99.

11. The method according to claim 8, wherein said calibration curve is reconstructed once a month.