The title compound, \( \text{C}_{16}\text{H}_{18}\text{N}_{2}\text{O}_{2}\text{S} \), shows antibacterial and antifungal activities. The dihedral angle between the thiophene and 2-methylphenyl groups is 83.3 (1)°. There are intra- and intermolecular N—H···O hydrogen bonds, and C—H···O intermolecular interactions.

**Comment**

Schiff bases (Csaszar & Morvay, 1983; Lakshmi et al., 1985; Cohen et al., 1977) and their derivatives of thiophene (El-Maghraby et al., 1984; Dzhurayev et al., 1992; Gewald et al., 1966) possess antibacterial, antitubercular and antifungal properties. Sulfur-containing Schiff bases are the most effective. The title compound, (I), shows the above-mentioned biological properties (Mohan & Saravanan, 2002, 2003).

![Structure of 2-(Acetamido)-4,5-dimethyl-N-(2-methylphenyl)thiophene-3-carboxamide](image)

The molecular structure of (I) is shown in Fig. 1, and a packing diagram is shown in Fig. 2. The C2—C1—N2—C15 torsion angle is −170.81 (16)°, indicating that the acetamide group and the thiophene ring are essentially planar (Table 1). The dihedral angle between the least-squares plane passing through the amide group (O1/C5/N1) and the 2-methylphenyl group is 60.9 (1)°, to avoid steric interaction between the methyl and carbonyl groups.

An intramolecular N—H···O hydrogen bond (Table 2) forms a pseudo-six-membered ring, which locks the molecular conformation and eliminates conformational flexibility. The crystal structure is further stabilized by N—H···O dimers and C—H···O chains running parallel to the \( b \) axis, which hold the dimers together to form ‘chains of dimers’.

**Experimental**

The title compound was synthesized using the Gewald reaction (Gewald et al., 1966). \( \alpha \)-Cyanotoluidine (0.04 mol) was refluxed with ethyl methyl ketone (0.04 mol) in the presence of sulfur (0.04 mol), dimethylamine (4.0 ml) and ethanol (40 ml) at 323 K for 1 h. The product was mixed with acetic anhydride in the molar ratio 1:3 and heated in a beaker in a water bath for 1 h. The mixture was then
cooled to room temperature and the solid which separated was filtered off. Crystals of (I) were obtained after recrystallization from ethanol (yield 72%).

### Crystal data

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University. One of the authors (V) thanks Vivekananda Degree College for support.

References


