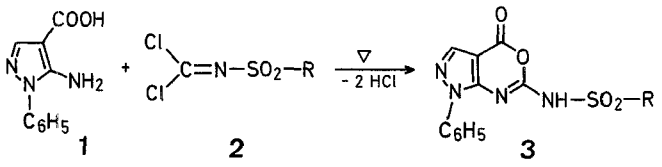
tional compounds to give sulfonylamino- and sulfonylimino-substituted five- and six-membered heterocyclic compounds. In an extension of this reaction to other bifunctional compounds, we report the preparation of 4-oxo-1-phenyl-6-sulfonylamino-1*H*,4*H*-pyrazolo[3,4-*d*] [1,3]oxazines **(3a–f)** by condensation of *N*-(dichloromethylene)-sulfonamides **(2a–f)** and 5-amino-4-carboxy-1-phenylpyrazole[4] **(1)**.




The reactions are carried out by addition of compound **2** in toluene at room temperature to a suspension of compound **1** in toluene. After reflux, the crude product **3** is obtained and may be purified by recrystallization (Table). The new heterocyclic compounds **3** with a condensed pyrazole ring[4,5] may be used as intermediates in the synthesis of 5-alkyl- and 5-aryl-1-phenyl-4-oxo-3,4-dihydropyrazolo[3,4-*d*]pyrimidines bearing a sulfonylamino group[4].

Melting points were determined on a Gallenkamp capillary apparatus and are uncorrected. The I.R. spectra were recorded with a Perkin-Elmer Model 257 instrument. Microanalyses were performed at the Centro Nacional de Química Orgánica, C.S.I.C., Madrid.

**4-Oxo-1-phenyl-6-sulfonylamino-1*H*,4*H*-pyrazolo[3,4-*d*] [1,3]oxazines 3; General Procedure:**

To a suspension of 5-amino-4-carboxy-1-phenylpyrazole (**1**; 10.2 g, 0.05 mol) in toluene (125 ml) at room temperature is added dropwise with stirring a solution of the *N*-(dichloromethylene)-sulfonamide **2** (0.05 m) in toluene (125 ml). When the addition is complete, the mixture is refluxed during 15 h and the precipitate obtained is isolated by filtration, dried, and purified by recrystallization from acetonitrile.

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## Preparation of 4-Oxo-1-phenyl-6-sulfonylamino-1*H*,4*H*-pyrazolo[3,4-*d*] [1,3]oxazines

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Recently, it has been reported[1] that *N*-(dichloromethylene)-sulfonamides[2,3] undergo condensation with various bifunc-

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**Table.** 4-Oxo-1-phenyl-6-sulfonylamino-1*H*,4*H*-pyrazolo[3,4-*d*] [1,3]oxazines **3a–f**

| Product No. | R | Yield [%] | m.p. [°C] | Molecular Formula[a] | IR (Nujol) [cm$^{-1}$] $\nu_{NH}$ | $\nu_{C=O}$ | $\nu_{C=N}$ | $\nu_{SO_2}$ |
|---|---|---|---|---|---|---|---|---|
| **3a** | $CH_3$ | 70 | 147–149° | $C_{12}H_{10}N_4O_4S$ (306.3) | 3205 | 1790 | 1640 | 1260, 1150, 1095 |
| **3b** | $C_6H_5$ | 85 | 181–183° | $C_{17}H_{12}N_4O_4S$ (368.3) | 3100 | 1760 | 1620 | 1260, 1160, 1095 |
| **3c** | *p*-$H_3C$—$C_6H_4$ | 73 | 174–176° | $C_{18}H_{14}N_4O_4S$ (382.3) | 3105 | 1770 | 1620 | 1275, 1145, 1095 |
| **3d** | *p*-Cl—$C_6H_4$ | 88 | 204–206° | $C_{17}H_{11}ClN_4O_4S$ (402.8) | 3100 | 1765 | 1630 | 1255, 1175, 1095 |
| **3e** | *p*-$H_3CO$—$C_6H_4$ | 65 | 191–193° | $C_{18}H_{14}N_4O_5S$ (398.3) | 3125 | 1780 | 1635 | 1295, 1145, 1090 |
| **3f** | *p*-$O_2N$—$C_6H_4$ | 57 | 210–212° | $C_{17}H_{11}N_5O_6S$ (413.3) | 3185 | 1785 | 1640 | 1280, 1140, 1075 |

[a] Satisfactory microanalyses obtained: C ±0.23, H ±0.27, N ±0.28, S ±0.33.

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