

**SYNTHESIS OF AMIDES BY AMINOLYSIS OF ESTERS USING  
SODIUM HYDRIDE IN DIMETHYL SULFOXIDE**

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N-Substituted amides have been prepared by aminolysis of esters using the magnesium halide,<sup>1</sup> sodium<sup>2,3</sup> and lithium<sup>3</sup> salts of primary amines. Sodium methoxide<sup>4</sup> and bifunctional catalysts (such as 2-pyridone)<sup>5</sup> have also been employed in the aminolysis of esters by primary amines but yields are not uniformly high and no general method seems available for such aminolysis.

This communication describes the use of sodium hydride in dimethylsulfoxide, hexamethylphosphoramide, N-methyl-2-pyrrolidone or N,N-dimethylacetamide for the preparation of amides from primary amines and esters. The representative amides in the table were obtained in 68 to 94% yields using the following general procedure.

An equimolar mixture (0.10 mole) of ester, amine and sodium hydride (oil dispersion) in 50 ml of dimethylsulfoxide (or alternate solvent above) was stirred overnight at room temperature and then poured into ice-water with stirring. The crystalline solid was filtered, washed with water, air-dried and washed with pentane to remove oil (from sodium hydride).

<u>Table</u>			
<u>Ester</u>	<u>Amine</u>	<u>Amide Yield, %<sup>a</sup></u>	<u>mp, °C</u>
Ethyl <i>p</i> -anisate	Aniline	92	172-3 <sup>6</sup>
Ethyl <i>p</i> -diethylaminobenzoate	Aniline	94	123-4 <sup>7</sup>
Ethyl acetate	Aniline	85	113-14 <sup>8</sup>
Ethyl nicotinate	Cyclohexylamine	85	140-1 <sup>9</sup>
Ethyl <i>p</i> -anisate	Cyclohexylamine	82	161-3 <sup>10</sup>
Ethyl cyclopropane carboxylate	Cyclohexylamine	68	139-140 <sup>11</sup>

a: Yields are based on reaction run in dimethylsulfoxide solvent.

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