
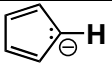

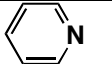
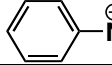
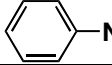
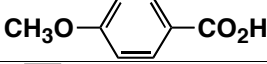
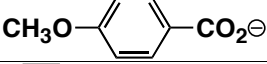
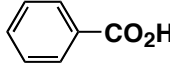
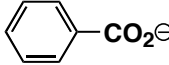
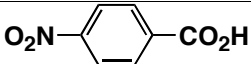
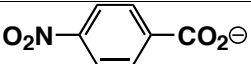
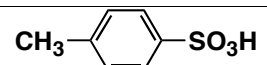
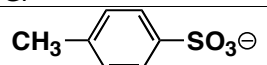


## Leaving groups in organic reactions

	Acid	pKa	Conjugate Base Nucleophile Leaving Group	Leaving Group from tetrahedral intermediate	Leaving Group in S <sub>N</sub> 1, S <sub>N</sub> 2, E1 & E2 Reactions
1	CH <sub>4</sub>	50	CH <sub>3</sub> <sup>⊖</sup>	<b>Never !</b>	<b>Never !</b>
2	C <sub>6</sub> H <sub>6</sub>	43	C <sub>6</sub> H <sub>5</sub> <sup>⊖</sup>		
3	C <sub>6</sub> H <sub>5</sub> -CH <sub>3</sub>	41	C <sub>6</sub> H <sub>5</sub> -CH <sub>2</sub> <sup>⊖</sup>		
4	H <sub>2</sub>	35	H <sup>⊖</sup>	<b>Rare</b>	
5	NH <sub>3</sub>	35	NH <sub>2</sub> <sup>⊖</sup>		
6	H-C≡C-H	26	H-C≡C: <sup>⊖</sup>		
7	CH <sub>3</sub> CO <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub>	23	<sup>⊖</sup> CH <sub>2</sub> CO <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub>	<b>Fair</b> Leaving Groups	
8	CH <sub>3</sub> COCH <sub>3</sub>	20	CH <sub>3</sub> COCH <sub>2</sub> <sup>⊖</sup>		
9	(CH <sub>3</sub> ) <sub>3</sub> COH	19	(CH <sub>3</sub> ) <sub>3</sub> CO <sup>⊖</sup>		
10	CH <sub>3</sub> CH <sub>2</sub> OH	17	CH <sub>3</sub> CH <sub>2</sub> O <sup>⊖</sup>		
11	H <sub>2</sub> O	15.7	HO <sup>⊖</sup>		
12	CH <sub>3</sub> OH	15.5	CH <sub>3</sub> O <sup>⊖</sup>		
13		15			
14	CH <sub>2</sub> (CO <sub>2</sub> Et) <sub>2</sub>	13	<sup>⊖</sup> CH(CO <sub>2</sub> Et) <sub>2</sub>		
15	CH <sub>3</sub> COCH <sub>2</sub> CO <sub>2</sub> Et	11	CH <sub>3</sub> COCH <sup>⊖</sup> CO <sub>2</sub> Et		
16	CH <sub>3</sub> NO <sub>2</sub>	10.2	<sup>⊖</sup> CH <sub>2</sub> NO <sub>2</sub>		
17	C <sub>6</sub> H <sub>5</sub> -OH	10	C <sub>6</sub> H <sub>5</sub> -O <sup>⊖</sup>		
18	<sup>⊕</sup> NH <sub>4</sub>	9.4	NH <sub>3</sub>		<b>Excellent</b> Leaving Groups
19	HCN	9.1	<sup>⊖</sup> CN		
20	(CH <sub>3</sub> CO) <sub>2</sub> CH <sub>2</sub>	9	(CH <sub>3</sub> CO) <sub>2</sub> CH <sup>⊖</sup>		
21	H <sub>2</sub> S	7	HS <sup>⊖</sup>		
22		5.2			
23	CH <sub>3</sub> CO <sub>2</sub> H	4.8	CH <sub>3</sub> CO <sub>2</sub> <sup>⊖</sup>		
24		4.6			
25	HN <sub>3</sub>	4.6	<sup>⊖</sup> N <sub>3</sub>		
26		4.5			
27		4.2			
28		3.4			
29	HF	3.2	F <sup>⊖</sup>	<b>Poor</b> to <b>Fair</b> Leaving Groups	
30	CF <sub>3</sub> CO <sub>2</sub> H	0.2	CF <sub>3</sub> CO <sub>2</sub> <sup>⊖</sup>		
31	HNO <sub>3</sub>	-1.3	<sup>⊖</sup> NO <sub>3</sub>		
32	H <sub>3</sub> O <sup>⊕</sup>	-1.7	H <sub>2</sub> O		
	CH <sub>3</sub> CH <sub>2</sub> OH <sub>2</sub> <sup>⊕</sup>	-2.4	CH <sub>3</sub> CH <sub>2</sub> OH		
33	HCl	-5	Cl <sup>⊖</sup>		
34		-5.7			
35	HBr	-7	Br <sup>⊖</sup>		
36	HI	-9	I <sup>⊖</sup>		
37	H <sub>2</sub> SO <sub>4</sub>	-11	HSO <sub>4</sub> <sup>⊖</sup>		<b>Excellent</b> "Almost Instant" Leaving Groups