

Weaker bases are favored at equilibrium

Compound		pK _a	
	$\text{H}-\text{Cl}$	-7	Strongest Acid (Weakest conjugate base)
Carboxylic acids*	$\text{R}-\text{CO}-\text{H}$	3-5	
β-Dicarbonyls*	$\text{RC}-\text{CH}_2-\text{CR}'$	10	
β-Ketoesters*	$\text{RC}-\text{CH}_2-\text{COR}'$	11	
β-Diesters*	$\text{ROC}-\text{CH}_2-\text{COR}'$	13	
Water	HOH	15.7	
Alcohols	RCH_2OH	15-19	
Acid chlorides*	RCH_2-COCl	16	
Aldehydes*	RCH_2-CHO	18-20	
Ketones*	$\text{RCH}_2-\text{CO}-\text{R}'$	18-20	
Esters*	$\text{RCH}_2-\text{CO}-\text{OR}'$	23-25	
Terminal alkynes	$\text{RC}\equiv\text{C}-\text{H}$	25	
LDA	$\text{H}-\text{N}(\text{i}-\text{C}_3\text{H}_7)_2$	40	
Terminal alkenes	$\text{R}_2\text{C}=\text{CH}_2$	44	
Alkanes	$\text{CH}_3\text{CH}_2-\text{H}$	51	Weakest Acid (Strongest conjugate base)

*These have resonance stabilized anions

A) Reactions are favored (i.e. have a motive) if they lead to formation of a weaker acid and/or weaker base.

B) Checking pKa values can predict if a reaction has a motive even if there are other steps besides a proton transfer.

C) Recall that the conjugate base of a stronger acid (lower pKa) is a weaker base.

D) Check the pKa's of the conjugate acid of the bases on either side of the equation. Lower pKa value corresponds to stronger acid of the conjugate acid, and thus weaker conjugate base. The base with a stronger conjugate acid (lower pKa value) will be the weaker base and will be favored at equilibrium.

E) Another way to look at it is that the base that is favored at equilibrium is the one that has the more stabilized anion, i.e. the one with the charge spread out over more (electronegative) atoms.

F) To the left is a pKa table that we will refer to often.