

Important pK_a Values to Know

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Acid	Conj. Base	pK_a	Remarks	
HI	I^-	-10	hydroiodic acid	} strong acids
HBr	Br^-	-9	hydrobromic acid	
H_2SO_4	HSO_4^-	-9	sulfuric acid	
HCl	Cl^-	-7	hydrochloric acid	
H_3O^+	H_2O	-1.7	hydronium	
HNO_3	NO_3^-	-1	nitric acid	
HSO_4^-	SO_4^{2-}	2	2 nd H of sulfuric acid	} weak acids
HF	F^-	3	hydrofluoric acid	
RCOOH	$RCOO^-$	4	carboxylic acids	
H_2S	HS^-	7	compare to H_2O	
NH_4^+	NH_3	9	ammonium	
$(RC(O))_2CH_2$	$(RC(O))_2CH^-$	9	α H of 1,3-diketones ^a	
HCN	NC^-	9.2	nitriles	
PhOH	PhO^-	10	phenols ^b	
$(ROC(O))_2CH_2$	$(ROC(O))_2CH^-$	13	α H of 1,3-diesters ^a	
H_2O	HO^-	15.7	water ^c	
ROH	RO^-	16	aliphatic alcohols ^d	
$RC(O)NH_2$	$RC(O)NH^-$	17	amides	
$HC(O)CH_3$	$HC(O)CH_2^-$	17	α H of aldehydes	
$RC(O)CH_3$	$RC(O)CH_2^-$	19.5	α H of ketones	
$ROC(O)CH_3$	$ROC(O)CH_2^-$	24	α H of esters	
PhNH ₂	$PHNH^-$	25	aniline ^e	
$N\equiv C-CH_3$	$N\equiv C-CH_2^-$	25	α H of nitriles	
$R_2NC(O)CH_3$	$R_2NC(O)CH_2^-$	30	α H of amides	
$RC\equiv CH$	$RC\equiv C^-$	25	terminal alkyne ($C_{sp}-H$)	
H_2	H^-	36	hydrogen gas	
NH_3	NH_2^-	38	ammonia	
RNH_2	RNH^-	40	aliphatic amines	
PhCH ₃	$PhCH_2^-$	41	benzylic ($C_{sp^3}-H$)	
C_6H_6	$C_6H_5^-$	42	aryl ($C_{sp^2}-H$)	
$H_2C=CHCH_3$	$H_2C=CHCH_2^-$	43	allylic ($C_{sp^3}-H$)	
$RCH=CH_2$	$RCH=CH^-$	47	vinylic ($C_{sp^2}-H$)	
RCH_3	RCH_2^-	50	alkanes ($C_{sp^3}-H$)	

^a the α H of β -keto esters are ~ 11

^b depending on the substitution of Ph, pK_a can vary from 4-11

^c water is amphoteric, so anything less acidic than water can act as a base in aqueous solution

^d depending on the substitution of R, pK_a can vary from 15-17

^e depending on the substitution of Ph, pK_a can vary from 18-28

Stronger acids are at the top; stronger conjugate bases are at the bottom. A conjugate base can deprotonate any acid higher than it on this table.