Infrared Absorption Bands of Functional Groups in Organic Compounds

Functional Group	***Wavenumber (cm^{-1})***	***Comments***
Alkane	2850-3000	C-H stretch for sp^3 carbon (Strong)
	1450-1470	C-H bend (Strong)
	1370-1380	C-H bend (Strong)
	800-1200	C-C stretch (many medium bands)
	720-725	C-H bend (Medium)
Alkene	3080-3140	C-H stretch for sp^2 carbon (Medium)
	1620-1680	C=C stretch (Medium)
	900-1000	C-H bend (Strong)
Alkyne	3300-3320	C-H stretch for sp carbon (sharp medium)
	2100-2140	C≡C stretch (medium for terminal alkyne)
	600-700	C-H bend (Strong)
Alcohol	**3200-3600**	H-bonded O-H stretch (Broad strong band)
	3600-3700	Free O-H stretch (sharp medium band)
	1000-1200	C-O stretch (strong, higher ν for more substituents on carbon)
Ether	1050-1150	C-O stretch
Primary amine	3200-3400	N-H stretch (two medium bands)
Secondary amine	3200-3400	N-H stretch (single medium band)
Nitrile	2220-2280	N≡C stretch (medium)
Aldehyde	**1700-1750**	C=O stretch (strong, sharp band)
	2700-2850	Aldehyde C-H stretch, two medium bands
Ketone	**1680-1750**	C=O stretch (strong, sharp band)
Carboxylic acid	**1700-1750**	C=O stretch (strong, sharp band)
	3000	O-H stretch (broad band, usually with a spike of sp^3 C-H stretch in the middle)
Ester	**1730-1750**	C=O stretch (strong, sharp band)
	1000-1300	C-O stretch
Amide	**1650-1700**	C=O stretch (strong, sharp band)
	3200-3400	N-H stretch (two bands for primary, one for secondary, none for tertiary amide)
Aromatic	3000-3150	C-H stretch (variable)
	1750-1950	C-H bending overtone region (usually several weak bands of similar strength)
Nitro	**1550 and 1400**	"Walrus teeth" N-O stretch bands
Carbon dioxide	2350	Doublet (positive or negative, depending on variation in local concentration during baseline and sample measurement)