

Table 4.2a Geminal proton spin-spin coupling constants  $J$ , in Hz

Structure	Coupling constant, Hz or cps	Structure	Coupling constant, Hz or cps
	12-15		0.5-3
	7.63-9.95 (solvent dependent)		3.9-8.8
	5.4-6.3		12.6

Table 4.2b Vicinal proton spin-spin coupling constants  $J$ , in Hz

Structure	Coupling constant, Hz or cps	Structure	Coupling constant, Hz or cps
Vicinal $\text{CH}_3\text{-CH}_2\text{-}$	4.7-9	$\text{CH}_3\text{CH}_2\text{-O-CH}_2\text{CH}_3$	6.97
$\text{CH}_2\text{-CH}_2\text{-X}$ where, if X =	7.1-7.7		6.1-7
-CH <sub>3</sub>	7.26	where, if X =	
-Cl	7.23	-OH	6.2
-Br	7.33	-Cl	6.4
-I	7.45	-Br	6.5
-N-Et <sub>2</sub>	7.4	-I	6.6
-CN	7.6	-CH <sub>3</sub>	6.8
-phenyl	7.62	-phenyl	6.9
		-CHO	7.0
	e, e; 2-4 a, e; 2-4 a, a; 5-10		6.5-9.4
	0.8-3		0.4-1
	4-10		0.5-2.5
	≈ 0		9-13
$\text{H}_A\text{C}=\text{CH}_B$	9.5-9.8	$>\text{CH}_A\text{-C}\equiv\text{C-H}_B$	2-3
	1-3		6-8
	<i>cis</i> $\text{H}_A\text{-H}_C$ , 4.6-19.3 <i>trans</i> $\text{H}_B\text{-H}_C$ , 12.7-24.0		1-5.5
where, if X =		where, if X =	
-F	$\text{H}_A\text{-H}_C$ , 4.6 $\text{H}_B\text{-H}_C$ , 12.7		$\text{H}_1\text{-H}_2$ , 1-2
-Br	$\text{H}_A\text{-H}_C$ , 7.1 $\text{H}_B\text{-H}_C$ , 15.2		$\text{H}_1\text{-H}_2$ , 2-3
-Cl	$\text{H}_A\text{-H}_C$ , 7.4 $\text{H}_B\text{-H}_C$ , 14.8		$\text{H}_1\text{-H}_2$ , 5.5
-CH <sub>3</sub>	$\text{H}_A\text{-H}_C$ , 9.6-11.1 $\text{H}_B\text{-H}_C$ , 16.6-17.4		$\text{H}_1\text{-H}_3$ , 1-2
-COOH	$\text{H}_A\text{-H}_C$ , 10.2 $\text{H}_B\text{-H}_C$ , 17.2		$\text{H}_2\text{-H}_3$ , 3-5
-phenyl	$\text{H}_A\text{-H}_C$ , 10.7 $\text{H}_B\text{-H}_C$ , 17.5		
-H	$\text{H}_A\text{-H}_C$ , 11.5 $\text{H}_B\text{-H}_C$ , 19.0		
-CN	$\text{H}_A\text{-H}_C$ , 11.7 $\text{H}_B\text{-H}_C$ , 17.9		