

4 atoms

Point group	Shape	Example	Dihedrals
T_d	Regular Pyramidal	P_4	$\cos^{-1}\left(\frac{1}{3}\right)$
C_{3v}	Pyramidal	NH_3	$\cos^{-1}\left(\frac{\cos\theta(1-\cos\theta)}{\sin^2\theta}\right)$
C_s	Pyramidal	Cl_2OS	$\cos^{-1}\left(\frac{\cos\theta-\cos^2\varphi}{\sin^2\varphi}\right)$
C_{2v}	Pyramidal	H_2Si_2	$\cos^{-1}\left(\frac{\cos\theta-\cos^2\varphi}{\sin^2\varphi}\right)$
C_2	Pyramidal	H_2O_2	$\cos^{-1}\left(\frac{\cos\theta-\cos^2\varphi}{\sin^2\varphi}\right)$
C_1	Pyramidal	H_2OS	$\cos^{-1}\left(\frac{\cos\theta-\cos\varphi\cos\phi}{\sin\varphi\sin\phi}\right)$
D_{3h}	Planar	BH_3	0 or 180
C_s	Planar	$HNSi_2$	0 or 180
D_{2h}	Planar	Br_2Na_2	0 or 180
C_{2h}	Planar	$(HI)_2$	0 or 180
C_{2v}	Planar?	O_2S_2	0 or 180
C_{2v}	Planar?	CFO_2	0 or 180
$C_{\infty v}$	Linear	$CAgIO$	0 or 180
$D_{\infty h}$	Linear	C_2H_2	0 or 180
C_{2v}		$(Ar_2)(HCl)$	
C_s		$(HCl)_2$	
C_2		$(HF)_2$	

5 atoms

Point group	Shape	Example	Dihedrals	
T_d		O_4Os	$\cos^{-1}\left(\frac{1}{3}\right)?$	
C_{3v}		ClH_3Si		
C_{3v}		$(\text{Kr})(\text{O}_3\text{S})$		
C_{2v}		Cl_4Te		
C_{2v}		C_3H_2	0,180?	2019 Vogt, Pg. 318
C_{2v}		$\text{H}_2\text{I}_2\text{Si}$	0,180?	2019 Vogt, Pg. 102
C_{2v}		$\text{H}_2\text{O}_2\text{Si}$		2019 Vogt, Og. 107
C_{2v}		$(\text{CO}_2)(\text{N}_2)$		
$C_s(\text{syn})$		BFH_2O		
$C_s(\text{syn-anti})$		CH_2O_2		
C_s		CN_4		
C_s		C_2H_3		
C_s		BF_2HO		
C_s		CH_3OH		
C_s		ClH_2NaO		
C_s		HNO_3		
C_s		$\text{H}_2\text{O}_2\text{Si}$		
C_s	Non-planar	CH_2N_2		
C_s		CBrF_2N		
C_s		CHClF_2		
C_s		$(\text{CO})(\text{N}_2\text{O})$		
$C_s(\text{effective})$		ArH_3N		
$C_s(\text{effective})$		$(\text{SO}_2)(\text{CO})$		
$C_s(\text{assumed})$		$\text{H}_2\text{N}_2\text{O}$	Given!	
$C_{\infty v}$	Linear	CH_3N		
	Linear	$(\text{CO})(\text{HCN})$		
$D_{\infty h}$	Linear	C_5		
$D_{\infty h}$	Linear	C_3Ge_2		
$D_{\infty h}$	Linear	C_3H_2		
	Quasi-linear	C_3O_2		