

# Molecular Geometry Report

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Molecular Formula	Lewis Structure	Electronic Geometry	Hybridization	Molecular Geometry	Ideal Bond Angle
$\text{NH}_3$ $5 + 3(1) = 8e^-$ (# valence $e^-$ )		tetrahedral	$sp^3$	trigonal pyramidal	$107.0^\circ$ <del><math>109.5^\circ</math></del>
$\text{H}_2\text{O}$ $8e^-$		tetrahedral	$sp^3$	Bent	$104.5^\circ$ <del><math>109.5^\circ</math></del>
$\text{CH}_2\text{Cl}_2$ $20e^-$		Tetrahedral	$sp^3$	Tetrahedral	$109.5$
$*\text{OPCl}_3$ (violates octet rule) $32e^-$		Tetrahedral	$sp^3$	Tetrahedral	$109.5$

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Molecular Formula	Lewis Structure	Electronic Geometry	Hybridization	Molecular Geometry	Ideal Bond Angle
$\text{CO}_3^{2-}$ $24e^-$		Trigonal planar	$sp^2$	Trigonal planar	$120^\circ$
$*\text{AlCl}_6^{3-}$ (violates octet rule) $48e^-$		Octahedral	$sp^3d^2$	octahedral	$90^\circ, 180^\circ$
$*\text{SO}_2$ (violates octet rule) $18e^-$		Trigonal planar	$sp^2$	Bent	$117.5^\circ$
$*\text{SO}_4^{2-}$ (violates octet rule) $32e^-$		Tetrahedral	$sp^3$	Tetrahedral	$109.5^\circ$

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Molecular Formula	Lewis Structure	Electronic Geometry	Hybridization	Molecular Geometry	Ideal Bond Angle
$*\text{ICl}_4^-$ (violates octet rule) $36e^-$		Octahedral	$\text{sp}^3\text{d}^2$	<del>Tetrahedral</del> Square planar	$90^\circ, 180^\circ$
$*\text{BrF}_3$ (violates octet rule) $28e^-$		Trigonal bipyramidal	$\text{sp}^3\text{d}$	T-shaped	$90^\circ, 120^\circ, 180^\circ$
$*\text{SeF}_4$ (violates octet rule) $34e^-$		Trigonal bipyramidal	$\text{sp}^3\text{d}$	See-saw	$90^\circ, 120^\circ, 180^\circ$
$*\text{BrF}_5$ (violates octet rule) $42e^-$		Octahedral	$\text{sp}^3\text{d}^2$	Square pyramidal	$90^\circ, 180^\circ$



Molecular Formula	Lewis Structure	Electronic Geometry	Hybridization	Molecular Geometry	Ideal Bond Angle
$\text{*PCl}_5$ (violates octet rule) $41e^-$		Trigonal Bipyramidal	$sp^3d$	Trigonal Bipyramidal	$90^\circ, 120^\circ, 180^\circ$
$\text{CH}_2\text{O}$ $12e^-$		C: Trigonal planar	C: $sp^2$	C: Trigonal planar	C: $120^\circ$
$\text{C}_2\text{H}_6\text{O}$ ( $\text{CH}_3\text{OCH}_3$ ) $20e^-$		C: Tetrahedral O: Tetrahedral C: Tetrahedral	C: $sp^3$ O: $sp^3$ C: $sp^3$	C: Tetrahedral O: Bent C: Tetrahedral	C: $109.5^\circ$ O: $109.5^\circ$ C: $109.5^\circ$
$\text{C}_2\text{H}_6\text{O}$ ( $\text{C}_2\text{H}_5\text{OH}$ ) $20e^-$		C: Tetrahedral O: Tetrahedral C: Tetrahedral	C: $sp^3$ O: $sp^3$ C: $sp^3$	C: Tetrahedral O: Bent C: Tetrahedral	C: $109.5^\circ$ O: $109.5^\circ$ C: $109.5^\circ$