

Table 2. Bond lengths (Å) and angles (°)

Au—Sb(1)	2.658 (2)	Au—Sb(2)	2.656 (2)
Sb(1)—C(11)	2.110 (6)	Sb(2)—C(21)	2.105 (6)
Sb(2)—C(31)	2.124 (4)	Sb(2)—C(41)	2.136 (6)
Sb(1)—Au—Sb(2)	108.8 (1)	Sb(2)—Au—Sb(2')	110.1 (1)
Au—Sb(1)—C(11)	117.7 (1)	C(11)—Sb(1)—C(11')	100.1 (2)
Au—Sb(2)—C(21)	118.5 (2)	Au—Sb(2)—C(31)	112.0 (2)
C(21)—Sb(2)—C(31)	102.1 (2)	Au—Sb(2)—C(41)	122.0 (1)
C(21)—Sb(2)—C(41)	99.7 (2)	C(31)—Sb(2)—C(41)	99.2 (2)

Symmetry code: (i) $-y, x-y, z$

Table 2. Fig. 1. shows the atomic numbering scheme of the title cation.

Related literature. For other salts of the same cation see Jones (1982) and Vicente, Arcas, Jones & Lautner (1990).

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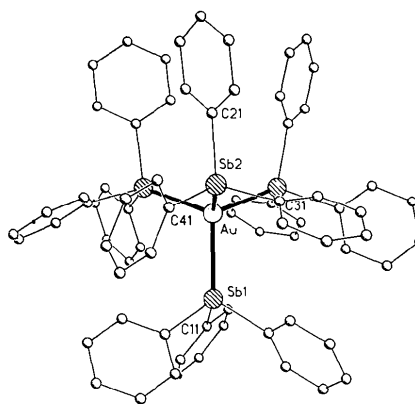


Fig. 1. The cation of the title compound, showing the numbering scheme of the asymmetric unit. Radii are arbitrary.

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Structure of Chloro[*N*-(3-dimethylamino-1-propyl)salicylideneaminato]palladium(II)

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Abstract. C₁₂H₁₇ClN₂OPd, *M_r* = 347.135, orthorhombic, *Pbca*, *a* = 10.764 (1), *b* = 12.557 (4), *c* = 19.626 (2) Å, *V* = 2652.8 (9) Å³, *Z* = 8, *D_x* = 1.737 g cm⁻³, λ(Mo *K*α₁) = 0.70926 Å, μ = 15.69 cm⁻¹, *F*(000) = 1392, *T* = 298 K, final *R* = 0.044 for 1769 reflections [*F_o* > 3σ(*F_o*)]. The coordination geometry around palladium in the title compound is almost square planar. The bond length of Pd—N2 [2.035 (7) Å] is shorter than that of Pd—N1 [2.101 (7) Å].

Experimental. The title compound [abbreviated as Pd(ONN)Cl] was synthesized as reported previously

(Oh, Yeo & Cho, 1991). Crystals suitable for X-ray work were obtained by allowing *n*-hexane to diffuse into a solution of Pd(ONN)Cl in CHCl₃. Orange crystal, 0.32 × 0.30 × 0.25 mm; Enraf–Nonius CAD-4 diffractometer; monochromated Mo *K*α radiation; 25 reflections (12.0 < θ < 14.3°) used for measuring lattice parameters; ω/2θ scan, ω-scan width of (0.75 + 0.34tanθ)°; max. sinθ/λ = 0.5958 Å⁻¹; 0 ≤ *h* ≤ 12, 0 ≤ *k* ≤ 14, 0 ≤ *l* ≤ 23; 2663 unique reflections measured, 1769 observed [*I* > 3σ(*I*)]. The intensities of three standard reflections (143, 125, 108), recorded every 3 h of X-ray exposure, showed no significant variation. Lorentz–polarization correction; empirical absorption correction using *DIFABS* (Walker & Stuart, 1983) (min.

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Table 1. Fractional coordinates and equivalent isotropic thermal parameters for non-H atoms with e.s.d.'s in parentheses

$$B_{eq} = (4/3) \sum_i \sum_j \beta_{ij} a_i \cdot a_j$$

	x	y	z	$B_{eq}(\text{\AA}^2)$
Pd	0.28741 (5)	0.18608 (5)	0.09834 (3)	2.61 (1)
Cl	0.1011 (2)	0.1615 (2)	0.1570 (1)	4.44 (5)
O1	0.2237 (6)	0.0654 (5)	0.0425 (3)	3.7 (1)
N1	0.3360 (7)	0.3060 (6)	0.1680 (4)	3.4 (1)
N2	0.4423 (6)	0.1974 (6)	0.0392 (3)	3.0 (1)
C1	0.233 (1)	0.3886 (8)	0.1726 (5)	4.5 (2)
C2	0.351 (1)	0.2549 (9)	0.2368 (5)	4.9 (2)
C3	0.4525 (9)	0.3669 (8)	0.1524 (6)	4.6 (2)
C4	0.5575 (8)	0.2966 (8)	0.1308 (5)	4.1 (2)
C5	0.5519 (8)	0.2641 (8)	0.0561 (5)	4.0 (2)
C6	0.4527 (8)	0.1487 (8)	-0.0171 (4)	3.5 (2)
C7	0.3688 (8)	0.0758 (7)	-0.0494 (4)	3.2 (2)
C8	0.3983 (9)	0.0400 (8)	-0.1158 (5)	4.2 (2)
C9	0.325 (1)	-0.0309 (8)	-0.1510 (5)	4.5 (2)
C10	0.217 (1)	-0.0682 (8)	-0.1181 (5)	4.3 (2)
C11	0.1862 (9)	-0.0367 (7)	-0.0527 (5)	4.0 (2)
C12	0.2595 (8)	0.0379 (6)	-0.0170 (4)	3.1 (2)

and max. correction factors: 0.868, 1.181). Structure solved by Patterson and Fourier synthesis. Full-matrix least-squares refinement; function minimized $\sum w(|F_o| - |F_c|)^2$, $w = 4F_o^2/\sigma^2(I)$ with $\sigma(I) = [\sigma(I)^2 + (0.04F_o^2)^2]^{1/2}$, all non-H atoms refined anisotropically; all H atoms positioned according to idealized geometry (C—H = 0.95 Å) and given isotropic B values which were 1.2 times B of the attached atom; final cycle of refinement including 154 variables converged to $R = 0.044$, $wR = 0.053$, $S = 0.52$; final $(\Delta/\sigma)_{max} = 0.01$; the highest and lowest peaks in the final difference map were 0.72 and -0.85 e \AA^{-3} , respectively; atomic scattering factors and anomalous-dispersion corrections from *International Tables for X-ray Crystallography* (1974, Vol. IV) for the non-H atoms and from Stewart, Davidson & Simpson (1965) for H; all calculations were carried out with the *Structure Determination Package* (Enraf-Nonius, 1982). Table 1* gives atomic coordinates and equivalent isotropic thermal parameters of the non-H atoms and Table 2 selected bond distances and angles. Fig. 1 shows an ORTEP (Johnson, 1976) drawing of the title compound with adopted numbering.

Related literature. The structures of square-planar Pd^{II} or Cu^{II} complexes of a similar tridentate ONN-Schiff base ligand have been reported (Elias & Paulus, 1982; Roper, Paulus & Elias, 1989). Noticeable differences between the present structure and that of the [(sal-en-nEt₂)PdCl] complex (Elias & Paulus, 1982) are the somewhat longer Pd—N distances [2.101 (7) versus 2.08 Å for Pd—N1 and

* Lists of structure factors, anisotropic thermal parameters and H-atom parameters have been deposited with the British Library Document Supply Centre as Supplementary Publication No. SUP 55041 (13 pp.). Copies may be obtained through The Technical Editor, International Union of Crystallography, 5 Abbey Square, Chester CH1 2HU, England. [CIF reference: AS0592]

Table 2. Selected bond distances (Å) and angles (°)

Numbers in parentheses are estimated standard deviations in the least significant digits.

Pd—Cl	2.332 (2)	N1—C3	1.50 (1)	C7—C12	1.42 (1)
Pd—O1	1.993 (6)	N2—C5	1.48 (1)	C8—C9	1.38 (1)
Pd—N1	2.101 (7)	N2—C6	1.27 (1)	C9—C10	1.41 (1)
Pd—N2	2.035 (7)	C3—C4	1.50 (1)	C10—C11	1.38 (1)
O1—C12	1.28 (1)	C4—C5	1.52 (1)	C11—C12	1.41 (1)
N1—C1	1.52 (1)	C6—C7	1.43 (1)		
N1—C2	1.51 (1)	C7—C8	1.42 (1)		
Cl—Pd—O1	82.9 (2)	Cl—N1—C2	108.4 (7)	C6—C7—C8	118.1 (8)
Cl—Pd—N1	89.3 (2)	C2—N1—C3	105.8 (7)	C6—C7—C12	122.5 (8)
Cl—Pd—N2	173.9 (2)	C2—N1—C3	108.2 (7)	C8—C7—C12	119.4 (8)
O1—Pd—N1	171.7 (3)	Pd—N2—C5	124.2 (5)	C7—C8—C9	122.6 (9)
O1—Pd—N2	91.2 (3)	Pd—N2—C6	122.4 (6)	C8—C9—C10	117.3 (9)
N1—Pd—N2	96.7 (3)	C5—N2—C6	113.4 (7)	C9—C10—C11	121.8 (9)
Pd—O1—C12	127.3 (5)	N1—C3—C4	112.8 (7)	C10—C11—C12	121.2 (9)
Pd—N1—C1	110.4 (5)	C3—C4—C5	113.7 (8)	O1—C12—C7	124.7 (8)
Pd—N1—C2	107.8 (6)	N2—C5—C4	113.4 (7)	O1—C12—C11	117.8 (8)
Pd—N1—C3	116.1 (6)	N2—C6—C7	129.7 (8)	C7—C12—C11	117.5 (8)

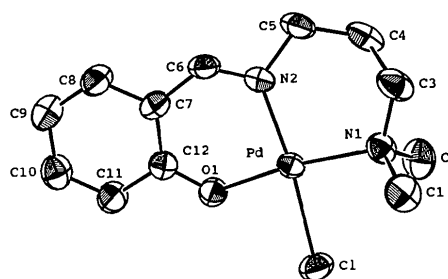


Fig. 1. ORTEP (Johnson, 1976) diagram of Pd(ONN)Cl with atom labelling (50% probability thermal ellipsoids). H atoms are omitted for clarity.

2.035 (7) versus 1.96 Å for Pd—N2] and larger N1—Pd—N2 angle [96.7 (3) versus 84.5°] in the present structure. These differences are probably due to the larger chelate ring strain in the present complex which has a propylene unit between the two coordinating N atoms instead of an ethylene unit as in [(sal-en-nEt₂)PdCl].

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