Acta Crystallographica Section E
Structure Reports Online
ISSN 1600-5368

1-Chloro-1-[(4-methylphenyl)hydrazinylidene]propan-2-one

Abdullah M. Asiri,[a,b] Abdulrahman O. Al-Youbi,[a] Mohie E. M. Zayed[a] and Seik Weng Ng[c,a]*

[a]Chemistry Department, Faculty of Science, King Abdulaziz University, PO Box 80203 Jeddah, Saudi Arabia, [b]The Center of Excellence for Advanced Materials Research, King Abdul Aziz University, PO Box 8020 Jeddah, Saudi Arabia, and [c]Department of Chemistry, University of Malaya, 50603 Kuala Lumpur, Malaysia
Correspondence e-mail: seikweng@um.edu.my

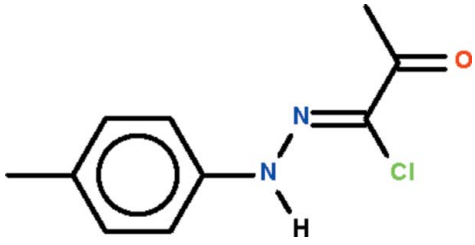
Received 29 June 2011; accepted 3 July 2011

Key indicators: single-crystal X-ray study; T = 100 K; mean σ(C–C) = 0.005 Å; R factor = 0.045; wR factor = 0.125; data-to-parameter ratio = 10.0.

The asymmetric unit of the title compound, $C_{10}H_{11}ClN_2O$, contains two molecules. The non-H atoms of each molecule lie approximately on a plane (r.m.s. deviations = 0.062 and 0.110 Å), and the C=N double bond has a *Z*-configuration in both independent molecules. In the crystal, adjacent molecules are linked by N—H···$O_{carbonyl}$ hydrogen bonds, forming chains running along [100].

Related literature

For the synthesis, see: Benincori *et al.* (1990); Sayed *et al.* (2002). For background to the title compound, see: Asiri *et al.* (2010).



Experimental

Crystal data

$C_{10}H_{11}ClN_2O$
M_r = 210.66
Monoclinic, $P2_1$
a = 11.0572 (3) Å
b = 7.6570 (2) Å
c = 12.4613 (3) Å
β = 105.063 (3)°
V = 1018.79 (5) Å^3
Z = 4
Cu $K\alpha$ radiation
μ = 3.06 mm^{-1}
T = 100 K
0.20 × 0.02 × 0.02 mm

Data collection

Agilent SuperNova Dual diffractometer with an Atlas detector
Absorption correction: multi-scan (*CrysAlis PRO*; Agilent, 2010)
T_{min} = 0.580, T_{max} = 0.941
3467 measured reflections
2667 independent reflections
2516 reflections with $I > 2\sigma(I)$
R_{int} = 0.021

Refinement

$R[F^2 > 2\sigma(F^2)]$ = 0.045
$wR(F^2)$ = 0.125
S = 1.06
2667 reflections
266 parameters
1 restraint
H atoms treated by a mixture of independent and constrained refinement
$\Delta\rho_{max}$ = 0.31 e Å^{-3}
$\Delta\rho_{min}$ = −0.42 e Å^{-3}
Absolute structure: Flack (1983), 533 Friedel pairs
Flack parameter: 0.17 (2)

Table 1
Hydrogen-bond geometry (Å, °).

D—H···A	D—H	H···A	D···A	D—H···A
N2—H2···O2	0.88 (5)	2.12 (5)	2.975 (4)	162 (4)
N4—H4···O1^{i}	0.83 (5)	2.12 (5)	2.909 (4)	159 (4)

Symmetry code: (i) $x+1, y, z$.

Data collection: *CrysAlis PRO* (Agilent, 2010); cell refinement: *CrysAlis PRO*; data reduction: *CrysAlis PRO*; program(s) used to solve structure: *SHELXS97* (Sheldrick, 2008); program(s) used to refine structure: *SHELXL97* (Sheldrick, 2008); molecular graphics: *X-SEED* (Barbour, 2001); software used to prepare material for publication: *publCIF* (Westrip, 2010).

We thank King Abdulaziz University and the University of Malaya for supporting this study.

Supplementary data and figures for this paper are available from the IUCr electronic archives (Reference: XU5262).

References

Agilent (2010). *CrysAlis PRO*. Agilent Technologies, Yarnton, Oxfordshire, England.
Asiri, A. M., Zayed, M. E. M. & Ng, S. W. (2010). *Acta Cryst.* E**66**, o2374.
Barbour, L. J. (2001). *J. Supramol. Chem.* **1**, 189–191.
Benincori, T., Fusco, R. & Sannicolo, F. (1990). *Gazz. Chim. Ital.* **120**, 635–659.
Flack, H. D. (1983). *Acta Cryst.* A**39**, 876–881.
Sayed, S. M., Khalil, M. A., Ahmed, M. A. & Raslan, M. A. (2002). *Synth. Commun.* **32**, 481–495.
Sheldrick, G. M. (2008). *Acta Cryst.* A**64**, 112–122.
Westrip, S. P. (2010). *J. Appl. Cryst.* **43**, 920–925.

supporting information

Acta Cryst. (2011). E**67**, o1964 [doi:10.1107/S1600536811026419]

1-Chloro-1-[(4-methylphenyl)hydrazinylidene]propan-2-one

Abdullah M. Asiri, Abdulrahman O. Al-Youbi, Mohie E. M. Zayed and Seik Weng Ng

S1. Comment

We have previously reported the synthesis of ethyl (*Z*)-2-chloro-2-(2-phenylhydrazin-1-ylidene) acetate by the reaction of benzenediazonium chloride with ethyl 2-chloro-3-oxobutanoate (Asiri *et al.*, 2010). The compound is an ester. In the present study, the use of a substituted benzenediazonium chloride and the methyl ester (instead of the ethyl ester) afforded a 1-chloro-1-(arylhydrazono)-2-propanone. Such ketones are intermediates in the synthesis of pyrazoles (Sayed *et al.*, 2002) and other heterocycles (Benincori *et al.*, 1990). In the 4-methyl substituted compound (Scheme I, Fig. 1), the non-hydrogen atoms lie on a plane [r.m.s. deviation 0.062 and 0.110 Å in the two independent molecules]. (Scheme I, Fig. 1). The C_{aryl}–N(H)–N═ C(S)═O portion adopts an extended zigzag conformation. Adjacent molecules are linked by an *N*–*H*···$O_{carbonyl}$ hydrogen bond to form a chain running [1 0 0].

S2. Experimental

To a stirred solution of methyl 2-chloro-3-oxobutanoate (1.64 g, 10 mmol) in ethanol (100 ml) was added sodium acetate trihydrate (1.30 g, 10 mmol). The mixture was chilled to 273 K and then treated with a cold solution of *p*-nitrobenzene-diazonium chloride, prepared by diazotizing *p*-methylaniline (1.07 g, 10 mmol) dissolved in 6*M* hydrochloric acid (6 ml) with a solution of sodium nitrite (0.70 g, 10 mmol) in water (10 ml). The addition of the diazonium salt solution was carried out with rapid stirring over a period of 20 min. The reaction mixture was stirred for further 15 min. and left for 3 h in refrigerator. The resulting solid was collected by filtration and washed thoroughly with water. The crude product was crystallized from ethanol to give the corresponding hydrazonoyl chloride.

S3. Refinement

Carbon-bound H-atoms were placed in calculated positions [C—H 0.95 to 0.98 Å, U_{iso}(H) 1.2 to 1.5U_{eq}(C)] and were included in the refinement in the riding model approximation.

The amino H-atom was located in a difference Fourier map, and was freely refined.

The Flack parameter was refined from 533 Friedel pairs.

Omitted from the refinement was the (2 - 2 2) reflection.

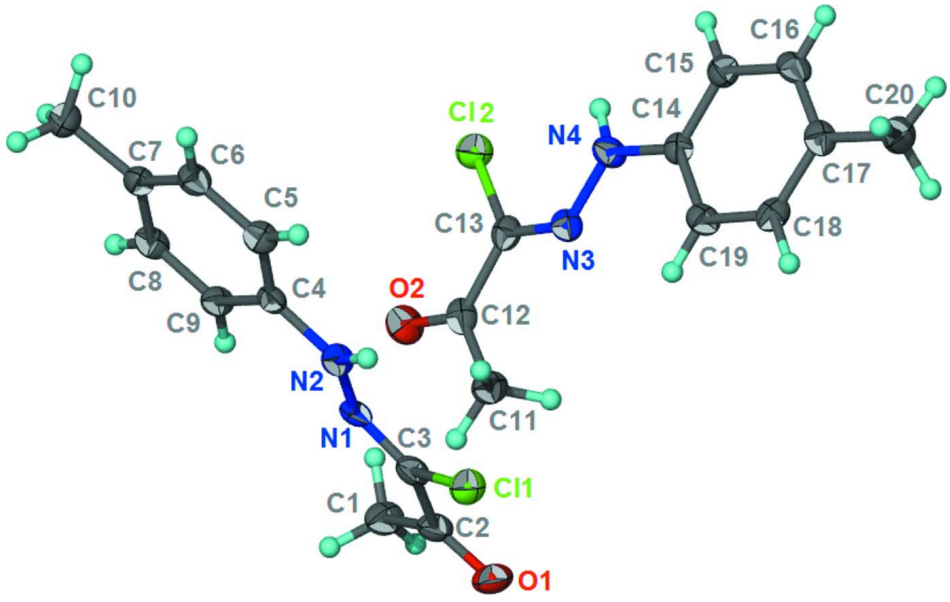


Figure 1

Thermal ellipsoid plot (Barbour, 2001) of the two independent molecules of $C_{10}H_{11}ClN_2O$ at the 70% probability level; hydrogen atoms are drawn as spheres of arbitrary radius.

1-Chloro-1-[(4-methylphenyl)hydrazinylidene]propan-2-one

Crystal data

$C_{10}H_{11}ClN_2O$
$M_r = 210.66$
Monoclinic, $P2_1$
Hall symbol: P 2yb
$a = 11.0572$ (3) Å
$b = 7.6570$ (2) Å
$c = 12.4613$ (3) Å
$\beta = 105.063$ (3)°
$V = 1018.79$ (5) Å^3
$Z = 4$
$F(000) = 440$
$D_x = 1.373$ Mg m^{-3}
Cu $K\alpha$ radiation, $\lambda = 1.54184$ Å
Cell parameters from 1695 reflections
$\theta = 3.7$–$74.0°$
$\mu = 3.06$ mm^{-1}
$T = 100$ K
Prism, yellow
0.20 × 0.02 × 0.02 mm

Data collection

Agilent SuperNova Dual diffractometer with an Atlas detector
Radiation source: SuperNova (Cu) X-ray Source
Mirror monochromator
Detector resolution: 10.4041 pixels mm^{-1}
ω scan
Absorption correction: multi-scan (*CrysAlis PRO*; Agilent, 2010)
$T_{min} = 0.580$, $T_{max} = 0.941$
3467 measured reflections
2667 independent reflections
2516 reflections with $I > 2\sigma(I)$
$R_{int} = 0.021$
$\theta_{max} = 74.2°$, $\theta_{min} = 3.7°$
$h = -13\rightarrow7$
$k = -9\rightarrow9$
$l = -13\rightarrow15$

Refinement

Refinement on F^2
Least-squares matrix: full
$R[F^2 > 2\sigma(F^2)] = 0.045$
$wR(F^2) = 0.125$
$S = 1.06$
2667 reflections
266 parameters
1 restraint
Primary atom site location: structure-invariant direct methods

Secondary atom site location: difference Fourier map
Hydrogen site location: inferred from neighbouring sites
H atoms treated by a mixture of independent and constrained refinement

$w = 1/[\sigma^2(F_o^2) + (0.0867P)^2 + 0.3419P]$ where $P = (F_o^2 + 2F_c^2)/3$
$(\Delta/\sigma)_{max} = 0.001$
$\Delta\rho_{max} = 0.31$ e Å^{-3}
$\Delta\rho_{min} = -0.42$ e Å^{-3}
Absolute structure: Flack (1983), 533 Friedel pairs
Absolute structure parameter: 0.17 (2)

Fractional atomic coordinates and isotropic or equivalent isotropic displacement parameters (Å²)

	x	*y*	*z*	U_{iso}*/U_{eq}
Cl1	0.22799 (7)	0.50001 (13)	0.90675 (6)	0.0252 (2)
Cl2	0.75288 (7)	0.52179 (14)	1.00248 (6)	0.0252 (2)
N1	0.2864 (2)	0.4827 (4)	1.1276 (2)	0.0187 (6)
N2	0.3920 (3)	0.4043 (4)	1.1235 (2)	0.0195 (6)
H2	0.416 (4)	0.391 (7)	1.062 (4)	0.035 (13)*
N3	0.7037 (2)	0.4842 (4)	0.7819 (2)	0.0193 (6)
N4	0.8068 (3)	0.5762 (4)	0.7850 (2)	0.0201 (6)
H4	0.853 (5)	0.615 (7)	0.844 (4)	0.035 (13)*
O1	0.0213 (2)	0.6872 (4)	0.9612 (2)	0.0297 (7)
O2	0.5199 (3)	0.3196 (4)	0.9474 (2)	0.0281 (6)
C1	0.0693 (3)	0.6493 (6)	1.1582 (3)	0.0253 (8)
H1A	0.0074	0.7420	1.1556	0.038*
H1B	0.1477	0.6800	1.2125	0.038*
H1C	0.0373	0.5391	1.1800	0.038*
C2	0.0928 (3)	0.6290 (6)	1.0454 (3)	0.0225 (8)
C3	0.2071 (3)	0.5347 (5)	1.0390 (3)	0.0207 (7)
C4	0.4745 (3)	0.3415 (5)	1.2216 (3)	0.0177 (7)
C5	0.5915 (3)	0.2783 (5)	1.2169 (3)	0.0207 (7)
H5	0.6156	0.2824	1.1491	0.025*
C6	0.6723 (3)	0.2097 (5)	1.3117 (3)	0.0212 (7)
H6	0.7515	0.1664	1.3077	0.025*
C7	0.6406 (3)	0.2026 (5)	1.4124 (3)	0.0200 (7)
C8	0.5243 (3)	0.2683 (5)	1.4160 (3)	0.0205 (8)
H8	0.5011	0.2654	1.4842	0.025*
C9	0.4416 (3)	0.3377 (5)	1.3228 (3)	0.0190 (7)
H9	0.3630	0.3825	1.3274	0.023*
C10	0.7273 (3)	0.1199 (6)	1.5139 (3)	0.0255 (8)
H10A	0.7083	0.1659	1.5810	0.038*
H10B	0.8143	0.1473	1.5154	0.038*
H10C	0.7155	−0.0070	1.5108	0.038*
C11	0.4814 (4)	0.2920 (5)	0.7503 (3)	0.0240 (8)
H11A	0.4059	0.2297	0.7562	0.036*
H11B	0.5335	0.2139	0.7190	0.036*
H11C	0.4573	0.3938	0.7019	0.036*
C12	0.5538 (3)	0.3510 (5)	0.8636 (3)	0.0203 (8)
C13	0.6703 (3)	0.4509 (5)	0.8711 (3)	0.0194 (7)
C14	0.8352 (3)	0.6173 (5)	0.6841 (3)	0.0176 (7)

C15	0.9434 (3)	0.7145 (5)	0.6877 (3)	0.0206 (7)
H15	0.9979	0.7478	0.7569	0.025*
C16	0.9699 (3)	0.7618 (5)	0.5883 (3)	0.0220 (8)
H16	1.0423	0.8302	0.5907	0.026*
C17	0.8940 (3)	0.7123 (5)	0.4861 (3)	0.0204 (7)
C18	0.7876 (3)	0.6112 (5)	0.4846 (3)	0.0209 (7)
H18	0.7349	0.5739	0.4154	0.025*
C19	0.7581 (3)	0.5651 (5)	0.5822 (3)	0.0195 (7)
H19	0.6853	0.4977	0.5796	0.023*
C20	0.9210 (4)	0.7668 (6)	0.3778 (3)	0.0263 (8)
H20A	0.8425	0.7988	0.3241	0.040*
H20B	0.9602	0.6695	0.3484	0.040*
H20C	0.9778	0.8673	0.3910	0.040*

Atomic displacement parameters (Å²)

	U^{11}	U^{22}	U^{33}	U^{12}	U^{13}	U^{23}
Cl1	0.0246 (4)	0.0350 (5)	0.0168 (4)	−0.0019 (4)	0.0070 (3)	0.0016 (4)
Cl2	0.0246 (4)	0.0320 (5)	0.0193 (4)	−0.0022 (4)	0.0065 (3)	−0.0005 (4)
N1	0.0137 (12)	0.0207 (17)	0.0231 (13)	−0.0041 (12)	0.0074 (11)	−0.0008 (13)
N2	0.0191 (14)	0.0255 (17)	0.0158 (13)	−0.0014 (13)	0.0082 (12)	0.0000 (12)
N3	0.0170 (13)	0.0199 (17)	0.0230 (13)	0.0019 (12)	0.0089 (11)	0.0016 (13)
N4	0.0201 (14)	0.0242 (16)	0.0176 (14)	−0.0045 (12)	0.0079 (12)	−0.0019 (13)
O1	0.0162 (12)	0.046 (2)	0.0253 (14)	−0.0022 (12)	0.0019 (11)	0.0054 (13)
O2	0.0251 (13)	0.0375 (17)	0.0263 (14)	−0.0004 (12)	0.0146 (11)	0.0041 (12)
C1	0.0190 (16)	0.034 (2)	0.0246 (18)	0.0011 (16)	0.0089 (15)	0.0000 (17)
C2	0.0163 (15)	0.030 (2)	0.0212 (17)	−0.0053 (16)	0.0053 (14)	−0.0001 (16)
C3	0.0189 (15)	0.025 (2)	0.0194 (15)	−0.0068 (16)	0.0079 (13)	−0.0007 (15)
C4	0.0165 (16)	0.0152 (17)	0.0218 (17)	−0.0030 (14)	0.0057 (14)	−0.0003 (14)
C5	0.0194 (17)	0.0233 (19)	0.0217 (17)	0.0007 (15)	0.0096 (14)	−0.0010 (15)
C6	0.0189 (16)	0.0219 (17)	0.0245 (18)	−0.0011 (15)	0.0088 (14)	−0.0003 (15)
C7	0.0195 (16)	0.0182 (17)	0.0206 (17)	−0.0037 (14)	0.0024 (14)	0.0001 (14)
C8	0.0214 (17)	0.0245 (19)	0.0181 (16)	−0.0041 (15)	0.0099 (14)	−0.0036 (15)
C9	0.0172 (16)	0.0243 (18)	0.0172 (16)	−0.0021 (14)	0.0072 (14)	−0.0012 (14)
C10	0.0229 (17)	0.027 (2)	0.0252 (18)	0.0014 (16)	0.0043 (15)	0.0060 (16)
C11	0.0217 (18)	0.028 (2)	0.0217 (18)	−0.0005 (16)	0.0042 (15)	−0.0003 (16)
C12	0.0199 (17)	0.0193 (18)	0.0255 (18)	0.0056 (15)	0.0129 (15)	0.0032 (15)
C13	0.0219 (17)	0.0207 (18)	0.0167 (15)	0.0034 (14)	0.0068 (14)	0.0020 (13)
C14	0.0174 (15)	0.0181 (18)	0.0185 (16)	0.0023 (14)	0.0067 (13)	0.0013 (14)
C15	0.0196 (16)	0.0199 (17)	0.0223 (17)	0.0014 (14)	0.0057 (14)	0.0016 (15)
C16	0.0149 (15)	0.0212 (19)	0.032 (2)	0.0006 (15)	0.0104 (15)	0.0019 (16)
C17	0.0218 (17)	0.0204 (17)	0.0220 (17)	0.0023 (15)	0.0108 (14)	0.0014 (15)
C18	0.0198 (16)	0.0244 (19)	0.0186 (16)	0.0049 (15)	0.0050 (14)	0.0002 (14)
C19	0.0171 (15)	0.0189 (18)	0.0245 (16)	0.0000 (13)	0.0087 (14)	−0.0015 (14)
C20	0.0234 (18)	0.035 (2)	0.0237 (18)	0.0013 (17)	0.0109 (15)	0.0076 (17)

Geometric parameters (Å, º)

Cl1—C3	1.743 (3)	C8—C9	1.384 (5)
Cl2—C13	1.742 (4)	C8—H8	0.9500
N1—C3	1.281 (4)	C9—H9	0.9500
N1—N2	1.326 (4)	C10—H10A	0.9800
N2—C4	1.407 (5)	C10—H10B	0.9800
N2—H2	0.88 (5)	C10—H10C	0.9800
N3—C13	1.283 (4)	C11—C12	1.500 (5)
N3—N4	1.332 (4)	C11—H11A	0.9800
N4—C14	1.409 (4)	C11—H11B	0.9800
N4—H4	0.83 (5)	C11—H11C	0.9800
O1—C2	1.221 (5)	C12—C13	1.480 (5)
O2—C12	1.222 (4)	C14—C19	1.391 (5)
C1—C2	1.502 (5)	C14—C15	1.399 (5)
C1—H1A	0.9800	C15—C16	1.393 (5)
C1—H1B	0.9800	C15—H15	0.9500
C1—H1C	0.9800	C16—C17	1.383 (5)
C2—C3	1.477 (5)	C16—H16	0.9500
C4—C5	1.397 (5)	C17—C18	1.404 (5)
C4—C9	1.399 (5)	C17—C20	1.515 (5)
C5—C6	1.386 (5)	C18—C19	1.385 (5)
C5—H5	0.9500	C18—H18	0.9500
C6—C7	1.389 (5)	C19—H19	0.9500
C6—H6	0.9500	C20—H20A	0.9800
C7—C8	1.391 (5)	C20—H20B	0.9800
C7—C10	1.513 (5)	C20—H20C	0.9800
C3—N1—N2	121.3 (3)	H10A—C10—H10B	109.5
N1—N2—C4	120.0 (3)	C7—C10—H10C	109.5
N1—N2—H2	123 (3)	H10A—C10—H10C	109.5
C4—N2—H2	117 (3)	H10B—C10—H10C	109.5
C13—N3—N4	121.1 (3)	C12—C11—H11A	109.5
N3—N4—C14	118.7 (3)	C12—C11—H11B	109.5
N3—N4—H4	123 (3)	H11A—C11—H11B	109.5
C14—N4—H4	118 (3)	C12—C11—H11C	109.5
C2—C1—H1A	109.5	H11A—C11—H11C	109.5
C2—C1—H1B	109.5	H11B—C11—H11C	109.5
H1A—C1—H1B	109.5	O2—C12—C13	120.2 (3)
C2—C1—H1C	109.5	O2—C12—C11	122.5 (3)
H1A—C1—H1C	109.5	C13—C12—C11	117.3 (3)
H1B—C1—H1C	109.5	N3—C13—C12	119.3 (3)
O1—C2—C3	120.3 (3)	N3—C13—Cl2	123.6 (3)
O1—C2—C1	122.3 (3)	C12—C13—Cl2	117.1 (3)
C3—C2—C1	117.4 (3)	C19—C14—C15	119.9 (3)
N1—C3—C2	120.6 (3)	C19—C14—N4	121.6 (3)
N1—C3—Cl1	122.6 (3)	C15—C14—N4	118.5 (3)
C2—C3—Cl1	116.8 (3)	C16—C15—C14	119.0 (3)

C5—C4—C9	119.4 (3)	C16—C15—H15	120.5
C5—C4—N2	118.7 (3)	C14—C15—H15	120.5
C9—C4—N2	121.9 (3)	C17—C16—C15	122.0 (3)
C6—C5—C4	119.6 (3)	C17—C16—H16	119.0
C6—C5—H5	120.2	C15—C16—H16	119.0
C4—C5—H5	120.2	C16—C17—C18	118.0 (3)
C5—C6—C7	121.8 (3)	C16—C17—C20	122.1 (3)
C5—C6—H6	119.1	C18—C17—C20	119.9 (3)
C7—C6—H6	119.1	C19—C18—C17	121.1 (3)
C6—C7—C8	117.8 (3)	C19—C18—H18	119.5
C6—C7—C10	121.1 (3)	C17—C18—H18	119.5
C8—C7—C10	121.0 (3)	C18—C19—C14	120.0 (3)
C9—C8—C7	121.8 (3)	C18—C19—H19	120.0
C9—C8—H8	119.1	C14—C19—H19	120.0
C7—C8—H8	119.1	C17—C20—H20A	109.5
C8—C9—C4	119.6 (3)	C17—C20—H20B	109.5
C8—C9—H9	120.2	H20A—C20—H20B	109.5
C4—C9—H9	120.2	C17—C20—H20C	109.5
C7—C10—H10A	109.5	H20A—C20—H20C	109.5
C7—C10—H10B	109.5	H20B—C20—H20C	109.5

C3—N1—N2—C4	−177.1 (3)	N2—C4—C9—C8	177.5 (4)
C13—N3—N4—C14	−176.5 (3)	N4—N3—C13—C12	178.9 (3)
N2—N1—C3—C2	−177.1 (3)	N4—N3—C13—Cl2	0.6 (5)
N2—N1—C3—Cl1	2.5 (5)	O2—C12—C13—N3	−179.3 (3)
O1—C2—C3—N1	175.7 (4)	C11—C12—C13—N3	0.7 (5)
C1—C2—C3—N1	−4.4 (5)	O2—C12—C13—Cl2	−0.9 (5)
O1—C2—C3—Cl1	−3.9 (5)	C11—C12—C13—Cl2	179.1 (3)
C1—C2—C3—Cl1	176.0 (3)	N3—N4—C14—C19	0.4 (5)
N1—N2—C4—C5	−172.5 (3)	N3—N4—C14—C15	179.8 (3)
N1—N2—C4—C9	8.7 (5)	C19—C14—C15—C16	1.9 (5)
C9—C4—C5—C6	1.3 (6)	N4—C14—C15—C16	−177.5 (3)
N2—C4—C5—C6	−177.6 (3)	C14—C15—C16—C17	−1.5 (6)
C4—C5—C6—C7	−0.4 (6)	C15—C16—C17—C18	0.0 (6)
C5—C6—C7—C8	−0.5 (6)	C15—C16—C17—C20	178.7 (4)
C5—C6—C7—C10	177.2 (4)	C16—C17—C18—C19	1.1 (5)
C6—C7—C8—C9	0.5 (6)	C20—C17—C18—C19	−177.6 (4)
C10—C7—C8—C9	−177.2 (4)	C17—C18—C19—C14	−0.7 (5)
C7—C8—C9—C4	0.5 (6)	C15—C14—C19—C18	−0.9 (5)
C5—C4—C9—C8	−1.3 (6)	N4—C14—C19—C18	178.5 (3)

Hydrogen-bond geometry (Å, º)

D—H···*A*	*D*—H	H···*A*	*D*···*A*	*D*—H···*A*
N2—H2···O2	0.88 (5)	2.12 (5)	2.975 (4)	162 (4)
N4—H4···O1^{i}	0.83 (5)	2.12 (5)	2.909 (4)	159 (4)

Symmetry code: (i) *x*+1, *y*, *z*.