In (I) (Fig. 1), all bond lengths and angles show normal values (Allen et al., 1987). The cations lie on centers of symmetry and form stacks parallel to the $a$ axis, with a short
C2···C4vi distance of 3.496 (2) Å [symmetry code: (iv) x + 1, y, z], suggesting π–π stacking interactions. Intermolecular N–H···Cl hydrogen bonds (Table 1) contribute to the stability of the crystal packing (Fig. 2).

Experimental

α,α′-Diamino- p-xylene (2 g, Fluka, purum > 98%) was dissolved in water (7 ml). Subsequently, saturated (37%) HCl (5 ml, Merck) was added with stirring and cooling on a water bath. The mixture was filtered and the resulting white powder was washed with water and dried in air. Small colorless crystals were obtained by recrystallization from a saturated aqueous solution at 343 K, which was slowly cooled to room temperature.

Crystal data

C8H14N2+·2Cl−

$M_r$ = 209.12

Triclinic, $P\overline{1}$

$a$ = 4.3496 (8) Å

$b$ = 5.809 (1) Å

$c$ = 10.197 (2) Å

$α$ = 101.836 (3)$°$

$β$ = 10.197 (2) Å

$γ$ = 93.800 (3)$°$

$V$ = 247.18 (8) Å³

$Z$ = 1

$D_c$ = 1.405 Mg m⁻³

Mo $Kα$ radiation

$μ$ = 0.61 mm⁻¹

Platelet, colorless

$T$ = 100 (1) K

Table 1

<table>
<thead>
<tr>
<th>Hydrogen-bond geometry (Å, °)</th>
<th>D···A</th>
<th>D–H</th>
<th>H···A</th>
<th>D···A</th>
<th>D–H···A</th>
</tr>
</thead>
<tbody>
<tr>
<td>N···H5···C1’</td>
<td>0.92 (3)</td>
<td>2.32 (3)</td>
<td>3.190 (2)</td>
<td>158 (3)</td>
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</tr>
<tr>
<td>N···H5’···C1’</td>
<td>0.92 (3)</td>
<td>2.32 (3)</td>
<td>3.235 (2)</td>
<td>176 (2)</td>
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</tr>
<tr>
<td>N···H5’’···C1’’</td>
<td>0.93 (4)</td>
<td>2.28 (4)</td>
<td>3.199 (2)</td>
<td>175 (4)</td>
<td></td>
</tr>
</tbody>
</table>

Symmetry codes: (i) −x + 1, −y + 1, −z + 1; (ii) −x + 1, −y, −z + 1; (iii) x, y, z + 1.

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References


