Quadridavyne  
$\text{(Na, K)}_6\text{Ca}_2\text{Si}_6\text{Al}_6\text{O}_{24}\text{Cl}_4$

Crystal Data:  
- Hexagonal.  
- Point Group: $6/m$.  
- Crystals hexagonal, prismatic, elongated along [0001], to 2 mm, showing dominant {10\overline{1}0} and {0001}.  
- Twinning: On {10\overline{1}0}, commonly observed.

Physical Properties:  
- Cleavage: {0001}, perfect; {11\overline{2}0}, distinct.  
- Tenacity: Brittle.  
- Hardness $\approx 5$.  
- $D(\text{meas.}) = 2.335(5)$  
- $D(\text{calc.}) = 2.354$  

Optical Properties:  
- Transparent.  
- Color: Colorless.  
- Streak: White.  
- Luster: Vitreous.  
- Optical Class: Uniaxial (+).  
- $\omega = 1.529(1) \quad \epsilon = 1.532(1)$

Cell Data:  
- Space Group: $P6_3/m$.  
- $a = 25.771(6)$, $c = 5.371(1)$, $Z = 4$

X-ray Powder Pattern:  
- Ottaviano, Italy; can be distinguished from davyne only by single-crystal diffraction.  
- 3.71 (vs), 3.31 (vs), 4.80 (s), 2.788 (s), 2.677 (m), 2.474 (m), 2.147 (m)

Chemistry:  
(1)  

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\text{SiO}_2$</td>
<td>33.09</td>
</tr>
<tr>
<td>$\text{Al}_2\text{O}_3$</td>
<td>27.62</td>
</tr>
<tr>
<td>$\text{CaO}$</td>
<td>11.35</td>
</tr>
<tr>
<td>$\text{Na}_2\text{O}$</td>
<td>11.21</td>
</tr>
<tr>
<td>$\text{K}_2\text{O}$</td>
<td>5.93</td>
</tr>
<tr>
<td>$\text{Cl}$</td>
<td>12.13</td>
</tr>
<tr>
<td>$\text{SO}_3$</td>
<td>1.08</td>
</tr>
<tr>
<td>$-\text{O} = \text{Cl}_2$</td>
<td>2.74</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>99.67</strong></td>
</tr>
</tbody>
</table>

(1) Ottaviano, Italy; by electron microprobe, average of five analyses; corresponding to $\text{(Na}_{3.97}\text{K}_{1.38})\Sigma=5.35\text{Ca}_{2.22}\text{(Si}_{6.05}\text{Al}_{5.95})\Sigma=12.00\text{O}_{23.90}\text{(Cl}_{3.76}\text{(SO}_4)_{0.15})\Sigma=3.91$.

Mineral Group:  
- Cancrinite group.

Occurrence:  
- In volcanic ash containing metasomatized and hydrothermally altered lavas and scoriae, from the 1906 eruption of Vesuvius.

Association:  
- n.d.

Distribution:  
- From Ottaviano, near Naples, Campania, Italy.

Name:  
- From the Latin quad, for four, as the mineral has four times the unit cell volume of the related mineral species davyne.

Type Material:  
- University of Pisa, Pisa, Italy, 10014.

References:  
(1) Bonaccorsi, E., S. Merlino, P. Orlandi, M. Pasero, and G. Vezzalini (1994) Quadridavyne, $[[\text{Na, K}])_6\text{Cl}_2][\text{Ca}_2\text{Cl}_2][\text{Si}_6\text{Al}_6\text{O}_{24}]$, a new feldspathoid mineral from Vesuvius area. Eur. J. Mineral., 6, 481–487.