Sal ammoniac  \( \text{NH}_4\text{Cl} \)

**Crystal Data:** Cubic.  *Point Group:* \( 4/m  \overline{3} 2/m \). Crystals show \{112\}, \{113\}, \{011\}, rarely \{001\}; commonly with stepped or curved faces, skeletal or dendritic, to 5 cm; stalactitic, or in crusts, fibrous, earthy.  *Twinning:* On \{111\}, may be cyclic.

**Physical Properties:**  *Cleavage:* \{111\}, imperfect.  *Fracture:* Conchoidal.  *Tenacity:* Between brittle and sectile; very plastic.  *Hardness* = 1–2  \( D(\text{meas.}) = 1.532  \)  \( D(\text{calc.}) = 1.535 \)  Soluble in \( \text{H}_2\text{O} \); stinging salty taste.

**Optical Properties:**  *Transparent.*  *Color:* Colorless, white, pale gray, may be pale yellow to brown if impure; colorless in transmitted light.  *Luster:* Vitreous.  *Optical Class:* Isotropic; may be weakly anisotropic.  \( n = 1.639(1) \)

**Cell Data:**  *Space Group:* \( Pm\overline{3}m \) (synthetic).  \( a = 3.8756 \quad Z = 1 \)

**X-ray Powder Pattern:** Synthetic.
\[2.740 \, (100), \, 3.87 \, (25), \, 1.582 \, (25), \, 1.939 \, (8), \, 1.733 \, (6), \, 1.370 \, (6), \, 1.225 \, (6)\]

**Chemistry:** Identification relies on correspondence of properties with synthetic material.

**Occurrence:** A sublimation product around volcanic fumaroles; in burning coal seams and waste piles; in guano deposits. The ammonia usually is derived from organic matter.

**Association:** Sulfur (fumaroles); realgar, orpiment, sulfur, mascagnite, tschermigite (burning coal).

**Distribution:** Fumarolic on: Vesuvius, Campania; Etna, Sicily; Stromboli and Vulcano, Lipari Islands, Italy. From Mount Pelée, Martinique, West Indies. At Hekla, Iceland. On Parícutin, Michoacán, Mexico. At Kilauea, Hawaii, USA. From the Kukhi-Malik area, near Rarat, Tajikistan. With burning coal at: Duttweiler, near Saarbrücken, Saarland, Germany. At Saint-Etienne, Loire, France. From Newcastle, Northumberland, England. On Mt. Pyramide, Spitsbergen, Norway. In the USA, at the Hope Ranch, Santa Barbara Co., California. In guano on: Cincha and Guañaépe Islands, Peru. At [??ck-a Province??] Tarapacá, Chile.

**Name:** From the Greek, *sal ammoniac*, applied in antiquity to the synthetic compound.