The binary phase SrSi$_6$ was prepared at a pressure of 10(1) GPa and a temperature of 1520(150) K. Single crystal refinements and powder diffraction data reveal that the compound crystallizes in the orthorhombic crystal system (Cmcm, $a = 4.4692(4)$, $b = 10.256(1)$, $c = 11.698(1)$ Å) and is isopointal to EuGa$_2$Ge$_4$ and EuSi$_6$. Exothermic decomposition of the compound into SrSi$_2$ and Si at 797 K and ambient pressure indicates that the compound is a metastable high-pressure phase. Analysis of the chemical bonding using the electron localization function and calculated charge densities reveals covalent bonding within the polyanion of four-bonded silicon atoms. Strontium cations are enclosed in the 3D net resulting in an electron balance $\text{Sr}^2+\text{[Si}^0\text{]}_6^{2-}$. In the electronic density of states the excess electrons of the framework are assigned to a filling of antibonding bands. SrSi$_6$ is a metallic conductor with an electrical resistivity of $\rho \approx 250 \, \mu\Omega\cdot\text{cm}$ at 300 K. Magnetization measurements indicate diamagnetic behaviour ($\chi_0 = -50 \cdot 10^{-6} \, \text{emu}\cdot\text{mol}^{-1}$).

**Key words:** Strontium, Silicon, High Pressure, Zintl Phase