The interfacial tension (IFT) between aluminium and cryolite melts containing different salt additions (AlF$_3$, NaF, Na$_2$SO$_4$) has been measured during electrolysis by the capillary depression method. The technique is based on the measurement of the capillary depression occurring when a capillary, which is moved vertically down through the molten salt layer, passes through the metal/salt interface. The depression is measured by simultaneous video recording of the immersion height of the alumina capillary. The interfacial tension is strongly dependent on the $n$(NaF)/$n$(AlF$_3$) ratio. The addition of Na$_2$SO$_4$ decreases the IFT of the aluminium/electrolyte interface. We also found the different influence of the conditions of electrolysis on the IFT in systems with and without Na$_2$SO$_4$. In systems without Na$_2$SO$_4$ the IFT decreases with increasing current density, and in systems with Na$_2$SO$_4$ it increases.

**Key words:** Interfacial Tension; Cryolite; Sulphur Impurities; Aluminium Electrolysis.