
TITLE: Thermographical investigation of the K$_2$TiF$_6$-NaCl-TiO$_2$ system

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut metallurgii i obozhashche-
niya. Trudy. v. 5, 1962, Tsvetnaya metallurgiya, 82 - 94

TEXT: Using Kurnakov's thermal method the authors investigated the phase
diagram of the K$_2$TiF$_6$-NaCl-TiO$_2$ system near binary eutectics K$_2$TiF$_6$-NaCl and
K$_2$TiF$_6$-TiO$_2$. Batches of these substances were mixed, remelted and heated in
platinum crucibles or blocks placed in a pyrometrical apparatus. After thermo-
ographical inspection thermograms of 78 compositions were taken. On the basis of
results obtained from thermographical, roentgenostructural and crystallographical
analyses a phase diagram of the system and phase diagrams of the binary sys-
tems were plotted. A spatial diagram of the system in the investigated range is
presented and described. Polytimetric cross-sections of the system are given at
a constant 1- , 2- , 3- and 4-% content of titanium dioxide. A fusibility diagram

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of the system is plotted on the concentration triangle and the boundaries of
lamination zones are determined (Figure 13). The behavior of the basic compo-
nent of the alloys - potassium fluorotitanate - was analyzed. On the basis of
previous data, obtained by Kolomitskiy, Milov, Ponomarev and Putilin, it is as-
sumed that this component is present in three polymorphic forms. For pure po-
tassium fluorotitanate the following modifications are to be considered: $\delta$ -
stable in a range from room temperature to 380°C; $\gamma$ - stable in a 280 - 640°C
range; $\beta$ - stable at temperature over 640°C. Starting from 680°C noticeable
dissociation begins. Full melting takes place at about 850°C. There are 17
figures and 1 table.

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Figure 13. Fusibility diagram of the 
$K_2TiF_6-NaCl-TiO_2$ system