TABLE II

Summary of Runs in Al_2O_3-lined Cells

Pressure (kb)	Temp (°C)	Time (min)	Starting Material	Results
50	1800	2	CrO_3	CrO_2
25	1800	1	CrO_3	CrO_2
25	1900	1	CrO_3	CrO_2
50	1300	3	CrO_3	CrO_2
50	1175	5	Cr_2O_5	CrO_2
50	2000	2	CrO_2	CrO_2

The phases in the quenched material were identified by x-ray and optical (both reflected and transmitted light) observation and by a qualitative magnetic check for CrO_2. The stoichiometry of the CrO_2 phase was checked by weight loss according to the reaction

$$2\ CrO_2 \rightarrow Cr_2O_3 + \tfrac{1}{2}\ O_2$$

and the deviation from stoichiometry was found to be negligible.

Results and Discussion

The results indicate that CrO_2 can be maintained without decomposition at temperatures up to 2000°C for short times (at least 2 minutes) and at temperatures to at least 1200°C for 60 minutes. Besides the characterization of CrO_2 structurally, chemically, and magnetically, another convincing proof for the stability of CrO_2 in the 1200°-1550°C temperature range was an increase in grain size of about one order of magnitude over that of the original approximately 5μ to 10μ powder without the formation of Cr_2O_3.