X-RAY CRYSTALLOGRAPHY OF SHORTITE*

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Shortite, a double carbonate of sodium and calcium, collected from a drill core 20 miles west of the city of Green River, Sweetwater County, Wyoming, was described by J. J. Fahey (1939). The *x*-ray crystallography was not included in the report because the data had not been obtained at that time.

The following *x*-ray crystallographic data were derived from Weissenberg photographs of a crystal of shortite measuring 1 millimeter in its largest dimension. Rotation, zero and first layer-line photographs were taken about [100]; rotation and zero layer-line photographs about [010]. The lattice constants obtained from these photographs are as follows:

$a_0 = 4.98$ Å
$b_0 = 10.97$ Å
$c_0 = 7.10$ Å

$a_0 : b_0 : c_0 = 0.454 : 1 : 0.647$

The above ratio agrees well with the morphological axial ratio given as: $a:b:c = 0.455:1:0.648$.

The space group was determined from the following reflections to be $D_2^6 - A222$.

$hkl = k+l$ even
$h00 = h$ all present
$0k0 = k$ even
$00l = l$ even

The unit cell content was derived from an analysis by Fahey and a new specific gravity determination made with the Berman balance. The value, 2.60, is lower than the determination, 2.629, made by Fahey with the pycnometer method. In a personal communication Mr. Fahey states that his determination was probably high on account of the presence of included grains of pyrite. The calculated specific gravity, 2.59, agrees well with the lower value. This calculated specific gravity also agrees with the value 2.591 calculated from the specific refractive energies.

	1	2	3			4	5	6
CaO	36.34	36.64	0.653	0.654	Ca	0.654	3.996	4
MgO	0.04	0.04	0.001					
Na_2O	19.91	20.07	0.324		Na	0.648	3.96	4
CO_2	42.90	43.25	0.983		C	0.983	6.01	6
Insol.	0.66				O	2.944	18.3	18
	99.85	100.00						

Specific gravity 2.60 — Calculated gravity 2.59

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1. Analysis of shortite from Green River, Sweetwater County, Wyoming; analyst Fahey.
2. Analysis recalculated to 100 per cent.
3. Molecular proportions.
4. Atomic proportions.
5. Number of atoms in the unit cell.
6. Theoretical number of atoms in the unit cell.

The unit cell formula derived from column 5 is $2[Na_2CO_3 \cdot 2CaCO_3]$.

REFERENCE

FAHEY, JOSEPH J., *Am. Mineral.*, **24,** 514–518 (1939).