April 22, 1959

A. B. Cummins

Free Silica in JM Products

	Type of Material				Brick Samples				
	Stand. Steam Cured Transite Pipe		Rigid Veneered Transite Shingle		JM-20	JM-23	JM-26	JM-28	JM-3000
Quarts	14%[a]	13%	18%[a]	20%	8%	20%	5%	Trace[b]	Faint Trace
Cristobalite	-	-	-	-	5	39	46	31	16
Amorphous SiO_2	Faint trace				None seen				

(a) Determined by chemical method, as in Report No. 492-Int-67; 492-Tr-2
(b) Trace amounts of quarts in brick samples JM-28 and JM-3000 seen petrographically only.
(c) Isotropic material with R.I. <1.48. Have discussed the possibility of amorphous silica occurring in Transite products with Drs. Insley, Yang, Harker and others. It is the consensus of opinion that carbonation of CSHI could be a source of amorphous silica. The CO_2 content of the above pipe sample was 0.99 per cent; of the above shingle, 3.2 per cent (as determined by C. Lane). Obviously some of this CO_2 represents carbonation of free lime, so that the amount of silica released by carbonation of CSHI should be small. Petrographic examination of the two Transite products does not reveal any gross amounts of amorphous free silica.

The possibility of vitreous silica occurring in the brick samples was discussed with Dr. Insley and he considers it more probable that SiO_2 and Al_2O_3 would occur together in solid solution.

No tridymite was found in any of the samples.

All of the values reported were determined by X-ray diffraction except as noted.

D. Bailey