

mixing operation is 1,003,337 particles, less than ten microns, per cubic foot of air. These particles are all slightly angular, crystalline in appearance under the Konimeter microscope and about five microns in size. Many are transparent, glass like. There are a number of small black specks.

H - TALC or "SOAPSTONE": Pulverized talc or "soapstone" is used as a filler in the manufacture of "hot neck" greases used in the steel mills. According to R. B. Ladoo (U.S. Bureau of Mines Bul. No. 213, 1919) ordinary talc or soapstone is Steatite (hydrous magnesium silicate - $H_2Mg_3(SiO_3)_4$). In the form of powder, the talc is greyish white. Associate Chemist Frederick Goldman of the U.S. Bureau of Mines, who made a chemical analysis of samples of talc as marketed, reports:

SiO ₂	46.04	per cent
CaO.....	4.39	" "
MgO.....	26.20	" "
Combined Oxides....	15.64	" "

Grease makers usually consider the composition of "soapstone" which they use as approximately 90% magnesium silicate and 10% calcium carbonate. It comes in 90-pound paper bags, 700 bags to a box car. About 7200 pounds are used per batch and one batch is made a day on an average. The "soapstone" is dumped into the mixing kettle by two men with an average service of ten years. This dumping which requires about an hour per batch is a rather dusty operation. One sample taken at face level just after a bag had been dumped had as high as 22,995,840 particles, ten microns or less in size, per cubic foot of air. The average dust produced was 13,064,960 dust particles per cubic foot. About 98% of these dust particles were transparent, crystalline, irregularly shaped plates and rods, in appearance under the Konimeter microscope. Most of these particles (about 98%) were five microns or less in size, the remainder being ten microns or over; about 2% were scale-like, semi-opaque, five microns or less in size.

Physiological Effects Produced By Talc Dusts. About two years ago Dr. W. C. Dreessen, Passed Assistant Surgeon, and J. M. Dalla Valle, Assistant Sanitary Engineer, United States Public Health Service, made a study to ascertain whether there is a connection between talc dust exposure and the relatively high tuberculosis death rate in Murray County, Georgia, where two talc mills and mines are located. They found (Reprint No. 1669 from the Public Health Reports Vol. 50, No. 5, Feb. 1, 1935, pages 131-143):

"Physical and roentgenologic examinations were made of 66 men and women who were exposed or had been exposed to talc dust. In the higher dust groups comprising 33 men, 8 were found to have Pneumoconiosis I and 8 to have Pneumoconiosis II or III. Six of the thirteen examined were diagnosed as having Pneumoconiosis I. No advanced stages of the disease were found in this group. In the group exposed to low concentrations of dust, no Pneumoconiosis was found."

The final conclusion of this study was that although Georgia talc appears to be "more injurious than tremolite talc" the high tuberculosis mortality rate in the County "could not be attributed to the talc industry".

Investigators have suggested, however, that for more or less continuous exposures concentrations of talc or "soapstone" dust should not exceed 15,000,000 particles, ten microns or less in size, per cubic foot of air.

I - GRAPHITE: Powdered graphite (80% to 85% graphitic carbon and 15% probably magnesium silicate) is used in the manufacture of spring and pressure lubricants. It