

Figure 1



Figure 2

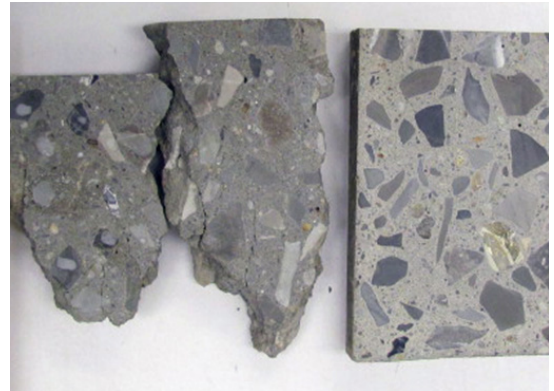


Figure 3

Petrographic Examination (ASTM C856)

“Standard Practice for Petrographic Examination of Hardened Concrete”

What is a Petrographic Examination?

A petrographic examination characterizes the composition and condition of concrete or other hardened hydraulic-cement mixtures.

How are Petrographic Examinations Conducted?

A concrete petrographer, often a geologist by education, uses methods similar to those used in geology in order to examine concrete and other hardened hydraulic-cement mixtures (Comment – building materials can include glass, etc.). Tools like a petrographic microscope, a stereomicroscope, an X-ray diffractometer and a scanning electron microscope can be used.

How is a sample prepared?

As part of a petrographic examination, a sample is examined as received. In order to help the petrographer observe characteristics of the concrete under the microscope, for both a petrographic examination and for air-void analyses, a slab measuring approximately one-inch thick is cut from the center of the sample (Figure 1). The cut surface is polished to remove the scratches and produce an optically-flat surface (Figure 2 and Figure 3).

How is this standard used in the industry?

Some examples of the purpose of a petrographic examination are to determine the cause of failure, assess if the concrete is as specified, to describe the cementitious matrix, or to determine if any adverse reactions have occurred within the concrete.