

Composite opal rough



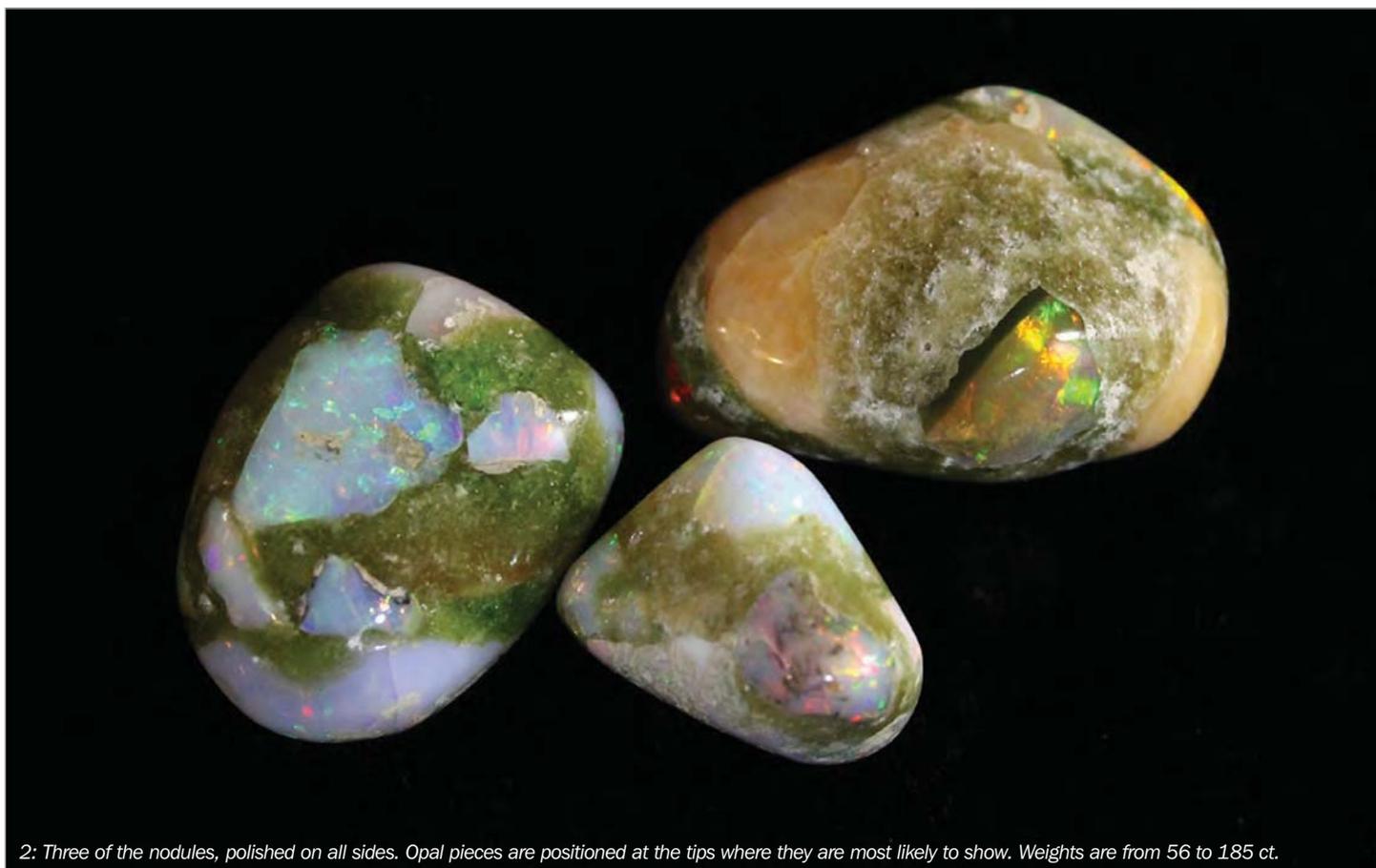
1: A group of rough with natural looking outer layer weighing from 63 to 238 ct. Largest is 50 mm wide.

Cara Williams FGA of Stone Group Labs discusses some unusual opal composites.

Opal dealer Jon Young (owner of www.ethiopiaopals.com) recently submitted 28 samples of opal, reportedly from Ethiopia. Ethiopian opal from Welo ('Wollo') Province has featured prominently in recent markets. Its hydrophane nature has made it a continual focus of gemmological laboratories due to its ability to accept treatments that other opals, such as the Type 1 Australian opal, cannot. This lab has previously reported on several treatments, including smoke treatment, dyes and artificial black backing; yet more treatments have been seen.

Samples consisted of 18 rough specimens that resembled Lightning Ridge nobbies in their outer, clay-like appearance (1). Four specimens were 'rubs': rough with windows polished into one or more surface areas. Six were fully polished on all sides and showed their composite nature, resembling brecciated rock (2).

Ethiopian opal forms within volcanic rock and is commonly seen as rounded nodules, similar to thunder eggs, with many featuring concentric colour zoning. Elements of these characteristics were visible in some of the opal areas but not



2: Three of the nodules, polished on all sides. Opal pieces are positioned at the tips where they are most likely to show. Weights are from 56 to 185 ct.

across an entire piece. Play of colour areas all exhibited the typical play of colour patterns and inclusions of Wollo opal; a few exhibited shallow surface cracks and two showed crazing. All were hydrophane opal, but one sample contained two very different types of hydrophane opal; two areas were transparent crystal opal with nice play of colour, while one area was whitish, nearly-opaque opal with minimal play of colour and the distinct 'tacky' feel on the skin of extreme hydrophane when rubbed with the finger. It is highly unlikely that these two types of opal formed and matured under the same conditions.

The edges of most opal areas were irregular and exhibited a broken appearance (3). Between areas of opal and other rock was a granular, sugary material that was mostly a light, peridot-like green, but varied in colour from a light green to near colourless. Under magnification, small sand-sized grains of colour were visible. A few randomly scattered grains had a 'Coke-bottle' look, while others were red or blue (4). Due to the odd and suspicious appearance, Young had applied a hot point and noticed an acrid smell. Infrared testing showed these areas to have a high concentration of epoxy-type resins. The prevalence of the polymer precluded accurate identification of the sand-like grains, but Raman testing gave vague indications of a silica, possibly glass. Several of the polished samples contained large areas of a pinkish near-opaque rock that was identified as chalcedony quartz (5).

As plentiful as the Ethiopian opal reserves appear to be, there is little justification for this product other than to utilize scraps.

Some Ethiopian opal is known to contain plant fossils and one of the rough samples contained what appeared to be a plant stem. Such fossils are known to form along the base of an opal where the opal-forming silica soils made contact with a soil base. For this reason, fossils typically occur on the base of an opal as it was forming, rather than suspended within, as appears to be in this instance — further confirmation of assemblage rather than natural composition.

This is a clever misrepresentation that is designed solely for the cutting market, since the assembled nature would become apparent upon cutting and finished gems would presumably only incorporate areas of contiguous opal. As plentiful as the Ethiopian opal reserves appear to be, there is little justification for this product other than to utilize scraps. According to Young, such opal rough composites have been seen in Ethiopia over the past year. In their rough state, with the clay-like outer layer, they can be convincing to the unwary. This is another example of how composite products are more frequently seen in various materials today, particularly rough, cabochons, and beads. ■

Images 1 and 2 by Bear Williams, Stone Group Labs.

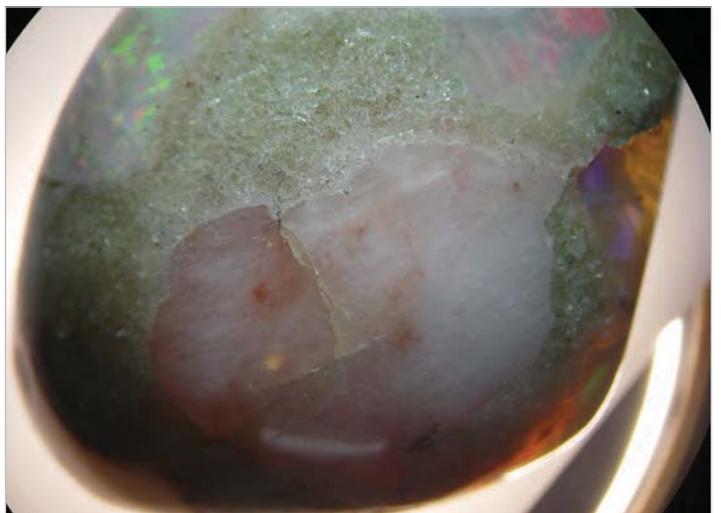
Images 3–5 by Cara Williams, Stone Group Labs.



3: Broken and irregular edges surrounded with green bonding agent. Specimen weighs 148 ct and contains nine distinctly different pieces of opal.



4: Close up of colourless bonded area. Note the greenish glass-like grain in centre as well as smaller red and blue grains.



5: Other than just opal, most specimens had areas of an opaque pinkish rock that tested as quartz, presumably used as a filler.