Spring 2024
Published: 01 March
www.LustreGemmology.com/research

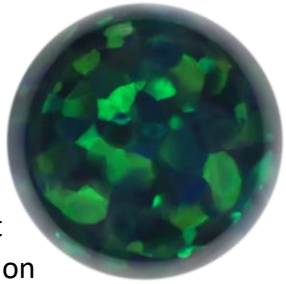
Gemmology Bulletin

Artificial Opals

By James Evans, EG

The artificial opals in today's marketplace provide a dazzling display of iridescence!

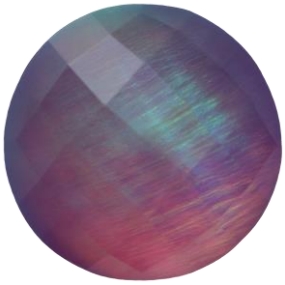
Coarse-crystalline Non-directional Opal



Produced by *Pinfire Gems & Colloids*, these were the first homogeneously crystallised imitation opals (meaning they can be cut in any direction).

The material shows an intense play-of-colour with an irregular, polygonal pattern. This play-of-colour can be produced in any shade (by changing the size of the silica nanoparticles or the spacing between the particles).

Aurora Opal

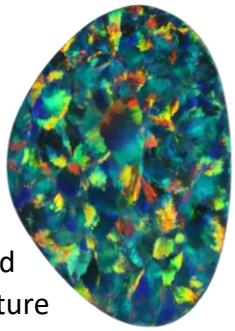


Aurora Opal is a fine-crystalline version of Pinfire's non-directional opal, which displays a 'swirly' or 'flame-like' play-of-colour.

These gems can be distinguished from their natural counterparts by their warmer touch (both coarse- and fine-crystalline versions are grown within a resin substrate).

The specimen shown is a doublet consisting of an Aurora Opal base and a faceted quartz crystal top.

Gilson Opal



Shortly after the silica structure of opal was determined, Pierre Gilson started work to manufacture the material. His first results were reported in *Gems & Gemology* (1972) and described as having a 'harlequin type' play-of-colour.

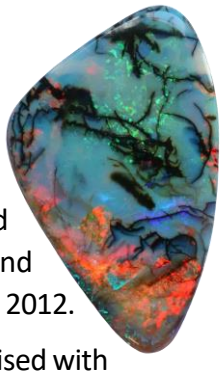
This specimen is a doublet of Gilson Opal upon a natural Rhyolite base.

Kyocera Opal

Gilson's method was soon replicated: first by replacing the silica with styrene and stabilising the material with a second resin; then by silica stabilised with resin.

All such opals display a characteristic columnar pattern, which turns into a 'lizard-skin' design when viewed across the columns.

Sterling Opal



Also known as 'Monarch Opal', this material was created by James Zachary and brought to market in 2012.

Sterling Opal is stabilised with resin and typically interspersed with black veins. Its play-of-colour ranges from a platy iridescence (reminiscent of ammolite), to an ethereal glow only otherwise seen in natural opal.

Slocum Stone

Developed by John Slocum, this artificial opal entered the market in 1974. Slocum Stone is a silicate glass with the appearance of iridescent films embedded throughout (though, in reality, no such films are present).

Mylar in Resin

Mylar is a name used generically for sheet polyester. When coated with a layer of metal and set within a second resin, flakes of mylar produce 'thin-film interference' which mimics the play-of-colour of precious opal (though not particularly well).

Foil in Glass

Perhaps the least convincing of all artificial opals, these gems were mass-produced in the mid-20th century and typically set in Victorian-style brooches.

With thanks to David J. Lilly for donating the Coarse-crystalline Non-directional Opal.