CLAIMS

1. A polishing pad, comprising:

a polishing layer stack having a polishing surface, a bottom surface, and a first aperture from the polishing surface to the bottom surface, the polishing layer stack including a polishing layer having the polishing surface;

a fluid-impermeable layer spanning the first aperture and spanning the polishing pad;

a first adhesive layer of a first adhesive material in contact with and securing the bottom surface of the polishing layer stack to the fluid-impermeable layer, the first adhesive layer spanning the first aperture and the polishing pad;

a light-transmitting body positioned in the aperture, the light-transmitting body having a lower surface in contact with and secured to the first adhesive layer and spaced apart from a side-wall of the first aperture by a gap; and

a second adhesive layer positioned on a side of the fluid-impermeable layer opposite the first adhesive layer and in contact with the fluid-impermeable layer, the second adhesive layer having a second aperture therethrough aligned with the light-transmitting body;

an adhesive sealant of a different second adhesive material disposed in and laterally filling the gap.

2. The polishing pad of claim 1, wherein the light-transmitting body is softer than the polishing layer.

3. The polishing pad of claim 2, wherein the adhesive sealant has the same hardness as the light-transmitting body.

4. The polishing pad of claim 1, wherein a top surface of the light-transmitting body is recessed relative to the polishing surface.

5. The polishing pad of claim 1, wherein the gap completely laterally surrounds the light-transmitting body.

6. The polishing pad of claim 1, wherein the adhesive sealant extends to contact the first adhesive layer without extending below the light-transmitting body.

7. The polishing pad of claim 1, wherein the first adhesive material comprises a pressure sensitive adhesive and the second adhesive material comprises a cured epoxy or polyurethane.

8. The polishing pad of claim 1, wherein the polishing layer stack comprises the polishing layer and a backing layer, and wherein the polishing layer is a napped polyurethane and the backing layer is a different material than the polishing layer.

9. The polishing pad of claim 8, wherein each of the backing layer and the fluid-impermeable layer are a polyester.

10. A method of making a polishing pad, comprising:

forming an aperture through a polishing layer stack from a polishing surface to a bottom surface of the polishing layer stack to expose a first adhesive layer that is positioned on and contacts the bottom surface of the polishing layer stack and spans the aperture and the polishing pad, the polishing layer stack including a polishing layer having the polishing surface, wherein the first adhesive layer secures the bottom surface of the polishing layer stack to a fluid-impermeable layer that spans the aperture and the polishing pad;

positioning a pre-formed light-transmitting body in the aperture in the polishing layer stack such that a lower surface of the light-transmitting body contacts and adheres to the first adhesive layer;

dispensing an adhesive sealant into a gap that separates the light-transmitting body from side-walls of the aperture to laterally fill the gap;

curing the adhesive sealant; and

removing a portion of a second adhesive layer that is positioned on a side of the fluid-impermeable layer opposite the first adhesive layer and in contact with the fluid-impermeable layer, wherein the portion is aligned with the light-transmitting body.

11. The method of claim 10, wherein forming the aperture comprises peeling a portion of the polishing layer stack away from the first adhesive layer while leaving a majority of the first adhesive layer in the aperture on the fluid-impermeable layer.