

**Note 1:** Sensor chips like the CCD and CMOS imaging chips are very sensitive and are not recommended to be touched or cleaned in any way unless absolutely necessary. They can be static (ESD) sensitive and must be handled and treated with utmost care. That being said, sometimes it is necessary to remove dust and other contamination from the chip. Standard anti-ESD protocols should be observed.<sup>1</sup>

**Note 2:** Sensor surfaces can be scratched by dust. Moving the dust around on the surface (cleaning by wiping) is to be rigorously avoided. Before the availability of **First Contact™** Polymer, the sensor and camera had to be sent back to the manufacturer, where it would be cleaned by a light dusting with clean air followed by very gently using a soft cotton swab with alcohol and spot cleaning the surface. **First Contact™** avoids these issues as it simply encapsulates and peels off after drying. (Be patient. When dry it peels off easily!)

**Note 3:** Occasionally, some parts adjacent to sensor surfaces might be made of plastics that can be harmed by the solvents in **First Contact™**. Some flat black painted surfaces may be dissolved as well. Extra care should be taken to avoid getting the wet polymer solution on these surfaces as it might be difficult to remove and may remove the paint (i.e. surfaces that **First Contact™** solvents, like acetone, will dissolve<sup>2</sup>). Any and all high quality coatings on the sensor itself are fine and will not be damaged.

**Note 4:** Some cameras have plastic infrared filters over the sensor chip. These plastic filters might dissolve. The sensor will still work fine, but it will now be sensitive to IR light. Some people use **First Contact™** polymer solution to deliberately remove these plastic filters and permit the camera to see into the IR. Verify with your camera vendor whether you have a plastic IR filter before using **First Contact™**.

1. To apply the **First Contact™** solution you will want to orient the sensor so it is horizontal and level.
2. Do not bother to blow on the surface to remove the loosest and biggest particles, this will probably just lodge dust in corners and crevices next to your sensor and these particles will later fall out onto your chip. The polymer will capture and entrain these particles when it is thickly applied.
3. Holding the small container of **First Contact™** above the sensor (so that there is no chance of accidentally dripping onto adjacent paint or plastic), put a drop on the center of the sensor using the applicator brush or a pipette.
4. Place a piece of lintless floss or netting material across the drop and over to an edge so that it gets soaked and can be used as a pull tab after the material dries.
5. Apply more solution until the sensor is covered. Use the applicator brush or a small pipette or eye dropper to place some drops on the sensor and gently spread the drops with the applicator brush until the film is somewhat even. DO NOT "work" the particles back and forth, just level out the polymer.
6. Let dry for 15-25 minutes (or overnight) until the solvent smell is gone and the polymer has hardened. When the **First Contact™** has dried it is firm and strong and lifts easily. Be patient!!! Before it is completely dry the polymer is much more adherent and sticky. The dry film can stay on indefinitely.
7. When dry, gently and slowly pull the tab to remove the polymer. Do not pull fast since that might create more static<sup>3</sup> and damage the chip. You may have to quickly start the peel from the edge, then go slowly.
8. Dispose of the film.
9. If the film was too thin in places, it may tear or leave a small chunk of polymer on the surface. Simply reapply - the polymer will redissolve itself and come off next time.<sup>4</sup>

<sup>1</sup> See, for example, "Basic ESD Control Procedures and Materials," <http://www.esda.org/basics/part3.cfm>.

<sup>2</sup> Plastics like polystyrene, polycarbonate (eyeglasses and lenses) and polymethylmethacrylate (acrylic and plexiglass) can be harmed by the **First Contact™** solvents (similar to acetone). Most plastics, like nylon, polypropylene, polyethylene etc. are fine. However many extruded or cast plastic parts are made of sensitive materials.

<sup>3</sup> In situations where one is walking on carpets in dry, desert or winter conditions without humidity in the air static is more likely to be problem. Take standard industry precautions for ESD protection: The manufacturers of walking on carpets cannot be responsible for careless handling and accidental sensor damage due to ESD.

<sup>4</sup> In the event that some polymer gets under a retaining ring or some other small area, determine for yourself if the polymer is actually in the way and will affect future images before deciding to attempt removing it. If the polymer attached to a retaining ring or something is not practically affecting imaging, it may be better to leave it alone. You still have a clean sensor chip. However, it can be gently removed when dry with a soft wooden or plastic toothpick or other material that is softer than the surface being cleaned.