

## Technical Information on First Contact™

### **What is First Contact™?**

First Contact™ solution is a one-part, easy-to-use product for cleaning and protecting precision optics and surfaces. First Contact™ is specially formulated to minimize surface adhesion and yet clean surfaces safely and effectively. First Contact™ solution applies quickly and easily, dries to a tough, flexible, elastic film, which pulls easily off the surface when the special peel tab is used. This process produces an amazing optically clean surface.

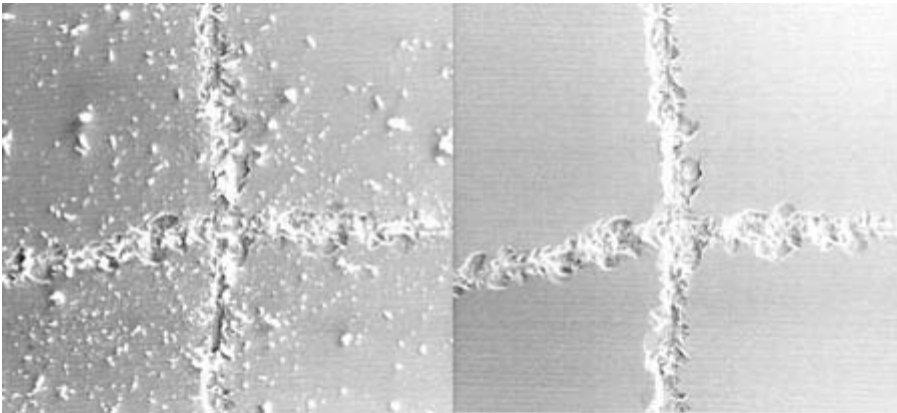
First Contact™ designer polymer is impervious to water, water vapor, sulfur, and oxygen. It is chemically inert and forms a tough, flexible film. These characteristics make First Contact™ a logical choice for protecting precision optics in storage and during shipment.

### **How does First Contact™ work?**

Years of research led to the development of this novel designer polymer/solvent system. It is a carefully tuned chemical system optimizing the desired properties of adhesion and drying to avoid thermal coating stress. First Contact™ cleans without rubbing or dragging because the user never touches anything but the First Contact™ solution and the First Contact™ film. Cleaning with First Contact™ cannot create scratched surfaces!

### **What surfaces can be cleaned with First Contact™?**

First Contact™ is a revolutionary product with the amazing ability to remove organic residues and dirt from precision optics, crystals, metals, and glass. It really cleans diffraction gratings, too!



Si wafer with diamond scribed cross. Before and after First Contact™

First Contact™ can clean any surface that is not soluble in strongly polar organic solvents such as acetone or ethanol, including all types of glass, metals, silica, Si, Ge, KRS-5, NaCl, KBr, and all polar inorganic crystals. It works on frosted glass, diffuse reflective and even many anodized surfaces! First Contact™ even cleans AR and reflective coatings, most commercial first surface

mirrors (protected and unprotected), and some plastics, for example nylon and Delrin®, that don't dissolve in polar organic solvents such as acetone. First Contact™ possesses a perfectly balanced adhesive force to hold the residues without holding onto the many expensive precision coatings in use on today's optics.

First Contact™ solution is applied to the surface one wants clean. The solution conforms to the surface shape and dries to a plastic film in intimate contact with every surface feature and contour. The dried film is removed, leaving an optically clean surface. First Contact™ cleans mirrors, lenses, and diffraction gratings, among other important optics.



That said, First Contact™ is not for use on plastics that dissolve in strongly polar organic solvents. Chief among materials one should never try to clean with First Contact™ is polycarbonate which is the most common material used in prescription eyeglasses. **DO NOT USE FIRST CONTACT™ TO CLEAN PRESCRIPTION EYEGLASSES OR OTHER PLASTIC LENSES.**

#### **What will First Contact™ clean from the surface?**

First Contact™ cleans organic residues and small particles from surfaces. It will remove human skin oils, specifically fingerprints, from any object suitable for cleaning with polar organic liquids. If you are unsure, please contact Photonic Cleaning Technologies at [sales.photoniccleaning.com](mailto:sales.photoniccleaning.com).

#### **Can First Contact™ clean water soluble residues from precision optics?**

The answer is no, First Contact™ solution works on organic contamination and small particles. It cannot remove water soluble residues by itself.

However, many water soluble residues can be removed effectively in a three-step process. Step one is to use suitable methods to dissolve the water soluble residues. Step two is to rinse away as much of the aqueous system as possible using acetone or another suitable organic liquid. Finally, use First Contact™ solution to remove the last traces of organic liquids and contaminants as well as any other particulates still on the surface.

#### **What does First Contact™ do in addition to clean surfaces?**

First Contact™ can be used to protect precision surfaces from physical and chemical damage making it an excellent choice for storage, shipping, and manufacturing protection.

First Contact™ provides physical protection from scratching and abrasion. The tough plastic film adheres firmly to the surface and protects it from physical harm.

First Contact™ provides protection from chemical attack. First Contact™ is impermeable to water, water vapor, sulfur, and oxygen.

### **What can First Contact™ NOT do?**

First Contact™ cannot repair damaged surfaces nor can it clean all plastics.

**FIRST CONTACT™ WILL DISSOLVE MOST EYEWEAR OR PLASTIC LENSES!** The solvent system contains strongly polar liquids capable of dissolving many plastics including polycarbonates and polystyrenes.

First Contact™ will not repair scratches or restore corroded surfaces. First Contact™ can remove fingerprints as long as the residue is reasonably fresh and the oils and acids have not etched the optic surface.

First Contact™ neither repairs nor creates surface imperfections. When properly applied, nothing touches the optic surface except liquid First Contact™.

### **How is First Contact™ applied?**

First Contact™ is brushed onto the surface. The best technique is to pour a small amount of First Contact™ solution onto the surface and gently spread the solution around the optic surface; this method ensures nothing but the First Contact™ solution touches the optic surface. Additional liquid may be poured onto the optic or applied directly from the brush by pouring or brushing fresh First Contact™ onto the First Contact™ that is already on the surface.

### **How much First Contact™ will I need?**

The First Contact™ solution must be applied generously enough to create a thick, dry film on the surface that will peel off without tearing. The film is a tough, flexible plastic.

**For a smooth surface – like a mirror – plan on using about 1 ml First Contact™ solution for four (4) square inches of surface area treated. (1 ml per four square inches is the same as 1 ml per 26 square cm.)** Rough surfaces and grooved surfaces need more solution than this.

### **How long does it take for First Contact™ to dry to a strong, flexible film?**

The short answer is that First Contact™ solution takes about 15 to 20 minutes to dry on a typical mirror or lens. Rough surfaces like diffraction gratings need at least 2 to 3 times longer.

The long answer is it depends on many factors including ambient temperature, amount applied per surface area, etc. The more First Contact™ solution applied, the longer the dry time; the cooler the room, the longer the dry time.

### **How is First Contact™ removed from the object?**

When First Contact™ solution has dried thoroughly, the film will peel off quickly and easily using the special peel tabs provided in the regular and deluxe kits. Simply expose the sticky side

of the peel tab, place it on the film, make sure the sticky tab and film are in intimate contact, wait about 15 seconds, and gently pull up. For best results, pull from an edge of the film towards the center.

**The First Contact™ film tore while removing, what should I do?**

First Contact™ film is a very tough, flexible material. If the film tore while being removed, the coating is probably too thin. Stop peeling, apply more First Contact™, and allow it to dry. The old, torn film and the new application will form a thicker film coating that should be easily removed without tearing. Leave the peel tab in place when applying additional solution and use it to remove the dried film.

**The First Contact™ film is sticking to the surface. What is happening?**

First Contact™ is a solution of polymer in solvents. The polymer forms a film as the solvents evaporate. Even though the film is present, the solvents may still be evaporating and the film is not as strong as it will be when it is dry.

If possible, lay the film back down on the surface and apply more First Contact™ solution to re-dissolve any polymer adhering to the surface where the wet film was lifted. Allow the solution plenty of time to dry before attempting to remove the film a second time.

**What ventilation is needed when using First Contact™?**

First Contact™ solution contains volatile solvents including acetone and ethanol. Adequate ventilation is necessary when using the product.

It may not need saying, but these solvents are also quite flammable and the product should not be used near open flame or other ignition sources.

**Is First Contact™ solution flammable?**

Yes, First Contact™ solution is flammable. Use only with adequate ventilation and protect from open flames or other ignition sources.

**Is First Contact™ solution toxic?**

Yes, the solution is toxic. It contains several organic solvents. See the instruction sheet and MSDS for more information about the product.

The solution is not a serious irritant however. If it should get the skin, it can be easily peeled off when it dries.

**Is the First Contact™ polymer film flammable?**

The dry First Contact™ polymer film is essentially inert and will not easily burn.

**Can First Contact™ be used on larger surface areas?**

Yes, First Contact™ can be used on any surface suitable for the solution composition.

On larger surfaces it is suggested to use more substantial removal techniques than the small peel tabs provided in the regular and deluxe kits. Intermediate surfaces may be peeled using bumper

sticker-size tabs that Photonic Cleaning Technologies can supply on request. Very large surfaces may require special fine mesh cloth, available from Photonic Cleaning Technologies, be applied between a double application of First Contact™ solution. The cloth becomes part of the coating without ever touching the surface and provides a strong matrix to pull and remove the dry film.

**Can First Contact™ be applied as a spray?**

First Contact™ solution can be applied as a spray. Research and experimentation shows that HVLP spray technology is compatible with First Contact™ application. Standard First Contact™ can be sprayed with this technology. Contact us for more information.

**How do I work with or remove cured First Contact™?**

It can re-dissolve in the correct polar organic solvents.

The dry First Contact™ film should remove easily using a peel tab. See ‘How is First Contact™ removed from the object?’.

If the dry film does not come off easily, try applying a new coating of First Contact™ solution. This should re-dissolve the old film. Let the application dry thoroughly and remove the dried film.