How Clean?

"Contamination control requirements for future space telescope missions are so stringent that without the performance level of First Contact Polymers we believe certain flagship missions will not be allowed to launch."

— NASA Contractor, Mission and Systems Expert

"Using First Contact without a methanol drag wipe works best to keep the optic clean and also to clean a dirty optic."

— Caltech/MIT LIGO Doc. T1000137

"Once applied to an optic surface, it is expected that [First Contact Polymer] can be left on the surface indefinitely. The material is inert, and has no known chemical reaction with either the optic or the environment. Silicon wafers coated with the material were examined with ESCA and showed no trend of degradation or residue for up to eight months. Studies were not continued beyond eight months, but it is expected to be compatible indefinitely."

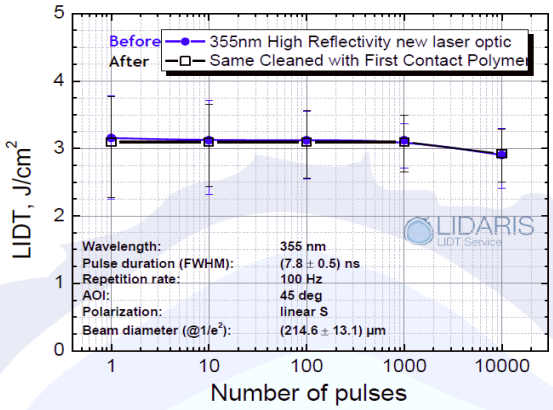
— Lockheed Materials Specification

Maintain Mirrors at Maximum Reflectivity
Extend Coating & Optic Lifetimes
Fabricate Zero Defect Coatings

Ideal for High Power Laser Optics

LIDT before & after cleaning a laser optic with First Contact.
Question: Does First Contact Polymer Leave any Residue? **No!**
Explanation: LIDT is VERY sensitive to surface contamination.

No variation below means no residue.

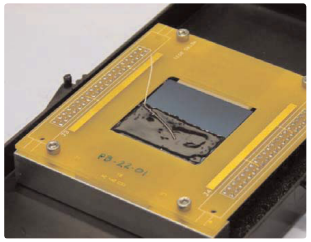


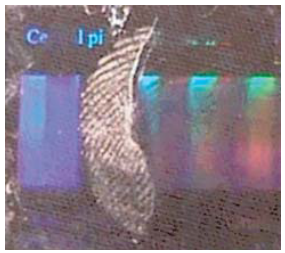
No Change in LIDT= No Residue = No Damage

LIDT = Laser Induced Damage Threshold

Safe! Dries in minutes with no residue. No outgassing. Space & UHV ready.

Static sensitive CCD being cleaned with First Contact





First Contact works beautifully on fused-silica phase masks, diffractive optics, gratings, nano structures, and microfluidic structures.

Sales in 72 countries around the world! Find a distributor near you.

PHOTONIC CLEANING TECHNOLOGIES, LLC

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Platteville, WI 53818 USA
Tel: +1 608 467 5396
www.PhotonicCleaning.com

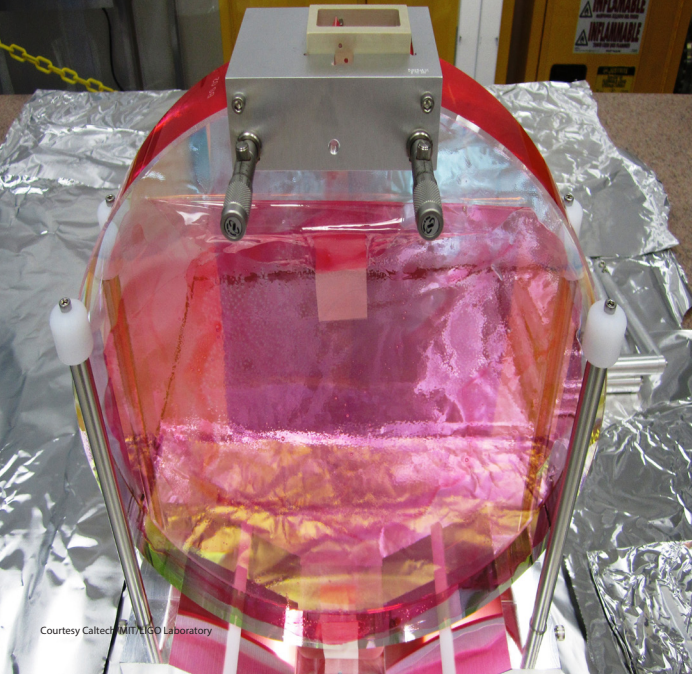
Send inquiries and PO's to sales@PhotonicCleaning.com

THE Cleaning & Protection System

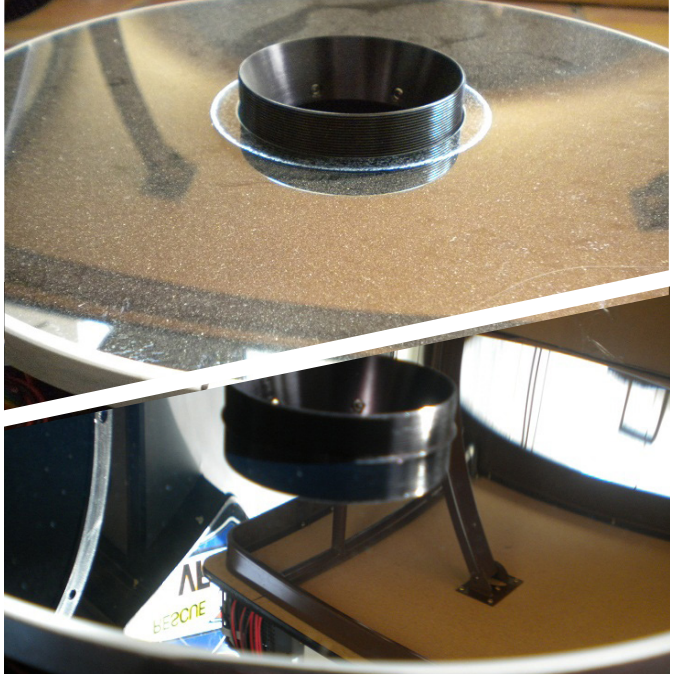
First Contact Polymer® liquid dries, peels and safely cleans telescope and high power laser optics as well as vacuum and aerospace surfaces. No Residue.

First Contact® Polymer

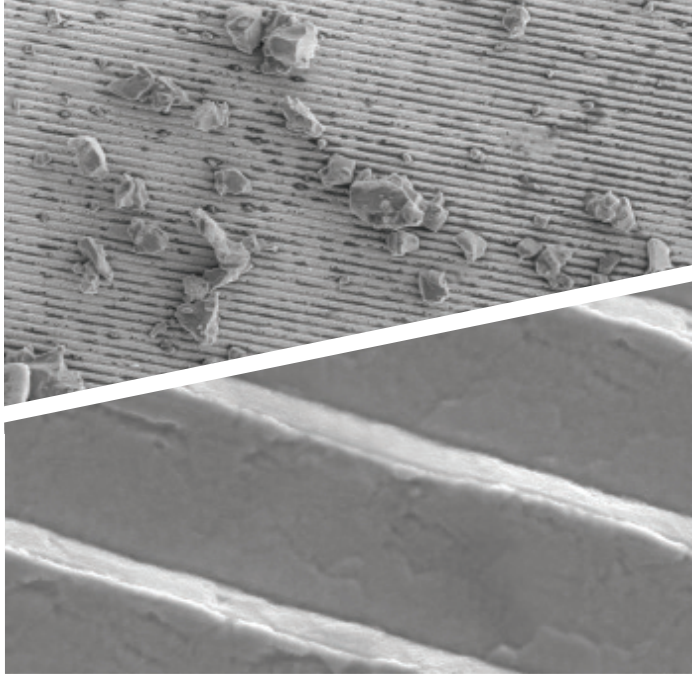
DELUXE ALL-INCLUSIVE KIT: *Applicator bottle & four refill bottles, thinner, fan brush, pipettes, peel tabs, inert mesh and string to embed and lift film.*



LIGO Power Recycling Optic - Caltech/MIT



12" RCOS Primary Mirror - Courtesy of James Olson, AZ



SEM images of a 300nm Al diffraction grating
Before & after (zoomed) cleaning

Cleanroom Clean without the Cleanroom

First Contact® is a safe, one-part, easy to use strip coating. It cleans and protects precision surfaces in use, during assembly, in shipping and in storage. Leaving zero residue, **First Contact** goes on as a liquid, dries to a flexible, resilient film and peels off with low adhesion and no tearing. It's fast, environmentally friendly, and easy to use.

Why FIRST CONTACT?

- **First Contact Polymer Solutions** consist of a blend of inert polymers in a blend of safe solvents with residueless additives, all carefully tuned so that the dried polymer peels with a fraction of the adhesion of scotch tape and minimizes thermal shock and stress to coatings. Safe. Tested. Atomically clean afterward.
- **First Contact** protects the precision surface when the film is left on. It prevents scratching and becomes a barrier to water, oxidation and sulfur compounds. Protect your optics during installation or transportation. When ready to use - peel!
- **First Contact Polymer Solutions** are made with our designer polymers and proprietary trace additives that are formulated and tuned for optimum performance on different surfaces. We also have an ESD free version. Just choose the one that is best for your application.
- **First Contact** works beautifully on frosted, nanostructured and anodized surfaces, microfluidic structures, fused silica phase masks and diffractive optics.

Restore Mirrors to Factory Condition

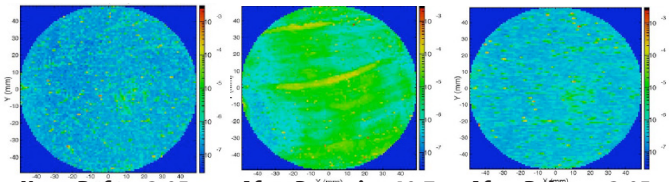
XPS	C 1s%	0 1s%	Si 2p %
After	17.8	57.4	20.6
Before	48.1	33.3	16.0

Chamber compatible. Vacuum Ready.

The table above shows XPS/ESCA data taken on a clean glass substrate before and after cleaning with Red First Contact Polymer. The amount of carbon contamination decreases substantially after polymer removal, exposing the Si and O underneath. The surface is truly vacuum ready. Typically, 4 monolayers of previously existing carbon contamination are removed. Water and solvents are also removed - much less solvent remains on surface than when just washed.
Pump down faster!

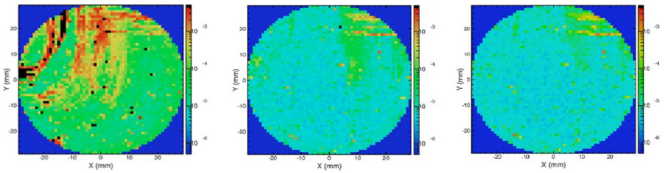
Clean the Uncleanable – Easily

Bidirectional Reflectance Distribution Function- LIGO/Caltech/MIT



New. Before 2.05 Average ppm scatter. **After Dragwipe 10.7 Better than dragwiping.** **After Polymer 2.05 No scratching.**

"Not only did cleaning with First Contact leave no residue, it also removed nearly all the residue left by the methanol."
-LIGO Report T1000137-v3



1. Dirty 2. Clean 3. Cleaner **1. Peel 2. Repeat 3. No Residue**

"A highlight of the BRDF tests shows that repeated applications...only improves optical surfaces." -LIGO Laboratory
-Proceedings of SPIE, 885, 88852E, doi:/10.117/12.2047327