Pyrosil and Silicate Flame Pretreatment
For Eco Friendly UV Ink Decorating

“Better Decorating Through Science”
Pyrosil and Silicate Flame Pretreatment
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Pyrosil and Silicate Flame Pretreatment
SGCD Deco ‘15

10 minutes
The science of Pyrosil flame pre-treatment

10 minutes
The equipment and automation required

5 minutes
The competitive advantage and eco friendly impact

5 minutes
Questions
What is PYROSIL®?

Pyrosil® is a proprietary flame technology made popular in Germany, which has a 30+ year track record of success in pre-treating and adhesion promotion for many substrates.

Pyrosil® is much more than standard flame treatment – because flame treatment can not solve glass adhesion issues related to cold end coatings, contamination, mold release coatings and viscosity reducing sprays for reducing glass abrasions during manufacturing.

Pyrosil® chemically changes surface structures and actually increases adhesion.

Propane Flame

Pyrosil® Flame
How Does PYROSIL® Work?

By injecting air or an inert gas into a proprietary silane chemistry known as Pyrosil, it is evaporated and molecules attach the carrier gas to form a vapor that is injected into the ratio controlled air and gas (propane or natural gas) stream going to a flame burner. – SiOx (Silicon Dioxide) is deposited in a uniform layer onto the glass substrate. SiOx changes the surface and creates a chemically active high surface tension for improved hydrophilicity (wettability) – The results are improved adhesion, durability and scratch resistance of UV Inks.

Pyrosil flame treatment deposits a reactive layer of SiOx for increased bonding of UV inks.
What does a PYROSIL® layer look like?

By adjusting the Pyrosil® layer – we can optimize the benefits.
Advantages of using PYROSIL® with UV inks:

- Creates a pristine printing surface
- Promotes adhesion
- Increases durability (dishwasher, scrubbing)
- Improves scratch resistance

Recommended by Marabu, Ruco, Sun Chemical, and many others

“Many glass containers are cold end coated (CEC) in order to improve the scratch resistance and obtain a transport protection. Therefore, to achieve good ink adhesion onto glass, a flame Pyrosil pre-treatment of the glass surface is necessary.”

source: www.rucousa.com
The Science of PYROSIL®:

Si-containing precursor

Primary particles

Particle agglomeration

Formation of the SiO$_x$-layer
Pyrosil® has undergone tens of thousands of adhesion tests, scoring tests, scratch tests and abrasion tests by Sun Chemical, ink manufactures, independent testing laboratories, and customers.

Untreated substrate
48 hour salt spray test

Pyrosil Treated
1000 hour salt spray test
There is no need for a lehr when printing with UV inks. As we know ceramic inks are melted into the glass, whereas UV inks bond to the surface of the glass.

Most printing equipment today can print with UV inks, the only equipment required is the Pyrosil flame pretreatment unit and UV curing equipment.
Pyrosil Flame Pre-treater

[Diagram of Pyrosil Flame Pre-treater]

- Pyros Cabinet
- Plumbing Cabinet
- HMI Box
- Electrical Box
- Blowers

[Image of Pyrosil Flame Pre-treater machine]
Key Components

- Touchscreen HMI
- Dust & Heat Exhaust Fans
- Pyrosil Flame Burners
- Flame Pre-Burners
- Conveyor and Feed Wheels
- Oscillating Servo Burners
Why print with UV Inks instead of ceramic inks?

Ceramic inks can contain:
- Lead
- Cadmium
- Zinc
- Tin

Ceramic inks can potentially present a health and environmental hazard:
- Government and environmental regulations
- Prop 65
- FDA Compliance
- Filing TRI reports with the EPA
- Your customer’s growing education and awareness

Energy cost and consumption of Lehr
(Approximately 100 ft long and 1,100°F!)

The competitive advantage and eco friendly impact
Who is driving demand for printing with UV Inks?

Craft Brewers
- Environmentally conscious and responsible
- Want custom details and colors
- Rapidly expanding sales

Wineries
- Environmentally conscious and responsible
- Many are in highly regulated areas
- Extreme growth projected

The competitive advantage and eco friendly impact
Wineries

A Nation of Wineries

Wine regions have been developing across the country, as diverse landscapes and weather patterns allow states to grow a variety of grapes.

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