1-800-262-8761
coburntechnologies.com

COBURN TECHNOLOGIES

CrystalChrome®

Photochromic Spin Coating System

- PRODUCE PHOTOCHROMIC LENSES ON DEMAND
- LEADING PHOTOCHROMIC PERFORMANCE
- SPACE SAVING DESIGN
- SMALL UPFRONT INVESTMENT
- COMPATIBLE WITH ANTI-REFLECTIVE AND METALIZING TREATMENTS
- PHOTOCHROMIC COATINGS SUITE FROM SDC TECHNOLOGIES

The Process

CrystalChrome® is designed for applying photochromic coatings to ophthalmic lenses. It is equipped with a Programmable Logic Control (PLC) and a user-friendly touch screen interface. The machine maintains infrared air cleanliness with a Hepa filter system, utilizes 8 independent spin motors, and a 2-axis motion system for coating lenses. These motors are mounted on a rotating carousel, each with a suction cup to hold and spin ophthalmic lenses at precise speeds. This system consists of two layers: CrystalChrome GY or BN for photochromic functionality and CrystalChrome HC for scratch resistance.

PreClean* by Operator

CrystalChrome®

1. **Load** Station
2. **Wash & Dry** Station
3. **PhotoCoat** Station
4. **IR Cure** Station #1
5. **Hard Coat** Station
6. **IR Cure** Station #2
7. **IR Cure** Station #3
8. **Unload** Station

Stage Lenses

Keep lenses in completely dry environment.
Maintain lens temperature of 80° C.

Oven Thermal Cure

Temperature: 110° C | Duration: 4 hours

OR

Reflow Oven Cure

Temperature: 125° C | Duration: 45 minutes

AR Coat

All photochromic lenses must be AR coated.

**PreClean may involve etching of front side surface in ultrasonic tank with caustic solution*

DIMENSIONS
83.2cm (32.75") Width
100cm (39.4") Depth
191.8cm (75.5") Height

WEIGHT
230kg (507lb)

POWER
240VAC, 50/60Hz,
20A single phase

AIR
80psi (5.5bar) (551kPa)

WATER
Deionized (2 mega ohm or better) or distilled water

WATER CONSUMPTION
30-50g per lens (depending on wash water settings)

Critical to Success

- Maintaining % solids in all coatings
- Immediate placement in staging environment after unloading from CrystalChrome
- Proper pre-cleaning of lenses
- Storage temperature of coatings

CrystalChrome®
Photochromic Coatings Suite

Available in Grey & Brown Colors

PERFORMANCE FEATURES

- Fast darkening and fading speeds
- Exceptional optical clarity
- Excellent product durability and stability
- Fast drying thermal cure
- Superior abrasion and chemical resistance

RECOMMENDED OPERATING GUIDELINES

PROPERTY	TYPICAL VALUES	
Coating	CrystalChrome® GY CCSGY-045 CrystalChrome® BN CCSBN-045	CrystalChrome® HC CrystalChromeHC-1
Environmental Conditions*	20 - 25°C, 30 - 55 % R.H.	20 - 25 °C, 25 - 40% RH
Application Spin Speed	3 s @ 400 - 500 rpm	3 s @ 300 - 500 rpm
Spin-off speed 1	50 s @ 400 - 500 rpm	50 s @ 400 - 700 rpm
Spin-off speed 2	3 s @ 1200 - 1500 rpm	3 s @ 1200 - 1500 rpm
Pre-cure (lens temperature)	60 s @ 60 - 80°C	120 s @ 60 - 80° C
Thermal cure	4 hrs @ 110°C	4 h 110° C
Yield	~0.36 g per pair 1,250 to 1,500 pairs	~0.5 g per pair ~1800 – 2000 pairs

**Refers to environment outside of the CrystalChrome machine*

CrystalChrome® GY

CCSGY-045

CrystalChrome® BN

CCSBN-045

SOLUTION PROPERTIES

PROPERTY	TYPICAL VALUES
Solids	26 - 28%
Viscosity @ 25°C	<45 cP
Solvent Mix: SM312-041	

COATING PROPERTIES

PROPERTY	TYPICAL VALUES
Coating Thickness	5.0 - 5.5 µm
Refractive Index	1.50
Adhesion *(with CrystalChrome® HC)*	100 %

CrystalChrome® HC

CrystalChromeHC-1

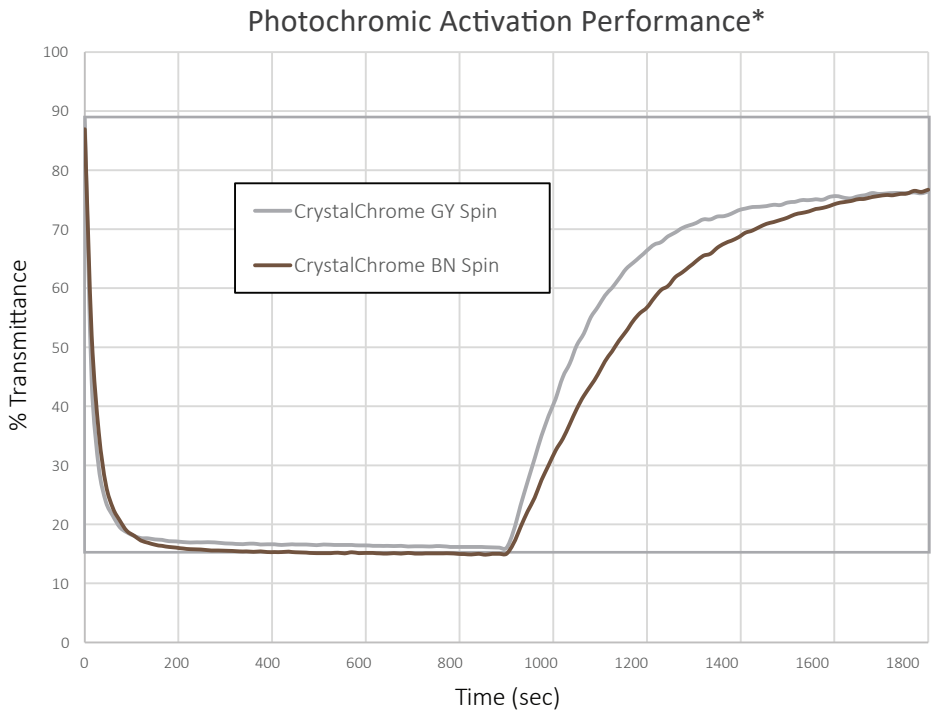
SOLUTION PROPERTIES

PROPERTY	TYPICAL VALUES
Solids	23 - 25 %
Viscosity @ 25°C	≤ 8.0 cP
Solvent Mix: SM835-041	

COATING PROPERTIES

PROPERTY	TYPICAL VALUES
Coating Thickness	2.5 - 3.5 µm
Refractive Index	1.49
Adhesion	100 %
Bayer Ratio	3.0 - 3.5

Activation



**Data collected on a SDC CrystalChrome® M photochromism measurement Instrument. Results may vary based on collection method.*

Frequently Asked Questions

Do I need to A/R coat the photochromic lenses?

Yes. All photochromic coated lenses must be A/R coated after the reflow oven curing step.

How do I switch coatings from Brown to Grey or Grey to Brown?

CrystalChrome BN (Brown) and CrystalChrome GY (Grey) should have separate tanks. To switch colors, simply switch the tank and follow the start up process. Upon switching colors, replace CrystalChrome HC hard coating as well. Hard coating should not be shared between the different photochromic coatings.

Are the coatings solvent based and are they considered hazardous goods for shipment purposes?

Yes, these coatings are solvent based and should be stored in accordance with local and federal guidelines, which may include storage in explosion proof, corrosive proof, temperature controlled environments.

How should I store these coatings?

CrystalChrome coatings must be stored in an explosion proof, corrosion proof, temperature controlled environment. The recommended storage temperature for CrystalChrome BN and CrystalChrome GY is 20- 25 °C (68- 77 °F). When stored at this temperature in the original closed container, it is recommended to begin use of the coating within 6 months of the date received.

Is there a shelf life for CrystalChrome coatings?

Yes. The shelf life of CrystalChrome BN, CrystalChrome GY, and CrystalChrome HC is 6 months.

Contact

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CrystalChrome coatings should be handled as hazardous materials. Products that are flammable should be handled using methods that are appropriate for flammable materials and should only be used in an environment that is properly classified for flammable material use.

CrystalChrome coatings should also be disposed of according to governing regulations for the disposal of hazardous wastes. A waste disposal expert should be consulted for specific waste disposal alternatives, which will vary from country to country.

Refer to each individual CrystalChrome technical data sheet for requirements on equipment preparation, solution management, health and safety, warranty and liability, and shipping.