



Boro News Newsletter

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Questions?

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Dichro transmits various colors

NEWS FROM NORTHSTAR

Northstar is proud to be a sponsor of educational videos. These include:

Essential Lampworking with Corbin Freeman – This well crafted 150 minute video covers a variety of techniques in step by step demonstrations. The clear photography, careful narration, and inserted diagrams make this an easy to follow instructional video for those with a basic knowledge of lampworking. The wealth of knowledge stored on this video will have you coming back again and again.

An Introduction to Using Borocolour® by **Milon Townsend** – The first in a six part series on using borosilicate glass, this video introduces the Northstar palette. All the colors

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Color and Dichro!

Introduction

An increasingly popular material utilized in borosilicate glass art is dichroic glass. Dichroic coatings come in many colors and are available on many types of flat glass, clear rods, and on Northstar color rod. In this newsletter we will discuss the basics of working with dichroic glass and how colored borosilicate and dichroic compliment each other.

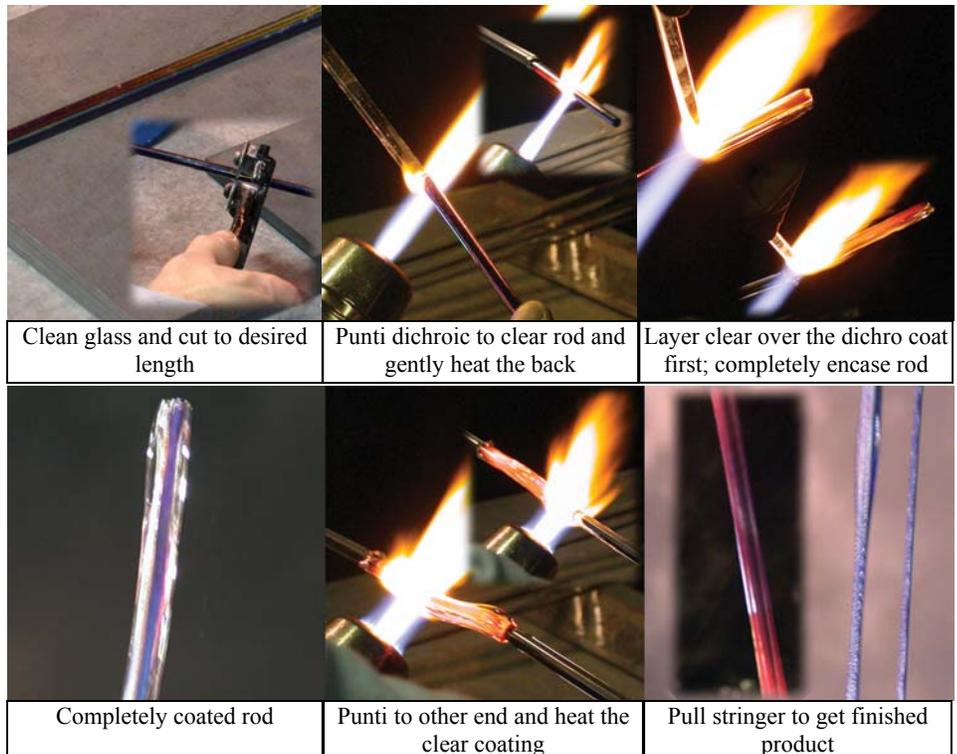
Technical Information

What is dichroic glass anyway? The term ‘dichroic’ refers to this substance’s unique property of transmitting one or more colors. This effect occurs naturally, as with certain insect wings, opals, and hummingbird feathers. Dichroic glass was first created for use in the NASA Space Program as a heat shield. Dichroic glass itself is any glass that has been coated with microscopically thin layers (about 700 angstroms thick) of metallic oxides such as silicon, titanium, and magnesium. The coating process takes place in a vacuum-sealed chamber using technology called “thin film physics”. An electric beam vaporizes metallic oxides and the glass target is evenly coated with many thin layers of the vaporized metals.

Working Dichroic

Dichroic coated glass is available in numerous different forms. There is dichroic sheet glass, dichroic coated clear rod, and colored rod with a dichroic coating. When working dichroic coated glass the dichroic coating must be completely covered over in a layer of glass to shield the thin coating from the flame. When working dichroic sheet glass, to prevent the coating from being damaged by the flame, stripes of clear glass layered over the surface can be used as a shield. For rods that have a dichroic coating, the dichroic can be shielded by simply layering a line of clear over the dichroic coating (**Method 1**) or collapsing a thin wall tube around the rod (**Method 2**, back page). When the dichroic coating is overheated or directly touched by the torch flame, the coating turns gray. To keep the thin dichroic coating intact, vigilance must be constant.

M E T H O D 1



Before working in the flame, the dichroic glass must be cleansed of any dirt or oil deposited from handling. Use a paper towel and some rubbing alcohol to clean the surface. If there are any deposits of foreign material on the dichroic coating it could cause discoloration or the dichroic to burn out.

When selecting a flame for working with dichroic, use a super-cool oxidizing flame and focus the heat on the back side of the glass so as not to directly heat the dichroic coating (never allow the flame to directly hit the dichroic as it will burn off the coating). Preheating the dichroic allows the coating to fully fuse to the glass before it is worked. After the dichroic is cased in clear the flame can pass over the encased dichroic, but be careful not to overheat.

Why Colored Rod with Dichroic

Pre-coating a colored rod with a dichroic coating allows the artist save time. Rather than spending time coating a piece of dichroic sheet glass with stripe after stripe of NS-20 Dark Cobalt and pulling it into a stringer or ribbon, Northstar offers NS-20 Dark Cobalt with a variety of different colored dichroic coatings including Dark Cyan/Red, Magenta/Green, and Rainbow. All the artist has to do is run a bead of clear over the dichroic coating and the rod is ready to use. Not only does this reduce prep time, but also renders the dichro in a convenient form for pulling stringers. This form of dichro is not suitable for all applications but comes in handy for many!

Color plays an important role in enhancing dichroic coatings on clear sheet glass as well. By layering a light transparent over the dichro or laying a dark backing beneath the dichroic coating many new effects can be yielded. Each individual color changes light's interaction with the dichroic coating. A particularly pleasing color that goes well when layered over dichro is NS-42 Cinnamon. In addition, any of the light transparent colors such as NS-66 Sublime are well suited for this application. As for opaque backings, try NS-20 Dark Cobalt, NS-45 Blue Moon, NS-44 Caramel, or any of the intense opaque colors such as NS-63 Canary.

Closing

We hope that this brief lesson has given you some ideas of what to do with dichroic glass and revealed the advantages of pre-coated color rod! Much of the great art is produced with these two technologies melded together. Stay tuned for new colors, information, and inspiration! Thanks for reading!

Jesse

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are divided into families then each family's working properties are discussed. This is a great introductory video for anyone, beginner and professional alike, with a 12 page companion booklet included for easy reference.

Both of these videos are currently available from Northstar Glass. More videos from both Corbin Freeman and Milon Townsend will be available later in the year, so stay tuned!

OLD COLORS, NEW PROPERTIES – In this newsletter, R. Jason Howard explores the outer limits of working the reformulated NS-53 Forest Green. To date, a number of colors have been reformulated. Here is a break down:

NS-01 Cobalt: Northstar's standard cobalt has undergone a very subtle re-formulation. It is the same color but slightly smoother and creamier from a workability standpoint. This particularly can be a benefit when using it to back dichroic as well as other applications where a softer flame is desired.

NS-43 Rust: The color of the raw rod is very similar to the original (may be slightly lighter), but the end result now depends more on the desires of the artist. In the past NS-43 Rust had a very slight (if any) ability to be struck. Now it can be struck to several shades darker giving more flexibility and options regarding the finished piece. With direct exposure to a flame, striking is fairly straight forward. The more complex applications will most likely require kiln striking. In addition, you should notice an improvement in the consistency and workability of this color.

NS-54 Star White: Though it still looks and feels the same, many of the boiling issues have been solved.

NS-57 Midnight: The color is very similar to the original but slightly more opaque especially when pulled thin. The consistency is better and it is smooth and creamy from a workability standpoint. During the re-formulation process, a lighter version was developed giving a nice transition color from NS-55 Periwinkle to NS-57 Midnight. NS-80 Hyacinth, a blue based purple, is now a member of the Northstar color pallet.

NS-58 Mint: The color is virtually identical to the old Mint but slightly more opaque. The workability has been improved and the boiliness has been reduced. What bubbles there are easily work out in most applications, similar to the re-formulated NS-54 Star White. In addition, the re-formulated Mint holds its intensity better than before when stretched thin.

NS-61 Blackberry: In the case of the NS-61 Blackberry, the color is a great faux black when thickly applied, fading out to a dark reddish color when applied thin or in stringers.

ON DECK –NS-64 Lava and NS-65 Cherry are in testing mode for reformulation with NS-11 Jade under preliminary adjustments. More information will be released as colors are successfully reformulated.

NEW COLORS – Yes, we do have two new colors. See the insert for info on NS-79 Blue Spruce. NS-80 Hyacinth is a creamy, easy to use blue/purple color that retains its color in all applications. So far, testing has met with excellent results. The color is available now and full working properties will be released soon. Keep an eye on our website for a peek at the color.

Northstar presents the first of the Featured Artist series. Over the course of the year, we will have a number of artists make pieces with a new or improved color and write up an explanation to go with it. This is meant to not only give you another voice in the flameworking world to hear, but a chance to see great artists at work. We hope this inspires you to new heights, as it inspires us to work with all of you to maintain our color quality and come up with new colors to add to your palette. *Enjoy!*

FEATURED ARTIST: ©R. Jason Howard
FEATURED COLOR: Reformulated NS-53 Forest Green

Greetings fellow glass blowers! I'm privileged to present the first "guest artist" piece in a newsletter showcasing a new or featured color. I created this piece (*pictured on back page*) to test the outer limits of compatibility of the new reformulated NS-53 Forest Green by exposing it to the harshest conditions I could think of: "inside out" frit work on a large complex form with multiple appendages and thicknesses. While chrome based colors are notoriously difficult to keep from cracking, especially in over-worked inside out applications, I have found *zero* problems with this updated green. This color is very easy to use and is extremely dense. It holds its color quite well in very fine stringer and latticino applications and stays opaque when blown thin. When first heated, the color tends to bubble a bit and should be worked in a hot flame for best results. As you reach the working temperature the bubbles fully work themselves free and the glass attains a very buttery soft and creamy texture. Once up to temperature, NS-53 Forest Green retains its heat well and is quite nice for solid sculpture and general manipulation. Any type of flame can be used, and neither time in the flame, over annealing, nor reduction, affects the chrome's compatibility. In fact, reduction adds an appealing bluish hue on the color's surface if left uncovered.

While working on this piece, I exposed it to a broad range of stresses and had to reinvent some of the ways in which I personally work, which put the glass through some pretty abusive situations. Since the mantis is quite large (approximately 24" long) it was very difficult to hold on to. I did a large portion of the assembly work on the floor with a hand torch, flame annealing seals as I went, and kiln heating later in between steps. While the process exposed the glass to many crack inducing harsh temperature changes, I was impressed with its general tolerance to abuse.

During some preliminary tests, I did find that it was important to make sure the frit was melted in thoroughly, and that large, cold, un-annealed parts could not be placed directly into a hot annealer (small parts like the legs were fine however). To reheat the whole piece after it had rapidly cooled, I would simply shut the annealer off as the piece came out, and turn it back on as the cold piece went in.

To make the bulk of this piece, I used approximately one pound of small sized NS-53 Forest Green frit placed inside 25mm heavy wall tube. Fifty millimeter heavy wall tubing was used for the body and large solid rod for the wings. On the wings, unencased NS-68 Parrot Green was used for the veins and small sized NS-11 Jade frit was utilized for the light green background. The imitation gold leaf eyes are simply encased dichroic glass backed by NS-64 Lava and NS-65 Cherry frits to simulate traditional gilding techniques. The antennae consist of an unencased twisted cane of NS-53 Forest Green, NS-65 Cherry, and NS-68 Parrot Green. Finally, the spikes on the forelegs are NS-13 Amber Purple struck at 1150 degrees Fahrenheit.

Jason

rjasonhoward.com

Turn the page for the amazing photographs of the NS-53 Forest Green Praying Mantis

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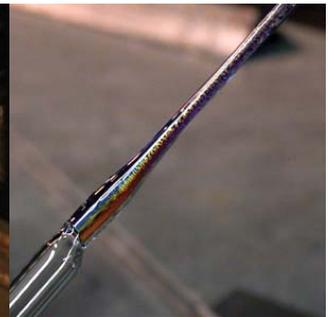
2



Seal one end of the tube and drop the dichroic in



Puncture to sealed end of tube



Fuse tube around rod starting at sealed end

Pull into stringer



“While working on this piece, I exposed it to a broad range of stresses and had to reinvent some of the ways in which I personally work, which put the glass through some pretty abusive situations.”

R. Jason Howard

Introducing NS-79 Blue Spruce

The team at Northstar has been at it again and has cooked up a wonderful new color NS-79 Blue Spruce! This color is a rich blue green that is well suited for blown applications, inside out, and sculpture! It is creamy soft in the flame and can be worked hot and thin. This intense color also has a unique property unlike any of the existing opaque colors in the Northstar family. When NS-79 Blue Spruce is subjected to a reducing environment, faint lines of silvery blue gray appear on the surface, yielding a deep smoky aqua color. These striations are accentuated when it is combed (raked) through. This effect can also be amplified with a layer of clear, yielding an aventurine like shimmer similar to liquid soap. If you desire to keep the original color of the NS-79 Blue Spruce rod, just work in a neutral to slightly oxidizing flame to prevent the multi-colored striations from appearing. Be sure to try NS-79 Blue Spruce with a coating of your favorite Amber/Purple. It is a sure eye catcher! On behalf of the staff at Northstar and the developers of this color, we hope you enjoy!

