Wasser fusing guidelines

Color, Simplicity & Success

WASSER TO WASSER FUSING GUIDELINES

For fusing pieces that are 2 glass layers

Action	Ramp Time	Set Point	Soak Time
Heating (from Room temp)	400°F/Hr	1340°F (726°C)	30 minutes (or desired effect)
Flash Venting	N/A	1050°F (565°C)	N/A
Annealing Soak	N/A	968°F (504°C)	30 minutes
Cooling-Phase 1	10°F/min	780°F (426°C)	30 minutes
Cooling-Phase 2	15°F/min	550°F (371°C)	30 minutes
Cooling-Phase 3 (to room temp)	20°F/min	to room temp	N/A

WASSER SLUMPING GUIDELINES

For slumping a piece that is 2 glass layers thick

Action	Ramp Time	Set Point	Soak Time
Heating (from Room temp)	400°F/Hr	1180°F (637.8°C)	30 minutes (or desired effect)
Flash Venting	N/A	1050°F (565°C)	N/A
Annealing Soak	N/A	968°F (504°C)	30 minutes
Cooling-Phase 1	10°F/min	780°F (426°C)	30 minutes
Cooling-Phase 2	15°F/min	550°F (371°C)	30 minutes
Cooling-Phase 3 (to room temp)	20°F/min	to room temp	N/A

WASSER DRAPPING GUIDELINES

For draping a piece that is 2 glass layers thick

Action	Ramp Time	Set Point	Soak Time
Heating (from Room temp)	400°F/Hr	1180°F (637°C)	30 minutes (or desired effect)
Flash Venting	N/A	1050°F (565°C)	N/A
Annealing Soak	N/A	968°F (504°C)	30 minutes
Cooling-Phase 1	10°F/min	780°F (426°C)	30 minutes
Cooling-Phase 2	15°F/min	550°F (371°C)	30 minutes
Cooling-Phase 3 (to room temp)	20°F/min	to room temp	N/A

WASSER FUSIBLES FUSING GUIDELINES

- Firing Temperatures (~+ 50F and are dependent upon glass color and thickness)
- Softening Point 1240°F(677°C)
- Tack Fuse 1285°F(696°C) Orton standard large cone 18 (r/r 108°F)
- Full Fuse 1340°F(727°C) Orton standard large cone 17 (r/r 108°F)

• Annealing Temperature	940°F(482°C)	780°F (426°C)	30 minutes
• Shrinkage Initiation Point	1360°F(738°C)	550°F (371°C)	30 minutes
• Bailling Formation Starts	1450°F(788°C)	to room temp	N/A
• Glass Lost/Shelf Intusion	1550°F(843°C)		

Make detailed notes on every project. Recording glass types, thickness and equipment used will help to repeat good results. Use the above guidelines as a reference only.

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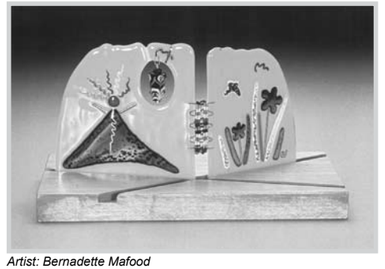

Artist: Bernadette Mafood

Artist: Linda Duff Hughes

Artist: Marty Roberson

Wasser™ Glass is truly a remarkable and vibrant Artist Glass. It's rich opaque and semi-translucent colors allow the artist to use it in hot glass, as well as foil and lead applications. Thin and lightweight, it is easy to cut and shape with little or no shards. Wasser™ Glass has a 90 COE rating and low temperature-fusing capabilities, making Wasser an ideal glass for beginners and experts alike.

WASSER

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WASSER

INSTRUCTIONAL GUIDE

D I A M O N D T E C H

fusing Wasser

Color, Simplicity And Success

Fusing With Wasser Glass - Glass Phases

A. **HEATING PHASE**

The time it takes to increase Wasser glass from room temperature to an ideal fusing temperature of between 1200° to 1340°F is called the Heating Phase. Because Wasser tacks and fuses at temperatures lower than other 90 COE glass, it is advisable to tack and fuse at a slower rate. You should increase heat at a rate of 400°F per hour. To achieve this rate, set the kiln on low, open kiln "peepholes" or raise the lid (flash vent) to keep the temperature at a constant.

Wasser Glass is a very soft fusible glass; therefore, it may be necessary to turn the kiln on and off at the beginning of the Heating Phase to slow down the heating process. Keep in mind when fusing additional layers of glass, an even slower Heating Phase is necessary to allow heat penetration through each layer of glass.

1. **TACK FUSING:** Tack Fusing Wasser™ Glass gives a multi-dimensional and reflective appearance. To achieve a Tack Fuse place the glass on the kiln shelf and increase kiln temperature, as described in the Heating Phase, until it reaches 1150°F, then slow down the heating process. Wasser begins to soften at 1240°F . Please note that kilns are not all alike. Variances between kilns, especially the mini kilns, can be the result of the pyrometers being slightly off by 10°-20°F and sometimes household currents will vary causing slight temperature differences. Remember to check the piece frequently while fusing and record changes as needed. Heating at a slower rate will give you more control over the end result. Once you have achieved the desired look, proceed to the Cooling Phase.

2. **FULL FUSING:** Wasser™ at full fuse will result in the glass combining to create a uniform thickness throughout. Please note, glass likes to be ¼" thick. When heating glass to full fuse, anything less than 1/4" will shrink, anything with more than 1/4" will spread out. (This glass characteristic is extremely important when fusing Wasser™ Glass, due to it's uniquely thin quality).

Layering glass fusing slowly, and not going to a full fuse, can reduce shrinkage. When full fusing several pieces of glass, place your base glass on a prepared kiln shelf or shelf paper. Using a tiny drop of adhesive, such as white glue, secure your glass pieces in place on top of the base glass and add layers, one at a time. Allow to dry thoroughly.

Wasser to Wasser Full Fuse

Slowly bring Wasser™ to 1280°F, periodically checking the glass. Slowly raise the temperature to 1340° F. You may achieve the desired result before you reach 1340° F, therefore it is important to check and record changes in schedules as needed. Turn off kiln and proceed to the Cooling Phase.

Wasser to Bullseye, Uroburos and Spectrum Full Fuse

When using Wasser between two layers of Bullseye, Uroburos or Spectrum 90 COE, start by bringing the kiln temperature to 1340°F (Wasser Full Fuse). At this stage, turn the kiln to high and fuse at the recommended temperature for the top and base glass. Maintain a "soak" at this temperature for 30 minutes depending on the size of your piece. Smaller pieces will "soak" for less time. Proceed to the Cooling Phase.

B. **COOLING PHASE**

When the desired look has been achieved, turn the kiln off. To stop the fusing process "flash vent" by opening and closing the kiln lid for about 8-10 seconds. Repeat until the kiln temperature drops to 1050°F. Replace the lid and turn kiln on low for 30 minutes. This will keep the kiln approximately 968°F allowing for a minimal annealing cycle. Continue to cool at the following rates:

10°F/min. to 780°F for 30 min.

15°F/min. to 550°F for 30 min.

20°F/min. to room temperature.

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fusing Wasser

Bubble Control

Wasser has a smooth, thin surface which can trap air, resulting in bubbles in your glass. Decreasing the viscosity between the glass layers will reduce the amount of air bubbles. To decrease viscosity, follow prescribed Heating Phase instructions. This process will force air trapped between the layers out, preventing bubbles.

Another way to minimize air bubbles is to reduce surface area. This can be achieved by cutting the base glass into sections, then layering the glass design in such a way that the design covers the cuts. Build the glass design on a piece of thin shelf paper, this will allow air to escape through the cuts more easily.

Wasser Glossary and Definitions:

Annealing: The process of slowly cooling glass between its softening point and its straining point. Each type of glass has its own unique annealing temperature and time.

C.O.E. (Coefficient Of Expansion): The measured expansion of heated glass based on the percentage of change in a glass rod heated one degree centigrade. This technical term is used by glass manufacturers to rate their regularly tested glass. Fusers typically use glass that is 90 COE or 96 COE

Compatibility: The absence of stress when two or more pieces of glass are fused together. Glasses that expand and contract at the same rate are said to be compatible and have the same COE.

Firing Schedule: The program for heating and cooling glass.

Fiber Paper: A paper composed of pressed ceramic fibers that can be used as an alternative to kiln wash.

Soak Time: Holding glass at a predetermined temperature for a specific amount of time.

Wasser Glass Product Line Information

Product #	Style	Color
MP114	Mottle	Weathered
MP115	Mottle	Fusion
MP116	Mottle	Sunrise
MP117	Mottle	Blue Haze
MP118	Mottle	Bubbles
S125	Solid	Dark Navy
S197	Solid	Gray
S198-F	Flash	Black - White Base
S198	Solid	Black
S199	Solid	White
S202	Solid	Light Yellow
S203	Solid	Yellow
S303-F	Flash	Orange-White Base
S402-F	Flash	Red-White Base
S501	Solid	Brown
S502	Solid	Terra Cotta
S601	Solid	Light Mauve
S603	Solid	Mauve
S701	Solid	Mint
S702	Solid	Shamrock
S703	Solid	Light Green
S703-F	Flash	Green - White Base
S801	Solid	Light Blue
S803	Solid	Purple
S804	Solid	Royal
S804-F	Flash	Blue - White Base
S805	Solid	Turquoise
S806	Solid	Peacock Blue
P101	Pattern-Stripe	Turq/Royal/Lt Gn/Blk
P102	Pattern-Feather	TerCot/Org/Nvy/Turq
P103	Pattern-Spot	Red/Org/Grey/Ylw
P104	Pattern-Feather	Wht/Blk/Red/Grey
P105	Pattern-Spot	Wht/Blk
P106	Pattern-Spot	Turq/Blk/White
P107	Pattern-Stripe	Ylw/Royal/Red/Org
P108	Pattern-Spot	Lt Mauve/Prpl/Mauve
P109	Pattern-Spot	Lt Mauve/Mauve/Lt Ylw/Mint
P110	Pattern-Spots	Lt Grn/Shmrk/Mint/Ylw
P111	Pattern-Feather	Turq/Lt Ylw/Org/Lt Prpl
P112	Pattern-Spot	Turq/Wht
P113	Pattern-Stripe	Gray/Lt Mauve/Lt Bl/Lt Prpl
P114	Feather	Tiger's Eye
P115	Feather	Venus
P116	Feather	Butterscotch
P117	Feather	Denim
P118	Feather	Stratus
PC119	Classic	Midnight Leopard
PC120	Classic	Miami
PC121	Classic	Disco
PC122	Classic	Tropical Fish
PC123	Classic	Carnival
PC124	Classic	Fiesta
PC125	Classic	Restless
PC126	Classic	Cosmos
PC127	Classic	Inferno
PC128	Classic	Volcano
M101	Metallic	Gold
M102	Metallic	Silver
M103	Metallic	Antique Copper
HM101	Heavy Metallic	Heavy Gold
HM102	Heavy Metallic	Heavy Silver

Master Sample Set
The best possible way to choose your colors is to have your own sample set of Wasser colors. Full set includes 61 3" x 3" glass samples and technical information sheet. #SS103

Wasser Fusibles
Fusibles are made from Wasser™ tested compatible sheet glass. These shapes - hearts, squares, rounds, stars. go well beyond the limitations of conventional glass cutting and may be used in both warm and cold glass applications. Wasser™ Fusibles come in various sizes and an assortment of colors: red, blue, orange, light purple, green, yellow, white and black.