



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  
COLOR, SIMPLICITY AND SUCCESS...



INSTRUCTIONAL GUIDE

D I A M O N D T E C H I N T E R N A T I O N A L

# 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. This can be achieved by opening "peep" holes, opening the kiln lid just a little and turning the kiln on low. These procedures will reduce the possibility of "shock" to the glass. 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 multidimensional and reflective appearance. To achieve a Tack Fuse place the glass on your 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: kilns are not all alike. There are some variances between kilns, especially the mini kilns. Pyrometers can be slightly off 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 will spread out. (This

glass characteristic is extremely important when fusing Wasser™ Glass, due to its unique thin qualities.) Layering the glass, fusing slower, and not going to 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.

#### 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 the glass to let the heat out by holding the lid open for about 8-10 seconds or until the kiln temperature drops to 1000°F. Replace the lid and turn kiln on low for 30 minutes. This will keep the kiln approximately 940°F, allowing a minimal annealing cycle. Continue to cool at the following rates:

10°F/min. to 800°F

15°F/min. to 700°F

20°F/min. to room temperature.

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## Color, Simplicity & Success

### 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 Heating Phase instructions. This process will squeeze out air bubbles trapped between the layers.

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. (If you build your glass design on a piece of thin shelf paper, air will better be able to escape through the cuts.)

### 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

<u>Product #</u>	<u>Style</u>	<u>Color</u>
S125	Solid	Dark Navy
S197	Solid	Gray
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
S801	Solid	Light Blue
S803	Solid	Purple
S804	Solid	Royal
S805	Solid	Turquoise
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
M101	Metallic	Gold
M102	Metallic	Silver
M103	Metallic	Antique Copper

#### Master Sample Set

The best possible way to choose your colors is to have your own sample set of Wasser colors. Full set includes 35 3" x 3" glass samples and technical information sheet. #S100A

# 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	940°F (504°C)	30 minutes
Cooling-Phase 1	10°F/min	800°F (426°C)	N/A
Cooling-Phase 2	15°F/min	700°F (371°C)	N/A
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	940°F (504°C)	30 minutes
Cooling-Phase 1	10°F/min	800°F (426°C)	N/A
Cooling-Phase 2	15°F/min	700°F (371°C)	N/A
Cooling-Phase 3 (to room temp)	20°F/min	to room temp	N/A

## WASSER DRAPPING GUIDELINES

For drapping 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	940°F (504°C)	30 minutes
Cooling-Phase 1	10°F/min	800°F (426°C)	N/A
Cooling-Phase 2	15°F/min	700°F (371°C)	N/A
Cooling-Phase 3 (to room temp)	20°F/min	to room temp	N/A

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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