Firing Schedules

Every kiln is different and every make of glass behaves differently in the kiln. An approximate temperature level to produce different effects for COE 96 glass is:

0 - 1000° Thermal shock range.
The range at which thermal shock can occur. Once the glass is heated to above 1000° there is no longer a fear it will crack.

1200° Slump.
The glass will become soft enough to sag and can be slumped or draped.

1300° Tack Fuse
Two pieces of glass in contact with each other will tack fuse. They will become permanently attached to each other but without noticeably softening their edges.

1325° Fire Polish
The glass edges will soften become slightly rounded.

1350° Contour Fuse
The glass edges will soften, become well rounded, and the glass begin to adopt a smooth common level.

1400° Almost Full Fuse
The glass will have become an almost smooth common level.

1450° Full Fuse
The glass will have flowed together into a single common level.

You might at first think firing schedules are too difficult to figure out yourself. They're not. Each segment is for a specific reason to perform a specific function. If you change what you're doing, you will change what needs to be done, so you therefore must use a different firing schedule. A kiln firing schedule that works for a small thin piece of glass won't work for a large thick piece of glass. A firing schedule up to 1200° to slump glass won't be hot enough to fuse it. A program up to 1400° will just make a mess if you're trying to slump it. Everything that's done is done for a specific reason. If you understand what the reasons are, you'll understand how to vary your firing schedules.

Here's a typical simple 5 segment firing schedule for 2 layers of glass to be fired to a full fuse.

Segment	Rate (° /hr)	Temp ° F	Hold Minutes
1	400	1000	20
2	400	1150	15
3	850	1450	15
4	AFAP	950	60
5	400	100	0

Segment 1 RAMP UP
Temperature increased at 400° per hour to allow the glass to absorb the heat evenly to avoid cracking from thermal shock. Thin glass and small pieces can be ramped up quickly. Thick glass must be ramped up much slower (perhaps as slow as 100° per hour). If you're not confident how fast is safe, go slow. Going too fast will crack the glass. Going too slow just takes longer.

Segment 1 SOAK
The temperature is held at 1000° for 20 minutes to allow the heat to soak entirely into the glass.

Segment 2 RAMP UP
Temperature increased at 400° per hour up to 1150°.

Segment 2 SOAK
Temperature is held at 1150° to allow the escape of any air that might be trapped between the layers of glass or between the bottom glass and the kiln shelf. It's soaked at this temperature because it's not yet hot enough for the glass so slump.

Segment 3 RAMP UP
Because there's no longer a risk of thermal shock, the temperature can be brought up rapidly to the top level.

Segment 3 SOAK
Temperature is held at the top level for however long is needed to produce the desired effect.

Segment 4 RAMP DOWN
Temperature is now dropped as fast as possible to reduce the risk of devitrification.

Segment 4 SOAK
Temperature is held long enough for the glass to cool to a uniform temperature before proceeding to drop into the range of possible thermal shock and to anneal the glass.

Segment 5 RAMP DOWN
Temperate is now dropped to room temperature at a rate slow enough to avoid thermal shock.

Firing Schedules

SAMPLE FIRING SCHEDULES

Every kiln fires a little differently, and every project requires a slightly different firing schedule. Only experimentation will teach you exactly what schedules will produce exactly the results you want. To get you started with your experiments, here are some sample schedules that have always worked well for us in our shop:

FULL FUSE (up to 12") *

Seg	Rate	Temp	Time
1	400	1000	20
2	400	1150	15
3	850	1450	15
4	AFAP	950	60
5	400	100	0

- For tack fuse, fire only to 1350 in segment 3
- For contour fuse, fire to 1375 in segment 3

FULL FUSE (up to 21")

1	300	1000	20
2	300	1150	20
3	850	1450	15
4	AFAP	950	60
5	300	100	0

FULL FUSE (with bubble squeeze)

1	400	1000	20
2	400	1150	15
3	50	1250	20
4	850	1450	15
5	AFAP	950	60
6	400	100	0

SLUMP (up to 12" 1 or 2 layer)

1	400	1000	20
2	400	1250	20
3	AFAP	950	60
4	400	100	0

SLUMP (up to 21" with bubble squeeze)

1	300	1000	20
2	300	1150	20
3	300	1250	20
4	AFAP	950	60
5	300	100	0

DRAPE

1	400	1000	20
2	850	1225	5
3	AFAP	950	60
4	400	100	0

DROP RING

1	400	1000	20
2	850	1300	10
3	AFAP	950	60
4	400	100	0

CASTING (small open mold)

1	500	1250	10
2	AFAP	1500	20
3	AFAP	950	45
4	500	100	0

CASTING FRIT

1	300	1000	60
2	300	1400	120
3	AFAP	950	90
4	300	500	30
5	AFAP	0	

POT MELT (small)

1	500	1700	60
2	AFAP	950	120
3	300	750	0
4	300	100	0

POT MELT (large)

1	500	1700	90
2	AFAP	1500	45
3	AFAP	950	60
4	300	750	0
5	300	300	0
6	300	100	0

SHELF MELT

1	500	1250	60
2	AFAP	950	240
3	200	750	0
4	300	100	0

- To calculate how much glass will be needed to produce a consistent ¼" thick melt, measure out 1 lb of glass for every 32 square feet to be covered.

PATTERN BARS (1" thick)

1	500	1500	30
2	AFAP	950	240
3	200	750	0
4	300	100	0