



Checklist for Efficient Mixing

Check the Equipment

- Are any ribbons or paddles missing or bent?
- Is there excessive build up in the mixer? Build up on tub walls, ribbons or paddles and their support arms will have a negative impact on mixing efficiency. The mixer should be clean prior to taking samples.
- Do ribbons or paddles have excessive wear? Contact the manufacturer for original dimensions.
- Is there proper clearance between the ribbons or paddles to the mixer tub? The ribbon assembly or paddles should be adjusted as close to the bottom of the tub as possible. Typical clearance is less than 1/4" from the bottom of the tub.
- Is the mixer rotation correct? Check the rotation tag affixed to the mixer. If the tag is missing, the ribbon or paddle cross arms (attachment arms) should be behind the ribbons or paddles as they move through the product.
- Is shaft speed correct? Older mixers may benefit in turning at somewhat higher speeds provided sufficient horsepower is available to accommodate the speed increase. Consult the factory for assistance when increasing shaft speed.
- Is the mixer being overfilled? Mixer volumes are based on cubic feet capacity. Check the cubic feet volume of the batch by dividing the batch weight by a confirmed pounds per cubic foot density of your ingredients. Visually check the fill level. On a single shaft mixer, the tops of the ribbons or paddles should protrude approximately 3-4" above the level of the ingredients at the center of the mixer. Over filling will inhibit mixing.
- Is the mixer discharge properly sealing. Check to see if the mixer discharge is leaking.

Check for Proper Sequence for Ingredient Addition:

- Major and minor scales should be completely discharged before adding micro ingredients. If your mixer is equipped with an air displacement vent, the air pressure from these scales discharging can cause micro ingredients to be blown thru the vent thus bypassing the mixer.
- Micro ingredients should be added as close to the center of the mixer as possible.
- Liquids should be added after the dry mix time has expired and should be injected through several openings along the up side of the mixer, if possible, preferably through spray nozzles for proper dispersion.

Check for Proper Mixing Cycle Time

- Major and minor scale discharge time _____ seconds
- Micro ingredient addition time _____ seconds
- Dry mix time (Starts after all dry ingredients are in the mixer) _____ seconds
- Liquid addition time _____ seconds
- Wet mix time (Starts after all liquid ingredients are in the mixer) _____ seconds
- Mixer discharge time _____ seconds
- **Total mixer cycle time _____ seconds**

Check for Proper Dry and Wet Mix Times

- As a general rule minimum dry mix time should be 25% of the mixer's design mix time. The wet mix time should be 75% of the mixer's design mix time. The design mix time is the optimum time required to achieve a desired (CV) when mixing dry ingredients. H&S new design single shaft ribbon mixers achieve a (CV) of 10 or less in two minutes. The H&S twin shaft mixers, ribbon or paddle type, will achieve a (CV) of 10 or less in one minute.

EXAMPLE: H&S single shaft ribbon mixer.

- The "minimum" dry mix time is 25% of two minutes or 30 seconds.
- The "minimum" wet mix time is 75% of two minutes or 90 seconds.

EXAMPLE: H&S twin shaft mixer.

- The "minimum" dry mix time is 25% of one minute or 15 seconds.
- The "minimum" wet mix time is 75% of one minute or 45 seconds.

NOTE: Longer mix times will result in lower C.V.'s.

Check for Proper Sampling Procedures:

- Ten or more samples are recommended.
- It is best, but not always possible, to take the samples thru the top of the mixer. The next best place would be to sample out of the surge bin under the mixer. Samples taken from the mixer unloading conveyer or downstream of the mixer typically are not representative of the mix and may give inaccurate test results.

Please contact Hayes & Stolz Ind. Mfg. Co. LLC., if you have questions or would like additional information.

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