Merits of blender types

A quick reference guide to the relative merits of blender types.
Tumbling-action (Double and V-Cone) vs Ribbon blenders

TUMBLING MIXERS/BLENDERS WITH SMOOTH INTERIORS

ADVANTAGES	DISAVANTAGES
Excellent for friable or fragile materials due to minimal attrition and low shear forces.	Because very little shear is imparted in the mixing process, particles of greatly dissimilar size and/or density may not be thoroughly mixed.
Large potential capacities and true scale up.	Requires greater space for installation and external guarding may be required.
Easy to clean, load and unload.	May not be appropriate for single stage mixing of low volume ingredients.
Minimal maintenance required.	

TUMBLING MIXERS/BLENDERS WITH BAFFLES OR SHEAR BLADES

ADVANTAGES	DISAVANTAGES
Shear blades and / or baffles greatly increase the degree of shear mixing that occurs, and may be better for very fine or very coarse materials.	Higher shear mixing means that a significant level of grinding may also result.
Good for single stage mixing in all proportions.	Scale up may not behave as expected.
May be used for both wet or dry mixing.	More difficult to clean and complete discharge between batches is likely to require disassembly.
	Higher maintenance levels are likely.

RIBBON MIXERS/BLENDERS

ADVANTAGES	DISAVANTAGES
High shear can break agglomerates.	High shear – not suitable for friable or fragile materials.
Short cycle times.	Higher energy requirements.
Most cost-effective for volume blending.	Incomplete discharge.
Lower overhead space.	Larger footprint.
	Potential ‘dead-spots’ in the corners and the bottom of the equipment.