



QUADRO

Application Note



High Shear Mixing Technology for Manufacturing Tomato Paste and Sauces



INTRODUCTION

Tomato sauces are used in many products including frozen foods, pasta sauces and pizza toppings, etc. A typical tomato sauce would be based on sieved or whole tomatoes, and/or tomato paste. It would also contain water, sugar, vinegar, salt, and seasoning.

Tomato ketchup / sauces are manufactured from tomato paste. Premium quality ketchups with a high solids content derive their viscosity from a combination of water retention of the fibrous strands in the paste and the gelling effect of pectin found naturally in tomatoes.

In one case, a 12% net total solids (NTS) solution of tomato paste was produced from dilution of a 31% NTS paste (600,000 cps) with no variation in color.



High Shear Mixing Technology for Manufacturing Tomato Paste and Sauces

Quadro Y Jet Mixer Performance

The Y Jet Mixer dispersed and blended the 31% NTS tomato paste in minutes to produce a lump free, homogeneous solution with excellent color and texture. The low shear action of the Jet Mixer ensures the natural pectin and fibres remain undamaged. The paste slowly pumped directly from a tote to the bypass assembly for subsurface addition into the action area of the mixer. The mixer quickly and efficiently blended the paste homogeneously into the solution without the use of additional heat. The time to produce a 200 gallon batch was reduced from 45 minutes with a conventional mixer to approximately 5 minutes with the Y Jet Mixer. The Quadro Ytron Y Jet Mixer reduces the time to disperse and blend tomato paste into water, without pectin damage, in ambient temperature water, and to a better quality than traditional mixing methods.

Benefits

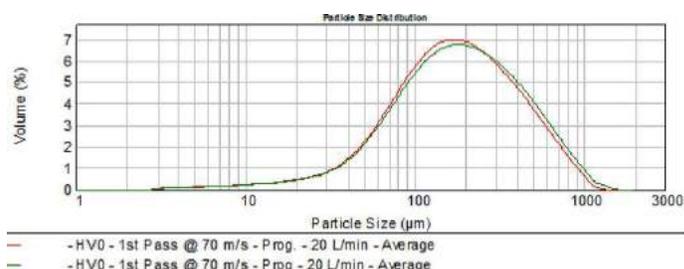
- Reduces Batch blending time upto 80%
- Eliminates problems with stratification and dead mixing areas throughout the vessel
- Axial flow pattern eliminates vortexing and air entrainment

The Quadro HV

The Quadro HV has proven to work efficiently in creation of thicker and more dense tomato paste due to its capability of enabling the mixture to absorb more water in the fibres. It reduces the particle size (<0.033”) and

significantly improves product texture for a better appearance of the paste. All of the work is done in a single pass eliminating any need to pass the product multiple times through the process to get better texture and reduced particle size. The HV design ensures that there is no air entrainment, processing time is shorter than a conventional milling method which increases the output value. Test results have proven that the results obtained in the lab can be scaled to a manufacturing scale depending on the model of selection.

Below is a Particle size distribution graph in tomato paste from a test we conducted using HV for one of our valued customers who were facing challenges in getting the desired particle size with their current setup and wanted to explore other options.



Benefits

- Increased capacity
- Reduced process time with desired results achievable in single pass
- Increases output value due to reduced processing time
- >55 times higher shear energy of a conventional rotor-stator mill