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PROCESS BULLETIN

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Subject: HOMOGENIZATION OF TOMATO BY PRODUCTS

High pressure homogenization is an entirely mechanical process;the tomato products are forced through the homogenising valve producing changes into the particle structures:

- ✓ Single cells production
- ✓ Disaggregation of agglomerates
- ✓ Disruption of crystals agglomerates
- ✓ Reduction of oil globules size
- ✓ Cutting effect on fibers seed and others
- ✓

These mechanisms relate to the changes in the structure of an aqueous tomato dispersion caused by the application of mechanical energy.
The tomato pulp contributes many relatively spherical particles, which are insoluble in water and which must be reduced in size and uniformly dispersed throughout the product. If this is not done, a product with an excessively rough texture will result. Furthermore, since the carotene pigment is contained in these particles of pulp, failure to properly disperse them will result in a product with poor uniformity and depth of colour.

In addition to the above particles, a tomato dispersion contains a very large number of fibrous strands. Through proper processing techniques these fibers form a structure which is responsible for the viscosity of the product and for its ability to retain free water. A large reduction in the length of these fibers, caused by some mechanical processing equipment, will destroy the fiber structure and result in reduced product viscosity and increased serum weeping. However, homogenization causes fibrillation of the fiber ends without a significant reduction in fiber length. This results in fibers having ends similar in appearance to the ends of a frayed rope and which will absorb and retain water in the manner of a wick. The obvious result is increased product viscosity and reduced separation. Unfortunately, the process does have limitations.

If too high an homogenizing pressure is used, the fiber network will be broken down; and, although the greater number of individual fibers will absorb more water and cause a greater viscosity increase, any remaining free water will quickly separate because the