



**HEART OF PROCESS** is new atmospheric essence recovery-juice concentrating technique. In it, the depectinized juice is preheated to 220F. and discharged to steam-heated vaporizer where 89% of water is removed. Vapor and concentrate are separated with latter going to cooler and blending tank. Vapors go to packed fractionating column where they are concentrated 150 times original strength, then condensed and cooled to 190F. Essence and non-condensable gases are separated in splitter. Essence is chilled in packed column where vent gases are scrubbed and discharged to atmosphere. Essence flows to receiver. Final steps comprise blending essence, concentrate and pomace, homogenizing mixture, packaging for freezing.

# Makes Better Peach Concentrates

**New process that makes high-density products for ice cream, beverages and jellies seen absorbing surplus fruit, thus stabilizing peach market**

**KEY TO PRESERVATION** of fresh flavor in peach concentrates is the rapid inactivation of natural occurring enzymes early in the process and recovery of volatile flavor during concentration.

With this in mind, we at EURDD have developed methods for preparation of the following types of concentrated peach products:

1. An unsweetened whole puree that has seven times the flavor of the original peach. This product is intended primarily for intensifying the flavor in peach ice cream.

2. A frozen nectar concentrate for beverage use.

With slight modifications, the processes may be applied to apple, grape\*, cherry, and berry juices.

Briefly, the technique consists of pitting, peeling, pureeing, enzyme inactivation, depectinization, juice-

fiber separation, aroma recovery, juice concentration, and restoration of aroma and fibers to concentrate.

## Preparing the Products

In the processing steps, every effort is made to minimize exposure of fruit to flavor and color damaging conditions.

**Preliminary Steps.** Pitted peach halves of mature fruit are pureed immediately following steam peeling, by means of a cylindrical juice extractor having an 0.033 in. screen. Discharge of the unit was modified to combine tailings with material passing through the screen.

Elimination of rapid enzymatic browning is accomplished by rapid heat treatment employing two heat exchangers with a holding coil between.<sup>1</sup> Puree is heated to 180F. in first unit, held for 2 sec. in the coil, then cooled to 100F. in second unit. Residual activity of polyphenolase is 0.1% or less.<sup>2</sup>

Puree leaving the second heat exchanger is treated with Pectinol 10M (Rohm & Hoos)\*\* (8.6 oz./100 gal.) for ¾ hr. to facilitate juice-fiber separation and permit high juice concentration without gel formation.

L-ascorbic acid is added (1.5 oz./100 lb. of puree) during depectinization to prevent normal oxidative browning. In the nectar type concentrate, this has the additional advantage of placing it on a comparable level with other beverages that are rich in natural occurring vitamins.

**Juice-Fiber Separation.** Removal of fibers from the juice is necessary in order to achieve a high degree of concentration.

This was achieved with a Harris bag press.\*\* Fibrous material is held for blending with essence and concentrate.

**Flavor Recovery and Juice Concentration.** This was done by stripping aroma from the juice and fractionating the vapors involved. The stripped juice was concentrated

\*For application of the process to grapes see "These Concentrating Advances Bring Superior Flavors". (FE, Dec. '57, p. 90)

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\*\*Mention of specific manufacturers or products does not imply endorsement by the Department over others not mentioned.

by a single-pass atmospheric technique developed by Eskew et al.<sup>2</sup> (The manufacture and use of volatile fruit concentrates are subject to the regulations of the Bureau of Internal Revenue.<sup>3</sup>)

For the puree concentrate, the entire pomace from the juice extraction along with the recovered volatiles are blended with the concentrate, and the mixture homogenized to a smooth consistency. The product is made 7-fold with respect to the single strength puree. Degree of concentration of the juice is dependent upon desired fold of finished product and moisture (juice) content of pomace.

**Beverage Nectar:** To obtain an acceptable sweetness in the nectar, the Brix-acid ratio was altered by addition of sucrose, equal to 93% of the soluble solids in the juice, prior

to flavor recovery. Increasing the Brix also results in reduced vaporization required to achieve desired concentration in a single pass. In determining the amount of pomace addback, effect of seasonal variation of insoluble solids content of the fruit must be taken into account.

Desired consistency was obtained one year by adding 100% of recovered pomace. However, only 50% was required the following year. Taste panel members considered consistency of reconstituted nectar to be satisfactory if apparent viscosity was between 95-120 centipoises as measured by a Brookfield\*\* viscosimeter.

Sweetened concentrate, pomace and recovered aromas are blended, then the mixture is homogenized for smoothness. Soluble solids content of the nectar was established at 51.4

Brix, so that dilution with three volumes of water resulted in a 15 Brix beverages. This was a very palatable drink having a fresh flavor and natural color.

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#### References:

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2. Eskew, R. K., Claffey, J. F., Aceto, N. C., and Eisenhardt, N. H. Rapid Atmospheric Evaporator Simplifies Juice Concentration and Improves Flavor Recovery. To be published.
3. Code of Federal Regulations, Title 26, Internal Revenue, 1954, Part 198 and subsequent issues.