



## Product Information

### Texture Systems for Bakery Fillings

#### ISP Texturizing Systems

Bakery fillings can vary substantially in their levels of solids, pH and consistency. In common, they usually contain fruit, sugar, corn syrup, starch and water and are adjusted to a pH of 3.7 - 4.5. However, the final formulation is often a trade-off between the desired taste and texture and the manufacturing process.

The choice or the optimum texturizing ingredients depends on such factors as whether the process is hot or cold, the pH, the solids level, the desired firmness of the gel, whether freeze-thaw stability is required and the targeted shelf-life.

#### Desired Performance

The generally desired performance characteristic of a texturizer for fruit fillings are:

- Hot or cold processing
- Medium to firm gel strength
- Bake stable (gels not thermally reversible)
- Functional at low pH
- No flavor masking
- Excellent mouthfeel

A number of systems have been specifically developed by ISP that provide excellent taste and mouthfeel in full calorie fruit fillings while providing the fluid gel characteristics needed for efficient processing.

ISP's bakery systems are fully optimized for bakery fillings. These systems are unrestricted by the type of hydrocolloids or other ingredients employed. Some of these systems are universal in their application and, as the example below, sold as individual products. However, they are generally customized to exactly match customer's requirements while minimizing cost.

#### Systems of Choice

The system of choice depends on the type of bakery filling. Generally, the following systems are used in the described filling types.

<i>Filling Parameters/Characteristics</i>	<i>Product</i>
High solids (> 60%), firmer texture	<b>Manugel JKB or PTJ</b>
High solids (> 60%), softer texture	<b>Manucol JKT</b>
Low to medium solids (< 60%), pH 4.5, or use of slowly soluble acids (adipic, GDL)	<b>Manugel PTJ</b>
Low to medium solids (< 60%), pH 4	<b>Manugel PTB</b>
Low to medium solids (< 60%), shear reversible gel	<b>Manucol SR</b>
Low calorie fillings	<b>Textureze BF 100</b>

Texture, taste, appearance and convenience are all important to consumers, and healthy, low fat & reduced calorie alternatives are in high demand - but only if they exhibit the taste, texture and mouthfeel of full fat/calorie products.

ISP bakery filling systems' benefits include:

- Hot or cold processing
- Medium to high gel strength
- Heat stable gels – less boil-out
- Full body mouthfeel
- Freeze-thaw stability
- Less moisture loss increasing shelf-life
- Can reduce starch and “pasty” taste
- Use in reduced sugar/calorie fillings

### Example - High Solids Fruit Filling

INGREDIENTS	GRAMS	(%)
High fructose corn syrup	105.0	21.0
Water	90.0	18.0
Glycerol	25.0	5.0
<i>Manugel PTJ</i>	5.0	1.0
Pre-gelatinized starch	7.5	1.5
Sucrose	36.5	27.3
Fructose	100.0	20.0
Fruit concentrate	25.0	5.0
Trisodium citrate dehydrate	2.5	0.5
Adipic Acid	3.5	0.7
Total	500.0g	100%

### Procedure

1. Combine water and fructose corn syrup
2. Slurry Manugel PTJ and starch in glycerol. Add to water-syrup with mixing, then add sucrose and fructose with mixing until dissolved
3. Add sodium citrate to fruit concentrate, add to the mix followed by addition of adipic acid
4. Mix rapidly, deposit and allow to gel. Firm gel can be sheared to obtain depositing viscosity



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- For technical inquiries on ISP products, please call 888-472-5446.

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