



GLYCINE



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One of the amino acids constituting proteins, Glycine occurs widely in nature. For example, such seafoods as prawn, sea urchin and scallop contain a large amount of free Glycine which creates characteristic flavor in those foods.



- **Packing:** Kraft paper bag with polyethylene inner bag, 20kg net.
Carton box with 20 polyethylene inner bags, each 1kg net.

PHYSICAL PROPERTIES

- (1) Chemical formula: $\text{NH}_2\text{-CH}_2\text{-COOH}$
- (2) Molecular weight: 75.07
- (3) Appearance: White crystalline powder
- (4) Melting point (dec): $232 \sim 236^\circ\text{C}$
- (5) Solubility: Easily soluble in water,
Slightly soluble in ethanol

SPECIFICATION

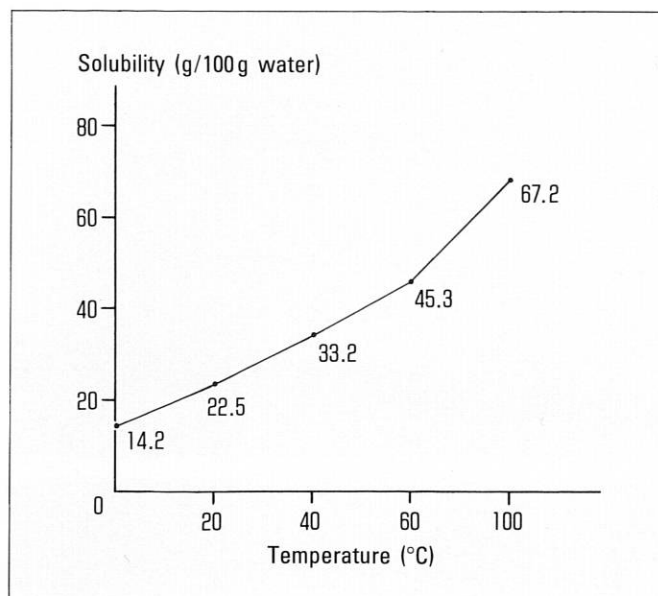
The following specification is based on the Japanese Standard of Food Additives.

| | |
|---|---------------------------|
| Assay | 98.5 ~ 101.5% |
| State of solution | Transparent and colorless |
| pH | 5.5 ~ 7.0 |
| Chloride (as Cl) | 0.021% max |
| Heavy metals (as Pb) | 20 ppm max |
| Arsenic (as As_2O_3) | 4.0 ppm max |
| Loss on drying | 0.30% max |
| Residue on ignition | 0.10% max |
| Check tests (2 different types) | Conforming |

CONTENT IN NATURAL FOODS

| | Kind of foods | Content (%) |
|------------|---------------|-------------|
| SEAFOOD | Prawn | 2.50 |
| | Sea urchin | 2.00 |
| | Scallop | 1.80 |
| | Crab | 1.30 |
| MEAT | Beef | 0.81 |
| | Chicken | 1.00 |
| | Pork | 0.86 |
| VEGETABLES | Soybean | 0.47 |
| | Green peas | 0.31 |

SOLUBILITY IN WATER



CHARACTERISTICS AND APPLICATIONS

- (1) **SWEETENER:** Glycine has a light sweet taste, with an intensity of 70% sweetness of sucrose.
- (2) **PALATABLE TASTE:** Glycine is contained in various foods, and relating palatability and elegant sweetness of foods respectively. There is a synergistic effect with other seasonings such as monosodium glutamate, ribonucleotides and organic acids and their salts, resulting in increments of palatability of foods.
- (3) **SOFTENING EFFECT:** Glycine exists in the form of $\text{H}_3\text{N}^+\cdot\text{CH}_2\text{COO}^-$ in aqueous solution. It shows, therefore, alkaline nature against acidic substances, and acidic nature against alkaline substances, resulting in a softening effect on bitterness, saltiness and sourness of foods with a buffer action on shifting of pH value.
- (4) **ANTIOXIDATIVE ACTIVITY:** While amino acids generally serve as chelating agent for metallic ions, Glycine is stronger than other amino acids in this respect. Thus Glycine is effective in preventing autooxidation of foods.
- (5) **ANTIMICROBIAL ACTIVITY:** Glycine prevents growth of *Bacillus subtilis* and *Escherchia coli*, thus improving the shelf life of foods.

APPLICATIONS AND EXAMPLES OF USES (In Japan)

| | Foods | Bases for addition | Addition rate (%) |
|-------------------------------------|---|--------------------|-------------------|
| Surimi based products | Kamaboko (Fish cake) | Raw fish meat | 0.3 ~ 1.0 |
| | Fried kamaboko | Raw fish meat | 0.3 ~ 1.0 |
| Squid products | Seasoned squid (Chinmi) | Squid meat | 0.1 ~ 0.5 |
| Fish roe products | Salmon roe (Ikura) | Salmon roe | 0.1 ~ 0.5 |
| Daily dishes | Packed rice cake (Mochi) | Rice cake | 0.3 ~ 0.5 |
| | Flour paste | Final product | 0.5 ~ 1.0 |
| | Curry | Final product | 0.5 ~ 1.0 |
| | Soy sauce pickles | Soy sauce | 0.2 ~ 0.5 |
| | Mustard pickles | Final product | 0.1 ~ 0.2 |
| | Canned foods | Syrup | 0.1 ~ 1.0 |
| Seasonings | Soy sauce | Final product | 0.2 ~ 0.5 |
| | Bean paste (Miso) | Final product | 0.3 ~ 0.7 |
| | Worcester sauce | Final product | 0.1 |
| | Vinegar and vinegar pickles | Final product | 0.1 ~ 0.5 |
| | Sauce for buck wheat noodle (Sobatsuyu) | Final product | 0.1 ~ 1.0 |
| Noodles | Chinese noodle | Wheat flour | 0.1 ~ 1.0 |
| | Japanese noodle | Wheat flour | 0.1 ~ 1.0 |
| Liquor | Synthetic sake | Final product | 0.1 |
| Beverages | Nutritional drinks | Final product | 0.5 ~ 1.0 |
| | Fruit juices | Final product | 0.1 ~ 0.2 |
| Confectionary and relating products | Jams | Final product | 0.5 ~ 1.0 |
| | Bean paste (An) | Final product | 0.5 ~ 1.0 |
| | Japanese sweet cake | Final product | 0.5 ~ 1.0 |
| | Pea-nuts cream | Final product | 0.5 ~ 1.0 |
| | Baked confectionary (in general) | Wheat flour | 0.1 ~ 0.8 |

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