

Vovo

# Golden State

POWDERED SKIM MILK



for

ICE CREAM MAKERS

## F O R E W O R D

Few manufacturers of food products are more beset with seasonal fluctuations, with its attendant difficulties of providing adequate supplies of dependable quality at all times, than the ice cream maker. Likewise, few are more dependent upon a perfectly balanced formula of unchanging quality for continued success. ♡ Golden State Brand Powdered Skim Milk, and the organization behind it, are answering these two vital problems for many of the leaders in the ice cream industry. ♡ This book is presented with the hope that it may lead to your becoming better acquainted with Golden State quality as applied to powdered skim milk and its benefits to the ice cream industry.

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GOLDEN STATE SALES CORPORATION

175 Franklin Street, New York City

GOLDEN STATE MILK PRODUCTS COMPANY

425 Battery Street, San Francisco, Calif.



## Golden State Brand Powdered Skim Milk for Ice Cream

THE manufacture of high grade ice cream depends largely upon the quality and correct combination of milk solids, with sugar, a small quantity of stabilizer, and flavoring material. Additional serum solids of milk (powdered skim milk) are necessary to give the smooth texture required in commercial ice cream.

A proper understanding of the function of serum solids (powdered skim milk) in ice cream is necessary to realize the importance of paying more than ordinary attention to this element of your mix.

These functions are:

(1) Improves texture and body; gives a smoother texture and a body that will stand up much better. Without additional serum solids the texture will be coarse, and ice crystals develop when the ice cream is held.

(2) Facilitates securing more uniform yield.

(3) Increases the nutritive value. The correct proportion of butter fat and serum solids with the other ingredients gives an ice cream which is practically a perfect food.

### ADVANTAGES OF QUALITY POWDERED SKIM MILK FOR SERUM SOLIDS

#### *Uniformity in Quality and Composition*

The composition and quality of high grade powdered skim milk is the most uniform of any source of serum solids available. This is a factor of great importance in controlling the quality and composition of the ice cream. Sweetened condensed and evaporated skim milk vary greatly, both in composition and quality, and this variation will be reflected in the quality and composition of the ice cream.

*Keeping Quality, Convenience and Supply*

The keeping quality of powdered skim milk allows of its being stored in quantities to insure having at all times an ample supply to meet any demand for extra ice cream occasioned by unusual conditions. A large reserve of all materials must be provided to meet all extra demands for ice cream. This is hazardous with evaporated skim milk, as conditions may necessitate holding it longer than it will keep. Powdered skim milk, packed in lined barrels, can be stored the same as sugar, in quantities to meet all requirements.

The demand for serum solids is greatest during times when the evaporated skim and sweetened condensed skim milk are most likely to deteriorate, making them less desirable for ice cream from this standpoint.

*Standardization*

The uniform composition of powdered skim milk (containing 97% total milk solids) makes it the best and most convenient for standardization.

## ICE CREAM FORMULAS

The formulas given are based on the use of Golden State Brand Powdered Skim Milk and a good quality of butter fat, combined with the other ingredients, for making quality ice cream of varying fat content. The use of inferior milk solids will not give the required results.

Commercial ice cream of good texture and body weighs from  $4\frac{1}{2}$  to  $4\frac{3}{4}$  pounds per gallon. The amount of mix for the gallons of ice cream desired can be obtained by taking multiples of the figures given in the formulas, all of which are on the basis of 100 pounds.



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**GOLDEN STATE MILK PRODUCTS CO.**

**Ice Cream Formulas**

Using Unsalted Butter and Golden State Powdered Skim Milk

INGREDIENTS		BUTTER FAT IN MIX			
		8%	10%	12%	14%
Water	Lbs	63	61.5	60	58
Golden State Milk	"	12.5	11.5	10.75	9.75
Sugar	"	14	14	14	14
Unsalted Butter	"	10	12.5	15	17.5
Gelatin	"	0.5	0.5	0.5	0.5
Total Solids	%	35.0	36.0	37.0	38.0

Using 20% Cream and Golden State Powdered Skim Milk

Water	Lbs.	35	26.5	18	10
Golden State Milk	"	9.5	8	6.5	4.5
Sugar	"	14	14	14	14
20% Cream	"	41	51	61	71
Gelatin	"	0.5	0.5	0.5	0.5
Total Solids	%	35.0	36.0	37.0	38.0

Using 30% Cream and Golden State Powdered Skim Milk

Water	Lbs.	47	42	36.5	31.5
Golden State Milk	"	11	9.5	8	6.5
Sugar	"	14	14	14	14
30% Cream	"	27.5	34	41	47.5
Gelatin	"	0.5	0.5	0.5	0.5
Total Solids	%	35.0	36.0	37.0	38.0

Using 40% Cream and Golden State Powdered Skim Milk

Water	Lbs.	53.5	49.5	46	42
Golden State Milk	"	11.5	10.5	9	7.75
Sugar	"	14	14	14	14
40% Cream	"	20.5	25.5	30.5	35.5
Gelatin	"	0.5	0.5	0.5	0.5
Total Solids	%	35.0	36.0	37.0	38.0

Using 20% Cream, 3.5% Milk and Golden State Powdered Skim Milk

3.5% Milk	Lbs.	46.5	35	24	13
Golden State Milk	"	6	5.5	4.5	3.5
Sugar	"	14	14	14	14
20% Cream	"	33	45	57	69
Gelatin	"	0.5	0.5	0.5	0.5
Total Solids	%	35.0	36.0	37.0	38.0

Using 30% Cream, 3.5% Milk and Golden State Powdered Skim Milk

3.5% Milk	Lbs.	58.5	52	45	39
Golden State Milk	"	6.5	5.5	4.5	3.5
Sugar	"	14	14	14	14
30% Cream	"	20.5	28	36	43
Gelatin	"	0.5	0.5	0.5	0.5
Total Solids	%	35.0	36.0	37.0	38.0

Using 40% Cream, 3.5% Milk and Golden State Powdered Skim Milk

3.5% Milk	Lbs.	64.5	60	55	51
Golden State Milk	"	6	5.5	4.5	3.75
Sugar	"	14	14	14	14
40% Cream	"	15	20	26	31
Gelatin	"	0.5	0.5	0.5	0.5
Total Solids	%	35.0	36.0	37.0	38.0

## METHOD OF USING POWDERED SKIM MILK

The powdered skim milk may be dissolved by sifting it on the surface of the unheated liquid in the vat, while running the agitator, or by dissolving in some other mixer in a portion of the liquid and adding to pasteurizing vat with the other material. Adding a mixture of the sugar and powdered skim milk, or the two simultaneously, greatly facilitates dissolving.

The ordinary type of vat is not well adapted to dissolving powdered skim milk, and the addition of mixing blades to the coils is recommended for providing better agitation. The use of a round glass lined tank with propeller agitators in the bottom is ideal for dissolving powdered skim milk. With this machine it can be dissolved quickly and without difficulty, using just sufficient liquid to cover the propeller blades, which will give violent agitation. After dissolving the powdered skim milk the other ingredients are added. When using sweet cream unsalted butter it should be cut up to hasten melting. The gelatin may be added either dry or in solution. If used dry, it should be added to mixture a few minutes before starting to pasteurize, either separately or mixed with the sugar. Adding powdered gelatin to the heated mix will cause lumping and difficulty in dissolving. When using the gelatin in solution, it is soaked in a portion of the cold liquid until soft, then heated sufficiently for dissolving and added to the mixture during pasteurization. A high grade of gelatin should be used.

The mix containing all ingredients with exception of the flavoring should be heated to a temperature of not less than 145° F. and held for thirty minutes before homogenizing, viscolizing or emulsifying. A pressure of 2000 to 3000 pounds should cover the



range for required results, with a correctly proportioned mix made up of good raw materials. Trouble will be experienced in homogenizing or viscolizing at the pressure required for best results should the mix be too high in acidity, due to the use of poor quality milk solids.

The use of an emulsifier gives quite satisfactory results, but it does not, of course, permit of securing as smooth a texture as is possible with either a viscolizer or homogenizer. Viscolizing, homogenizing or emulsifying must be done when using butter in the mix. Ice cream can be made from a mix that is not viscolized or homogenized when the source of milk solids is sweet cream and powdered skim milk, but as good quality of ice cream cannot be obtained.

The distinct advantages of homogenizing or viscolizing may be listed as:

- (1) Gives a smoother ice cream.
- (2) Body holds up better.
- (3) Insures uniformity.
- (4) Gives greater richness and palatability.
- (5) Decreases danger of churning.
- (6) Makes possible the use of butter and powdered skim milk for milk solids.

#### *Cooling and Aging the Mix*

The homogenized mix should be cooled quickly to a temperature of 45° F. or lower, and held from 12 to 24 hours before freezing. The aging increases the viscosity and gives a smoother texture.

#### *Freezing and Storing*

The required flavoring is added and the freezing carried out in the usual manner. The ice cream is hardened and held at a low temperature to insure retention of its texture and body. To obtain best results the ice cream mix should be added to freezer at a temperature of less than 45° F.

IMPORTANCE OF USING HIGHEST QUALITY  
MILK SOLIDS

Since the quality of ice cream depends so largely upon the quality and proportion of the butter fat (sweet cream or butter) and the serum solids (powdered skim milk) nothing but the best grades of these materials should be used. Either sweet cream or sweet cream unsalted butter of the proper grade may be used as the source of butter fat. The quality of sweet cream can readily be determined by observing the flavor and odor, and testing for acidity. Determining the quality of butter is much more difficult. A good grade of sweet cream unsalted butter should be used, and, if one is not familiar with butter quality, the purchase should be made from a reliable butter dealer on the basis of established grades.

The quality of dry skim milk used is most important and can quite readily be determined by examination and simple tests, such as dissolving a small quantity in a bottle or glass tumbler and noting its resemblance to normal skim milk in physical properties, color, flavor, smell and acidity. The sediment can be determined by the use of a standard tester or by allowing the milk to stand in a glass container and noting the material settling to the bottom. If the reconstituted powdered skim milk does not foam up like ordinary skim milk when shaken, have a good flavor, low acidity, and relatively free of sediment, it will not give best results.

Golden State Brand Powdered Skim Milk will meet all the requirements of serum solids of ice cream better than any other product. The special Spray Process of manufacturing Golden State having features favoring the production of the highest possible quality not enjoyed by any other method; the carefully supervised manufacture from graded milk



produced in close proximity to the factories, and the testing of each barrel, insures of the best and most uniform quality for ice cream.

OUTSTANDING POINTS OF SUPERIORITY  
OF GOLDEN STATE BRAND  
POWDERED SKIM MILK

(1) *Flavor.* A fine flavor is insured by the quality of fresh milk used, and the method of manufacture.

(2) *Solubility.* Complete solubility of Golden State Brand Powdered Skim Milk gives the desired smooth texture, and good body that stands up well.

(3) *Low Acidity.* Gives a better flavor and allows of proper homogenizing or viscolizing. Methods of grading milk and checking each individual barrel of powder insures of no high acid milk to cause trouble.

(4) *Sanitation and Cleanliness.* Golden State is made in modern plants especially constructed for the purpose, and with a special method wherein the product is not exposed to any contamination from outside sources. The pasteurized skim milk enters the drying chamber as a liquid, and is delivered directly into barrels as the powdered product.

(5) *Uniformity and Dependability.* Grading of the raw milk, the special process of drying, and care in manufacturing and checking on the finished product, insure quality as uniform as it is humanly possible to produce. Each barrel of Golden State Brand Powdered Skim Milk can be depended upon to give the same highly satisfactory and uniform results.

(6) *Packing.* Golden State Brand Powdered Skim Milk packed in heavy, air-tight, moisture-proof barrels, insures of the product retaining its fine flavor over a long period of time. In case of an over-supply due to a poor season, any surplus can be held over in the heavy barrels with perfect safety.

# GOLDEN STATE MILK PRODUCTS CO.

## Average Composition and Approximate Weight per Gallon

Product	% fat	% milk solids not fat	% sugar	Total solids	Wt. per* gal. lbs.
Water					8.3
Skim Milk	.07	8.63		8.7	8.6
Whole Milk	3.6	8.6		12.2	8.6
Cream	20.0	7.1		27.1	8.4
Cream	25.0	6.7		31.7	8.4
Cream	30.0	6.2		36.2	8.3
Cream	35.0	5.7		40.7	8.3
Cream	40.0	5.3		45.3	8.2
Bulk condensed milk	6.8	26 to 28		32 to 36	9.0
Evaporated milk in cans	7.8	17.8		25.5	8.9
Sweetened condensed whole milk	8.0	23.0	42.0	73.0	10.8
Sweetened condensed skim milk	.3	26.0	44.0	70.0	11.0
Condensed skim milk	.24	28 to 32		28 to 32	8.9 to 9.2
Golden State Powdered Skim Milk	.8	96.2		97.0	
Granulated sugar			100.0	100.0	7.5
Gelatine				90.0	1.0
Butter, unsalted	83.0			84.0	
Milk fat	100.0			100.0	7.5
Eggs, powdered	55.0			97.5	
Eggs, shell	10.5			26.3	
Corn sugar		90.0		90.0	

\*At 60° F.

### CONVERSION SCALE

Fahrenheit & Centigrade

Temperatures

FAHR CENT

212 100

200 95

190 90

180 85

170 80

160 75

150 70

140 65

130 60

120 55

110 50

100 45

90 40

80 35

70 30

60 25

50 20

40 15

30 10

20 5

10 0

0 5

-10 10

-20 15

-30 20

-40 25

-50 30

-60 35

-70 40

-80 45

-90 50

-100 55

-110 60

-120 65

-130 70

-140 75

-150 80

-160 85

-170 90

-180 95

-190 100

-200 105

-210 110

-220 115

-230 120

-240 125

-250 130

-260 135

-270 140

-280 145

-290 150

-300 155

-310 160

-320 165

-330 170

-340 175

-350 180

-360 185

-370 190

-380 195

-390 200

-400 205

-410 210

-420 215

-430 220

-440 225

-450 230



*Distributors*

GOLDEN STATE BRAND POWDERED SKIM MILK

Stocks of Golden State Brand Powdered Skim Milk are carried in principal cities of the United States, and sold and distributed through local brokers chosen by Golden State, in addition to our own offices in New York, San Francisco and Los Angeles. Such service is a guarantee of uninterrupted delivery of Golden State Brand Powdered Skim Milk to any consumer, regardless of the quantity needed. A detailed list of distributors is given below.

ARISS, CAMPBELL & GAULT.....	Portland, Ore.; Seattle, Tacoma
W. M. BRADFORD.....	26 Front St., San Francisco, Calif.
STANDARD BROKERAGE & DIST. CO.....	Salt Lake City, Utah
CARR-O'NEILL BROKERAGE CO....	Butte, Great Falls, Billings, Mont.
THE HALLAHAN COMPANY.....	The Bourse, Philadelphia, Pa.
C. B. JEWETT COMPANY.....	617 Bessemer Bldg., Pittsburgh, Pa.
JOHN P. BOYCE.....	19 So. Broadway, St. Louis, Mo.
C. E. BUELL, INC.....	131 State Street, Boston, Mass.
E. W. CARLBERG.....	1104 Union Ave., Kansas City, Mo.
DAIRY PRODUCTS COMPANY.....	819 Throver Bldg., Atlanta, Ga.
GRIFFITHS MILK PRODUCTS..	720 N. Michigan Ave., Chicago, Ill.
PICKRELL & CRAIG COMPANY...	209 E. Main St., Louisville, Ky.
C. B. SHACKLEFORD & SON....	12th & Farnum Sts., Omaha, Neb.
SPIERS-SIMPSON CO.....	287-88 Brokers Ex. Bldg., Norfolk, Va.
THE WILVER COMPANY.....	750 E. Lombard St., Baltimore, Md.
SOUTHWESTERN SPECIALTY COMPANY.....	San Antonio, Texas
THE FURMAN COMPANY.....	Houston, Texas
MEYER BLANKE COMPANY.....	410 Valentine St., St. Louis, Mo.
	Dallas, Texas; Birmingham, Ala.
EMPIRE PRODUCTS CORP.....	El Paso, Texas.

Warehouse Stocks Carried in 42 Cities in the United States



POWDERED

GOLDEN STATE  
BRAND  
PASTEURIZED

SKIM MILK

GOLDEN STATE MILK PRODUCTS COMPANY  
GENERAL OFFICES: SAN FRANCISCO, U.S.A.  
GOLDEN STATE SALES CORPORATION  
GENERAL OFFICES: NEW YORK, U.S.A.