

# The Manufacture of Whipped Cream Using Dry Skim Milk

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The use of cream for whipping purposes, though previously of little importance to the milk distributing plant, has in the last few years become very important, due to the increase in its consumption. With an increase in the demand for whipped cream by a critical consuming public the manufacturer has had to cope with numerous problems. The most common difficulties encountered in the manufacture of a whipped cream are:

1. Failure of the cream to whip, which may be due to improper aging, treatment and the application of improper whippers.
2. Separation or drainage of the serum from the whipped cream.
3. A greasy, too rich or buttery flavor due to a partial churning of the cream during the whipping process.
4. Variations from day to day in the body, texture and quality of the whipped cream due to variations in treatment of the cream, and in the method of whipping.
5. Variations in the overrun or volume that directly affect the quality of the finished whipped cream.

All of these factors materially influence the quality of the finished whipped cream and reflect directly on the consumer demand for the whipped cream.

It has been found that many of the factors affecting the quality of the whipped cream and the difficulties encountered in its storage can be eliminated by reinforcing the cream to be whipped with a high quality of dry skim milk and by using the proper type of whipper.

Dry skim milk when added to cream for whipping purposes will improve the flavor and nutritional value of the finished whipped cream, impart a more desirable body and texture and markedly reduce the material that drains from the whipped cream on standing after being whipped. Its addition to cream in quantities of 4 to 6 per cent also made possible the production of a desirable whipped cream from a cream of 25 per cent of butterfat when the Air Whip was used.

Four different types of cream whippers were used and the Air Whip and egg beater whipper proved to be most satisfactory; in fact,

they were the only types of whippers that could be used successfully when whipping cream on a commercial basis. The Air Whip, however, is superior to the common egg beater whipper in the following ways.

1. Gives less agitation to the cream during the whipping process which results in less clumping of the butterfat and makes possible the production of a less greasy, smoother and better flavored cream.
2. Produces a whipped cream that is more uniform in body and texture as the incorporation of the air and the body resistance are more or less controllable by the operator.
3. The overrun is greater and more easily controlled.
4. A satisfactory whipped cream possessing a desirable body, texture and drainage properties can be produced when using a 25 per cent butterfat cream reinforced with 4 to 6 per cent of dry skim milk.

#### **Cream To Be Used for Whipping Purposes**

Fresh pasteurized cream of 32 to 34 per cent of butterfat is satisfactory for whipping purposes; however, a desirable whipped cream may be made from a cream testing 25 per cent butterfat if the Air Whip is used and 4 to 6 per cent of dry skim milk is added. Pasteurized cream for whipping purposes was found to be very satisfactory when the cream was properly aged before whipping. The cream was pasteurized, prior to separation, for 30 minutes at 142 degrees Fahrenheit. Pasteurization of cream for whipping purposes is a desirable practice from the standpoint of health and keeping quality of the finished whipped cream.

#### **Procedure for Reinforcing the Cream with Dry Skim Milk**

The fresh pasteurized cream is cooled to 40 degrees Fahrenheit, standardized, weighed into a clean container and 4 to 6 per cent of high quality dry skim milk powder is added in the form of a cold paste. The paste is prepared by mixing a small quantity of the cream with the weighed dry skim milk. The mixing is easily performed with a common mixer or egg beater whipper. The thick viscous dry skim milk and cream paste is added to the remainder of the cream and gently stirred to facilitate complete distribution.

#### **Aging of the Cream Reinforced with Dry Skim Milk**

The reinforced cream is placed in the cooler and aged for 12 to 24 hours at 40 degrees Fahrenheit. Acid development at this temperature will be negligible as the bacteria content of a high quality dry skim milk is very low. It is very essential that all utensils and equipment used in the preparation of the cream be efficiently sterilized.

The greatest improvement of the cream resulting from the addi-

tion of the dry skim milk and aging will be acquired during the first 12 hours of the aging period, though an additional improvement will be obtained if the cream is aged for 24 hours. The 24-hour aging period works into the plant operations where cream is prepared one day and whipped on the following day. The reinforced cream when aged will be very viscous and desirable for whipping purposes.

Aging of the reinforced cream at 40 degrees Fahrenheit or lower is very essential to the production of a desirable whipped cream. Many failures of cream to whip can be traced directly to the use of improper temperature and period of aging.

### **Adding the Flavor and Sugar to the Cream Reinforced with Dry Skim Milk**

Flavoring materials are added to the cream just prior to whipping to insure complete distribution and to avoid any injurious effect upon the whipping properties of the cream. The amount of flavoring material added will depend upon the consumer demand.

Sugar may be added to the cream when adding the dry skim milk, just prior to whipping or its addition may be deferred until after the cream has been whipped. Best results are acquired if the sugar and dry skim milk are added at the same time. This insures complete dissolving of the sugar which amount is usually 3 to 5 per cent and is sufficient to sweeten the cream as a considerable amount of milk sugar is added in the form of dry skim milk. However, the amount of sugar to be added will vary with the demands of the consumer. By adding the sugar and dry skim milk at the same time there will be less drainage and the whipped cream will have a more resistant body.

When the addition of the sugar is deferred until after the cream has been added, there will be a reduction in overrun and the body will be impaired due to the treatment of the cream necessary for complete mixing. The sugar may only be partially dissolved which will impart a sandy or granular taste to the whipped cream.

### **Whipping the Cream**

The size of the batches of cream to be whipped should be limited to the capacity of the whipper used. It is impractical to whip batches that are excessive for the particular whipper used. Trying to hasten the process by the use of an excess amount of cream will result in a whipped cream that is variable in body and texture and decidedly leaky. The procedure of whipping will depend on type of whipper.

In general the lower the temperature at which the cream is whipped, the more desirable and easy the process of whipping. A temperature of 40 degrees Fahrenheit is most desirable.

The finished whipped cream may be packaged immediately after whipping or stored in bulk and packaged as sold. The whipped cream should be stored at a constant temperature of about 40 degrees Fahrenheit. Exposure to wide fluctuations in temperature should be avoided as the accompanying contraction and expansion impairs the structure and causes drainage from the whipped cream.

When transferring the whipped cream from whipper to a storage container and in all subsequent handling, the whipped cream must be handled gently as the structure is very fragile and easily impaired.

#### **Brief Description for Whipping Cream**

1. Use a high quality of pasteurized cream that has been carefully cooled and standardized.
2. Weigh out the exact quantity (4 to 6 per cent) of dry skim milk and add to the cooled, standardized cream in the form of a paste by mixing with a portion of the original cream.
3. It is best to add the sugar at the time of adding the dry skim milk; however, it may be deferred until just prior to whipping or immediately following the completion after whipping of the cream.
4. Age the treated cream for 12 to 24 hours at 40 degrees Fahrenheit.
5. Add the extract to the cream before whipping.
6. Whip the cream at 40 degrees Fahrenheit if best results are to be obtained.
7. Treat the whipped cream gently and store at 40 degrees Fahrenheit.

#### **Advantages of Adding the Dry Skim Milk to the Cream For Whipping Purposes**

There is an improvement in the quality of the finished whipped cream regardless of the whipper used as evidenced by the following:

1. A reduction of the material from the finished whipped cream.
2. An improvement in the uniformity of the texture and a marked improvement in the smoothness and resistance of the body of the finished whipped cream.
3. The flavor and nutritive value of the whipped cream are improved.
4. Some creams that are undesirable for whipping purposes are made whippable by the addition of the dry skim milk.

#### **ACKNOWLEDGMENT**

The authors wish to express their appreciation to the American Dry Milk Institute, Chicago, Illinois, whose cooperation made this research project possible.