

## COLD TEST

### PRINCIPLE

A preheated oil sample is held in an ice and water bath, and examined at regular intervals for the appearance of a precipitate. The appearance of precipitate is an indication of incomplete winterization or stearin removal processes.

### SCOPE

This method is applicable to refined corn oil. It can be applied to refined vegetable oils from other sources.

### SPECIAL APPARATUS

1. Oil Sample Bottle: 115 mL (4 oz.), narrow mouth. These must be completely cleaned and dried prior to use so they are free from dust particles.
2. Ice Water Bath: The bath is prepared by filling an insulated container with 2-5 kg of finely chipped ice. Cold water is added so that the sample bottles are completely immersed when placed into the bath.
3. Water Bath: Maintain at 25 °C

### PROCEDURE

Heat 200-300 mL of sample (Note 1) while stirring, and remove the heat source immediately when the oil temperature reaches 130 °C (Note 2). Cover, cool to 25 °C in water bath. Fill a sample bottle with the sample, insert a cork stopper tightly and seal with paraffin.

Immerse the sample bottle in the ice water bath. Replenish the ice when necessary to keep the bath solidly packed to maintain the bath temperature at 0 °C. Keep the ice water bath in a refrigerator to reduce ice requirements.

**COLD TEST — continued**

After 6 hours, remove the bottle from the bath and visually examine the sample closely for crystals or cloudiness indicating precipitate formation (Note 3). Do not mistake small and finely dispersed air bubbles for crystals of fat. If the sample is clear, return to the ice bath immediately and repeat observations after 24 hours (Note 4).

Report Cold Test results as follows:

- 6 - : a precipitate found within the first six hours.
- 6 + : a precipitate found between the 6th and 24th hours.
- 24 + : sample remained clear for 24 hours.

**NOTES AND PRECAUTIONS**

1. Laboratory winterized samples may require filtration prior to the Cold Test, but filtration should not be required for commercially refined vegetable oils.
2. The preliminary heat treatment removes traces of moisture, which causes cloudiness and destroys crystal nuclei, which cause premature crystallization.
3. Examining the sample against a dark backlighted background is helpful. The sample should be about 2 meters away from the background when viewing.
4. Although Cold Test observations are commonly made after the 6th and 24th hours, observations can be made at other time intervals and over extended time periods.

**REFERENCE**

Official Method Cc11-53 (1989), American Oil Chemists' Society, Champaign, Illinois.

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**METHOD HISTORY**

Corn Oil, Cold Test (H-10), Date of Acceptance 5-24-1965, Revised 3-31-1992.