

Translated English of Chinese Standard: GB/T28717-2012  
[www.ChineseStandard.net](http://www.ChineseStandard.net) → Buy True-PDF → Auto-delivery.  
[Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net)

**GB**

NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA

ICS 65.120

B 46

**GB/T 28717-2012**

---

**Determination of Malonaldehyde in Feed - High  
Performance Liquid Chromatography**  
饲料中丙二醛的测定 高效液相色谱法

**Issued on: September 03, 2012**

**Implemented on: February 01, 2013**

**Issued by: General Administration of Quality Supervision, Inspection and  
Quarantine;**

**Standardization Administration of the People's Republic of China.**

## Table of Contents

Foreword.....	3
1 Scope .....	4
2 Normative References .....	4
3 Principle .....	4
4 Reagents .....	4
5 Apparatus.....	5
6 Preparation of Specimen.....	6
7 Analysis Procedure .....	6
8 Calculation and Presentation of Results.....	7
9 Repeatability .....	7
Appendix A (Informative) Chromatogram of Malondialdehyde and Thiobarbituric Acid Complex.....	8

# Determination of Malonaldehyde in Feed - High Performance Liquid Chromatography

## 1 Scope

This Standard specifies the high-performance liquid chromatography detection method for malondialdehyde in feed.

This Standard is applicable to the determination of malondialdehyde in compound feed, concentrated feed and feed raw materials.

The detection limit of this Standard method is 0.015mg/kg, and the quantification limit is 0.05mg/kg.

## 2 Normative References

The following documents are essential to the application of this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB/T 6682 Water for analytical laboratory use - Specification and test methods

GB/T 14699.1 Feeding Stuffs – Sampling

## 3 Principle

After malondialdehyde in the sample is extracted by trichloroacetic acid, react with thiobarbituric acid (TBA) to form a pink complex. The supernatant is collected by centrifugation; and detect by high-performance liquid chromatography and fluorescence detector. Use external standard method to calculate the content of malondialdehyde.

## 4 Reagents

Unless otherwise specified, only reagents confirmed to be of analytical grade and Class-I water specified in GB/T 6682 are used in the analysis.

## 6 Preparation of Specimen

According to the provisions of GB/T 14699.1, take at least 500g of representative feed samples; reduce by at least 100g through quartering method; grind them; pass through a 0.9mm aperture sample sieve; mix them evenly and put them in an airtight container; and store them at low temperature in the dark for later use.

## 7 Analysis Procedure

### 7.1 Extraction

Weigh about 2g of specimen (weigh about 1g of feed oil, accurate to 0.001g); put it into a 250mL conical flask; accurately add 50mL of trichloroacetic acid mixture solution (4.4); shake at 180r/min for 30min; take about 20mL of extract into a 50mL centrifuge tube and centrifuge at 5000r/min for 5min.

### 7.2 Derivatization

Accurately pipette 5mL of the supernatant of the above specimen solution (7.1) and 5mL of malondialdehyde standard series solution (4.7) into 25.0mL colorimetric tubes; add 5.0mL of TBA solution (4.3); mix well; and place in a 90°C water bath to keep warm for 20 min. Take it out; cool it quickly in an ice-water bath; transfer it to a centrifuge tube; centrifuge at 12000r/min for 5 min. Take the supernatant and measure it on a computer; and the malondialdehyde standard series and specimens are derivatized simultaneously.

### 7.3 Determination

#### 7.3.1 Liquid chromatography reference conditions

**7.3.1.1** Chromatographic column: C<sub>18</sub> column, 250mm long, 4.6mm inner diameter, 5μm particle size, or equivalent performance.

**7.3.1.2** Column temperature: 35°C.

**7.3.1.3** Mobile phase: Acetonitrile (4.1) + potassium dihydrogen phosphate solution (4.2) = 18 + 82 (V + V); pass through a 0.45μm filter membrane before use.

**7.3.1.4** Flow rate: 1.0mL/min.

**7.3.1.5** Sample-injection volume: 10μL.

**7.3.1.6** Excitation wavelength: 525nm.

**7.3.1.7** Emission wavelength: 560nm.

**This is an excerpt of the PDF (Some pages are marked off intentionally)**

**Full-copy PDF can be purchased from 1 of 2 websites:**

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, [Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net)

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

**----- The End -----**