



## How Storage Conditions, Product Stability, and the Manufacturer’s Warranty Work to Determine your TestDiet® Shelf Life

The purpose of this document is to provide clarification of nutrient stability and shelf life for products in three TestDiet® product segments: research specific complete nutrition diets (modified cereal grain or purified) and enrichment products.

TestDiet® laboratory animal feed products are formulated with precision and manufactured at our Food Safety System Certified 22000 (FSSC 22000) facility in Richmond, Indiana. The current issue of the Guide for Care and Use of Laboratory Animals and USDA facility inspectors suggest using products within a 6 month from the date of manufacture. The below excerpt from THE GUIDE references **manufacturer’s recommendations should be considered:**

*Most natural-ingredient, dry laboratory animal diets stored properly can be used up to 6 months after manufacture. Refrigeration preserves nutritional quality and lengthens shelf life, but food storage time should be reduced to the lowest practical period and the manufacturers’ recommendations considered. 2011. Guide for the Care and Use of Laboratory Animals. p66.*

The manufacturer’s warranty on nutrient stability as well as storage conditions for TestDiet® custom products vary depending on the exact formulation; many contain high levels of dietary fat, sensitive compounds, and purified, unstable forms of vitamins. Consequently, the guarantee for nutrient stability of custom diets is generally 6 months from the date of manufacture, and any extension of your diet usage by controlled storage varies depending on the type of diet. Custom diets should be stored under conditions of 39°F/4°C or lower and ≤ 50% relative humidity. If these storage conditions are not available at your facility, please consult with a LabDiet® nutritionist for further assistance. The recommended shelf life based on proven product stability for our TestDiet® items is provided below in a quick-reference table followed by a detailed description of each category of our products.

<b>Product</b>	<b>Formula Provides the Stability to Assure a Recommended Shelf Life for</b>
<b>TestDiet® Modified Cereal Grain Diets</b>	9 months
<b>TestDiet® Purified Diets</b>	6 months
<b>LabDiet® &amp; TestDiet® Irradiated Enrichment Products</b>	24 months
<b>Non-Irradiated Enrichment Products</b>	12 months

### TestDiet® Modified Cereal Grain Diets:

Often research-specific products are created from the cereal grain LabDiet® product already in-use at your facility, or a very similar variation. Slight nutrient modification, or addition of a compound of interest, to one of our proven cereal grain diets allows seamless transition of your research animals onto a study and can also eliminate the need for a specialized control diet.

The major constituents of cereal grain diets are commodity crops including corn, wheat, and soybean meal. These complex, nutrient-dense ingredients make up the majority of these formulas with micro-nutrients being

added, when needed, to meet requirements specific to the intended species. Exhaustive data supports nutrient stability of diets made using cereal grains for a minimum of 9 months from the date of manufacture. Supporting data illustrating long-term nutrient stability of LabDiet® products and similar research-specific diets, can be found on our website (<https://www.labdiet.com/ProductStability/index.html>).

While the standard ingredients in cereal grain diets are nutrient stable at ( $\leq 70^{\circ}\text{F}/21^{\circ}\text{C}$ ), special consideration may be needed to account for unique aspects of individual diets based on research-specific needs (stability of added compound, for example). When possible, storage at  $\leq 39^{\circ}\text{F}/4^{\circ}\text{C}$  or even  $\leq 0^{\circ}\text{F}/-20^{\circ}\text{C}$  is strongly recommended.

### **TestDiet® Purified Diets:**

Purified diets are created from purified ingredients, such as casein, corn starch, cellulose, and individual vitamins and minerals. The American Institute of Nutrition (AIN) originally created the three formulas on which most purified diets used today are based, AIN-76A, AIN-93M, and AIN-93G. The AIN first developed a universally available formula in 1972, updated that formula in 1982 (what is known today as AIN-76A). Further improvements were made in 1993 resulting in today's common purified formulas, AIN-93M (maintenance) and AIN-93G (growth). In general, the nutrient levels were chosen to very closely meet rodent requirements. Little effort was made to exceed animal requirements to account for possible degradation over time.

With consideration of sensitivity of micro-nutrients, the formulation level relative to animal requirement, and the intended short-term use of these diets, the developing team recommended storage for 3 months under refrigeration ( $\leq 39^{\circ}\text{F}/4^{\circ}\text{C}$ ) and for 6 months under freezer conditions ( $\leq 0^{\circ}\text{F}/-20^{\circ}\text{C}$ ; Reeves et al., 1993). Additional data is needed to evaluate nutrient-stability of purified diets under varying conditions; at this time, we recommend storage of purified diets no longer than 6 months from date of manufacture at ( $\leq 39^{\circ}\text{F}/4^{\circ}\text{C}$ , or preferably ( $\leq 0^{\circ}\text{F}/-20^{\circ}\text{C}$ ), when possible.

### **LabDiet® & TestDiet® Enrichment Products:**

Dietary enrichment products provide supplemental nutrients but are typically not designed to be nutritionally complete diets. Dietary enrichment products should be stored under conditions of  $\leq 70^{\circ}\text{F}/21^{\circ}\text{C}$  and  $\leq 50\%$  relative humidity. Because they are typically not the sole source of the animals' daily ration, the assured product stability or shelf-life for our enrichment products is 12 months from the date of manufacture; all irradiated enrichment products are assured for stability up to 24 months.

We are confident that TestDiet® products maintain their nutritional integrity and remain palatable and safe for the timeframes outlined above. However, the contents of this publication do not supersede or override the decisions, protocols, and/or procedures of the inspection agencies, laboratory animal governing bodies, or directors or managers of lab animal facilities at research institutions. Our intention is to provide information about how our feeds are formulated and how product stability can be extended based on factual data we have accumulated over time. To review data supporting the stability of our products, please visit the Product Stability section at [www.testdiet.com](http://www.testdiet.com).

If questions or concerns arise, please do not hesitate to contact one of our LabDiet® team members by emailing [info@testdiet.com](mailto:info@testdiet.com).

## **TestDiet®**

Reeves, P.G., F.H. Nielsen, and G.C. Fahey, Jr. 1993. AIN-93 purified diets for laboratory rodents: Final report of the American Institute of Nutrition Ad Hoc Writing Committee on the reformulation of the AIN-76A rodent diet. J. Nutrition. Committee Report 1939-1951.