

Solvita® Grain Fungal Spoilage Test Instructions

1. Test weight of any grain should be 100g per 8oz (250cc) jar (approximately to the fill-line on the jar) 1. The moisture content should be determined at the time of the test and is used in the storage life calculations.

There are two types of procedures for grain testing: Using as-is a “field moist” sample which is the Woods End protocol, or using samples adjusted equally to 21% moisture, which is the Purdue Protocol. The Woods End protocol is most useful to check new arrival and freshly-harvested grains going into storage, to determine that background respiration is sufficiently low for good storage. The Purdue-Stroshine protocol is a means to evaluate the **spoilage potential**. The latter is very important for long term storage or international shipping where moisture content is expected to drift upwards over time. Both methods contribute to full understanding of current and potential grain spoilage.

2. INSERT Gel-Indicator. Tear-open the “Lo-CO₂” foil package, remove the paddle and carefully insert into the grain sample as indicated, and firmly attach lid. Incubate at 24°C for 4-24 hrs.

3. Read results at 24 hrs (optionally also at 4 hrs for a more sensitive result) by removing the gel paddle from jar and sliding gel-side up into the CO₂ reader; depress the CO₂-Lo button for the reading, and then the READ button to flash the LEDs- the results display immediately.

If multiple readings are taken i.e. at 4 and 24hrs), after removing the paddle the first time from the jar, immediately place the lid back on it, take the DCR reading, and then reinsert paddle into sample, and rapidly re-seal the jar. According to Purdue research, the CO₂ leakage has been determined to be very small from this.

4. Results: The Color Unit (first line of text on reader) is the Color Value as per the visual color chart when set for CO₂-Lo reading. These color ranges represent an arbitrary scale corresponding approximately to the log CO₂ concentration; the second line on the reader gives the CO₂ mg/kg readout.

5. Calculate the remaining days storage of grain sample, corresponding to 0.5% dry matter loss due to respiration, by the following formula. The loss of 0.5% corresponds approximately to a 1-grade in official quality rating.

Days to 0.5% DM loss = 62.5 * sample weight (dry) ÷ DCR ppm readout.

NOTES

Jar type: The kit ships normally with polystyrene 8oz jars. Results taken in 8oz glass jars are more sensitive than those in plastic. For grain testing we recommend 8 oz Glass Jars

Jar size: Some grain labs use 200g weights of sample; if the relationship of weight to volume of jar remains the same i.e. 200 g in a 1 pint jar, then the conditions of this test remain the same and the calculations are consistent.



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