LET'S GO FISHING

source of food and nutrition

A popular worldwide sport is the love for fishing. It is also provides a necessary source of food and nutrition for many. The use of live bait on the fish hook – worms, eels, small pieces of fish - is an essential part of the equipment preparation for successful fishing. In recent years, synthetic fish bait has become popular because it provides a less expensive alternative with various choices for attracting the specific type fish that you are interested in. This article explains how synthetic fish bait is tested for its textural quality so that performance when in use will be as good as the real item.

TEST PRINCIPLE

The objective is to identify a Texture Analyzer instrument and fixture for holding the synthetic bait in position. The test procedure evaluates the hardness and hardness work done on various types of fishing bait by compressing or squeezing the object to measure its resistance to deformation. Figure 1 shows an example of a Texture Analyzer with probe used to compress or penetrate the sample.

BACKGROUND

Synthetic fish bait is mainly composed of plastic to replicate the same feel and texture of various worms and small fish. They are also scented to the particular odor that worms or small fish would have to help attract and catch fish. A needle probe shaped like a small diameter cylinder is used during this compression test to determine the hardness and hardness work done of each fish bait sample. See Figure 2. This test determines the amount of force it will take to compress and hook synthetic fish bait.

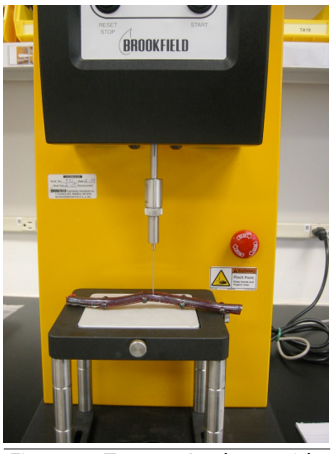

Figure 1: Texture Analyzer with probe used to compress or penetrate the sample

Figure 2: Shows the amount of force it will take to compress and hook fish bait

TEST SETTINGS

The Texture Analyzer is set up using the following test parameters.
Penetration speed and deformation distance into the fish bait are specified.

Test Type	:	Compresssion
Pre-Test Speed	:	1 mm/s
Test Speed	:	1 mm/s
Target Type	:	Deformation
Target Value	:	4 mm
Trigger Load	:	10 gm

PROCEDURE

1. Attach the needle probe to the texture analyzer.
2. Fix the base table to the instrument.
3. Insert a base plate into the table.
4. Remove the sample from the packaging and place it on the base table.
5. Lower the needle probe so that it is a few centimeters above the sample.
6. Position the sample worm under the needle probe by re-positioning the base table. Make sure the thickest part of the sample is centrally located under the probe.
7. Once alignment is complete, tighten the base table to prevent further movement.
8. Commence testing

OBSERVATION DURING TESTING

When a trigger force of 10 g has been detected as the needle probe makes contact with the bait, the probe precedes to compress/ penetrate the sample over the specified distance of 4 mm. As the probe penetrates the sample, the measured force is seen to increase. The maximum force to the specified distance is a measure of sample hardness (peak load); the higher the value, the firmer the sample. The hardness work done is a measure of the energy needed to compress the fish bait. Once the test is done the probe will return to its starting position.

Eight different samples listed in Table 1 are tested in this manner. The results are shown in the below graphs. Figures 3 and 4 show the measured force vs time, while Figures 5 and 6 show the measured force vs penetration distance.

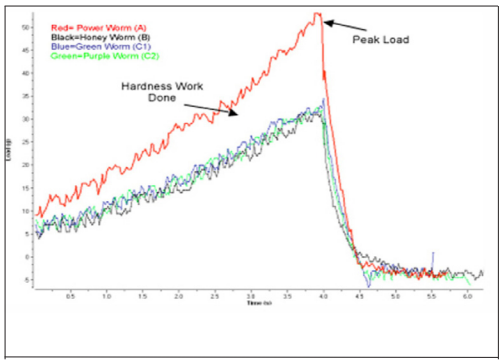

Figure 3 is a graph demonstrating load vs time for samples A through C2.

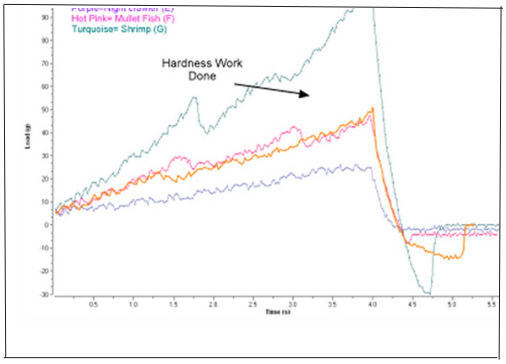

Figure 4 is a graph demonstrating load vs time for samples D through G.

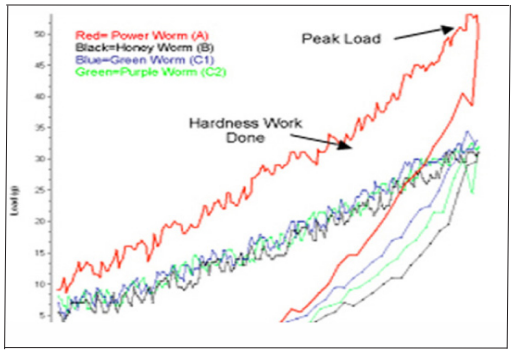

Figure 5 is a graph demonstrating load vs distance for samples A through C2.

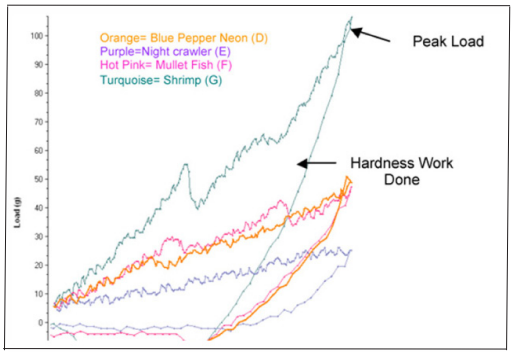

Figure 6 is a graph demonstrating load vs distance for samples D through G.

DATA REPORT

Sample Description		**Results**	Hardness	Hardness	Fracturability
Product Name	Batch Name	Sample	Cycle 1	Work Cycle 1	
			g	mJ	g
Fish Bait	#A PowerWorm A9	1	53.00	1.05	11.00
Fish Bait	#B HoneyWorm TA9	1	31.00	0.61	5.50
Fish Bait	#C Worm-green TA9	1	34.50	0.73	7.00
Fish Bait	#C Worm-purple TA9	1	32.50	0.67	8.00
Fish Bait	#D BluePepperNeon TA9	1	51.00	1.04	8.00
Fish Bait	#E Nightcrawler TA9	1	26.00	0.58	6.50
Fish Bait	#F MulletFish TA9	1	47.50	1.07	7.00
Fish Bait	#G Shrimp TA9	1	106.50	1.93	9.50

Table 1: Data collected during testing of the eight fish bait samples.

The hardest fish bait is the Shrimp (Sample G). Its peak load was recorded and measured at 106 gm. The hardness work done for the shrimp was recorded at 1.9 mJ. The fracturability of the shrimp was measured and recorded at 9.5 gm. The softest fish bait sample was the Night Crawler (Sample E). The peak load for the softest sample was recorded and measured at 26 gm. The hardness work done for the night crawler was recorded and measured at 0.5 mJ. The fracturability of the Night crawler was measured and recorded at 6.5 gm.

CONCLUSION

The test results prove that the Texture Analyzer fitted with needle cylinder probe is suitable for testing the various types of fish bait for hardness and hardness work done data results. Test procedure, sample preparation, and equipment setup must be adhered to for reproducible and repeatable test results.

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