

EL604. Buoys for Fish Culture

[EL604-2001/5/2015-5]



1. Scope

This criteria applies to the buoy used for culturing aquatic products such as laver, oyster and fishes, including the product that is made of synthetic resin with a hollow inner structure produced by thermal bonding or forming or by sewing with fiber cloth material on the outer side of a synthetic resin frame, product made of foam synthetic resin and product with durable synthetic resin cloth or coating on the surface foam synthetic resin surface. However, product of foam molding synthetic resin with a hollow donut shape structure that lacks durability shall be excluded.

2. Definitions

2.1

“Thermal bonding” refers to the way of forming that the part to be attached is melted and glued by heating thermoplastic resin.

2.2

“Organotin compound” refers to an organic compound that includes tin (Sn) as one of the elements of the product.

2.3

“Foam buoy” refers to a type of buoy that is produced by foam molding with polypropylene resin or polystyrene resin.

2.4

“Injection molded buoy” refers to a type of buoy with a hollow inner structure produced by thermal bonding of injection molded synthetic resin such as polyethylene in such a way that water cannot penetrate. Buoys made by sewing fiber material on the outer surface of the product shall also be included.

2.5

“Sheathed buoy” refers to a type of foam buoy for which the physical and chemical characteristics have been enhanced by treating the surface of the product with sheath or coating of synthetic resin material to provide sufficient strength.

Note) Application of this criteria is limited to the products for which the surface is treated properly so that peeling or separation does not occur. For example, a product sheathed with polyethylene film without complete treatment using adhesive or heat shall not be considered as a sheathed buoy. Furthermore, as a general rule none of the inner surfaces of sheathed buoy and foam buoy shall be exposed.

2.6

“ODP (Ozone Depletion Potential)” is an index that indicates the relative effects of a substance on the depletion of the ozone layer in comparison to the effects of CFC-11, with the index value of 1.

2.7

“GWP (Global Warming Potential)” is an index that indicates the relative effects of a substance on global warming in comparison to the effects of CO₂, with the index value of 1.

Note) The GWP for time horizons of 100 years in accordance with “Climate Change 2007” of IPCC (Intergovernmental Panel on Climate Change) shall be applied to this criteria.

3. Certification Criteria

3.1 Environmental Criteria

3.1.1

With respect to the use of chemical substances during the manufacturing process, or the emission of harmful substances while the product is consumed, the following requirements shall be satisfied.

3.1.1.1

Organotin compounds such as tributyltin (TBT) or triphenyltin (TPT) shall not be used as an antifouling agent.

3.1.1.2

Polybrominated biphenyls (PBBs), polybromodiphenyl ethers (PBDEs), tetrabromobisphenol A (TBBPA) and hexabromocyclododecane (HBCD) shall not be used as a flame retardant. However, this requirement is deemed to have been satisfied if the total sum of each contents of PBBs PBDEs, TBBPA and HBCD is below 100 mg/kg, or the total bromine (Br) content is below 30 mg/kg.

3.1.1.3

Synthetic resins containing halogens such as PVC shall not be used, and any synthetic resin used in the product shall not contain halogen compounds if the synthetic resin content in a product is over 25g. However, organic fluorine additives of below 0.5 weight % (example: anti-dripping agent) shall be allowed.

3.1.1.4

No lead compound or cadmium compound shall be added to synthetic resin if the synthetic resin content in a product is over 25 g.

3.1.1.5

When the product is disassembled for easy separation and recovery while it is disposed, if the weight of the isolated synthetic resin is over 25 g and the area of its flat surface is over 200 mm², the material classification information shall be marked on it.

3.1.1.6

Foam agent shall be of a type with ODP of 0 and GWP of below 3,000.

3.1.2

With respect to the lifespan of the product while the product is consumed and the emission of waste and recyclability when the product is disposed, the following requirements shall be satisfied.

3.1.2.1

In the result of weatherproof test, the elongation rate of the sheath of sheathed buoy shall be over 70%, and no crack, fragmentation or damage shall occur on the surface of the injection molded buoy or foam buoy.

3.1.2.2

In the result of the shockproof test, buoyance shall not be affected by crack, damage or ripping on the surface of the product.

3.1.2.3

In the result of rope stress test of foam buoy and sheathed buoy, product shall not be deformed by crack, ripping or damage to the product's surface.

3.1.2.4

The friability of sheathed buoy and foam material of foam buoy shall be lower than 5% in terms of weight reduction.

3.2 Quality Criteria

3.2.1

The shape, dimension, density and buoyance of product shall meet the requirements specified in the "Eco-friendly Buoy Certification Criteria" in accordance with Item 3, Paragraph 1, Article 5 of the Enforcement Regulation of the "Fishing Ground Management Act" that is applicable at the time of the application for certification.

3.2.2

In the result of the sea water pressure resistance test, the exterior of the product shall not be deformed and the weight increase shall not exceed 5%.

3.3 Consumer Information

3.3.1

Material for synthetic resin contained in the product and proper disposal method

3.3.2

Dimension, buoyance, density (sheathed buoy and foam buoy) and volume of product

3.3.3

Cautions while using the product

4. Test Methods

Certification Criteria		Test and Verification Methods
Environmental Criteria	3.1.1	3.1.1.1 Verification of submitted documents and test report by an accredited testing laboratory in accordance with the following test method or an equivalent <ul style="list-style-type: none"> Organotin compounds KS K 0737 (Test method for the determination of selected organotin compounds in textiles)
		3.1.1.2 Verification of submitted documents or test report by an accredited testing laboratory in accordance with the following test methods or an equivalent <ul style="list-style-type: none"> PBBs, PBDEs KS C IEC 62321 (Electrotechnical products – Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers) TBBPA, HBCD KS M 1072 (Determination of TBBPA(Tetrabromobisphenol-A) and HBCD(Hexabromocyclododecan) in polymer materials) Total bromine (Br) KS M 0180 (Standard Test Method for halogen(F, Cl, Br) and sulfur content by Oxidative Pyrohydrolytic Combustion followed by Ion Chromatography Detection(Combustion Ion Chromatography-CIC))
		3.1.1.3 ~ 3.1.1.6 Verification of submitted documents
	3.1.2	3.1.2.1 Test report by an accredited testing laboratory in accordance with the test methods specified in 4.1 and 4.2, or certificate of equivalent or higher standards
		3.1.2.2 Test report by an accredited testing laboratory in accordance with the test methods specified in 4.1 and 4.4, or certificate of equivalent or higher standards
		3.1.2.3 Test report by an accredited testing laboratory in accordance with the test methods specified in 4.1 and 4.5, or certificate of equivalent or higher standards
		3.1.2.4 Test report by an accredited testing laboratory in accordance with the test methods specified in 4.1 and 4.6, or certificate of equivalent or higher standards

Quality Criteria	3.2.1	Test report by an accredited testing laboratory in accordance with the “Eco-friendly Buoy Certification Criteria” based on Item 3, Paragraph 1, Article 5 of the Enforcement Regulation of the “Fishing Ground Management Act.”
	3.2.2	Test report by an accredited testing laboratory in accordance with the test methods specified in 4.1 and 4.3.
Consumer Information		Verification of submitted documents

4.1 General Matters

4.1.1

One piece of test sample shall be prepared for testing as a general rule, and a sufficient amount of samples required for the production of test samples specified in each individual standard shall be available.

4.1.2

Test sample shall be collected at random by eco-label certification body from products on the market or those in storage at the production site.

4.1.3

The result of test shall be numerically set according to KS Q 5002 (Statistical interpretation method of the data – Part 1: Statistical description of the data).

4.1.4

As a general rule, test samples shall be stored in a controlled environment with a temperature of $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and a relative humidity of $(50 \pm 10) \%$ for at least 16 hours before conducting a test.

4.2 Method for test of accelerated weatherproof performance

4.2.1

Unless otherwise specified, the exposure test method using xenon-arc source (WX-A) specified in KS F 2274 (Recommended Practice for Accelerated Artificial Exposure of Plastics Building Materials) shall be used, and the exposure time shall be 500 hours.

4.2.2

Test methods and test conditions for the calculation of the elongation rate of sheath material of synthetic resin sheathed buoy shall be as described in the following table.

Synthetic resin sheath material of sheathed buoy	Test method	Test sample	Test speed (mm/min)
Polyurea material	KS M 6518 (Physical Testing Methods for Vulcanized Rubber)	Type 3 of Dumbbell Type in 5.2.1	500
PVC Tarpaulin	KS K 0521 (Tensile Properties of Fabrics)	Test sample in 8.2	100
PE (Polyethylene)	KS M 3001 (Testing Methods for Mechanical Characteristics of Polyethylene Film)	Test sample in 6.1 Type 2 in Fig 1	500

Note) Elongation rate shall be calculated using the following formula, and the result shall be expressed as the average value taken from three test samples.

$$EB (\%) = (E1 / E0) * 100$$

, where EB: ratio of elongation rate after conducting the weatherproof test (%)

E0: elongation rate before conducting the weatherproof test (%)

E1: elongation rate after conducting the weatherproof test (%)

4.3 Method for test of seawater pressure proof performance

4.3.1

Measure the weight of the product before conducting the test.

4.3.2

Fix the product securely with a three-strand twisted polypropylene rope with diameter of 10 mm and nominal density of (48 ± 5) g/m to the bottom surface of a pressurized water chamber.

4.3.3

Fill the chamber with sea water until the product is completely submerged. Seal the chamber, apply the pressure that corresponds to the pressure at a depth of 10 meters and maintain the condition for 10 days.

Note) This test can be conducted by submerging the buoy to a depth of 10 meters in actual sea water for 10 days. However, in this case the applicant must agree to raise no objection to the test result.

4.3.4

Check for the existence of any anomaly that affects buoyance, such as crack, damage or ripping in the product as a result of the test.

4.3.5

Thoroughly wipe off any moisture from the surface of the product, weigh the product and then use the ratio of the weight without moisture to the weight measured before the test.

4.3.6

Test shall be conducted without modifying the product. If a modification to the product is unavoidable, the size, etc. can be changed through an agreement with the applicant.

4.4 Method for test of shockproof performance

The 'Shockproof Test' specified in the "Eco-friendly Buoy Certification Criteria" of the Ministry of Oceans and Fisheries shall be applied, except in the following cases.

4.4.1

The location of fall test shall be the approximate center of the product.

4.4.2

Test products shall not be classified into different grades, and the weight of the pendulum shall be 5 kg.

4.5 Test method of rope stress test

The 'Rope Stress Test' specified in the "Eco-friendly Buoy Certification Criteria" of the Ministry of Oceans and Fisheries shall be applied, except in the following cases.

4.5.1

As a general rule, original size of test sample shall be used without any modification. If the test is difficult with the original size, however, the test sample may be cut in the direction of the longer side within the range that it does not affect the test result. In this case, the modification shall be indicated in the test report.

4.5.2

Wrap the product with a rope by one turn in the direction of the circumference of the approximate center of the product, and securely fix both ends of the rope to the top and bottom of the tensile strength tester. Product shall be supported in an appropriate way so that it does not move easily when the rope is pulled.

4.5.3

The rope used for the testing shall meet the requirements specified in “4.3 Test method of sea water pressure proof performance.”

4.5.4

Upon completion of the test, check for the existence of any crack, damage or ripping on the surface of the buoy caused by the rope.

4.6 Test method of friability performance

4.6.1

Conduct the test in accordance with the method specified in KS M ISO 6187 (Rigid Cellular Plastics – Determination of Friability); however, the material of the regular hexahedron object used for the testing shall be stainless steel with the diameter of 19 mm \pm 1 mm instead of an oak tree. Test shall be conducted with a rotation speed of 60 \pm 2 times per minute for 30 minutes.

4.6.2

For a sheathed buoy, the sheath should be removed and the test shall be conducted on the foam buoy without a sheath.

4.6.3

Measure the weight after removing small particles upon completion of the test, and calculate the reduction ratio.

5. Reasons for Certification

“Extension of lifespan, reduction of ocean wastes”