

U.S. Department
of Transportation

**United States
Coast Guard**



U.S. Coast Guard Headquarters

Lifesaving & Fire Safety Standards Division
(G-MSE-4)

Guidelines for Approval of
Emergency Provisions for Lifeboats and Liferafts
August 1997

Guideline 46--Emergency Provisions

Sec.

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1 Scope.

(a) These guidelines describe emergency provisions approved by the U.S. Coast Guard to be carried in lifeboats and liferafts on certain vessels. The provisions described in these guidelines meet the IMO recommendations for emergency food rations.

(b) Marine survival rations are intended strictly for short-term survival situations at sea, and not necessarily as a long-term, well-balanced diet. The primary concern is to reduce water uptake, since fresh water is limited in a sea survival situation. Therefore, salt and protein content should be low. Carbohydrate provides a source of energy readily usable by the body, therefore it should be a high percentage of the provision. Since fats can contribute to rancidity, they should be limited to the amount needed for binder and palatability.

3 Incorporations by reference.

(a) The following Federal Specification and Standard are incorporated by reference into these guidelines:

(1) TT-L-32A - Lacquer; Cellulose Nitrate, Gloss for Aircraft Use, with Amendment 1, dated 9 March 1973.

(2) Federal Test Method Standard 101C, Method 5009.1 - Leaks in Containers, dated 13 March 1980.

(b) The following Military Specification is incorporated by reference into these guidelines:

(1) MIL-B-131F - Barrier Materials, Watervaporproof, Flexible, Heat-Sealable, with Amendment 3 dated 9 June 1976.

(c) The following standard of the American Society for Testing and Materials (ASTM) is incorporated by reference into these guidelines:

(1) ASTM B 117-73 - Standard Method of Salt Spray (Fog) Testing, reapproved 1979.

(d) In addition to the requirements of these guidelines, emergency provisions should meet the applicable requirements of the Federal Food, Drug, and Cosmetic Act and regulations issued under the authority of that Act.

5 General requirements for emergency provisions.

(a) The composition of the provisions should be as follows:

Moisture:	3 - 7% maximum	
Salt:	0.2% maximum	
Carbohydrate:	60-70% (weight)	50-60% (energy content)
Fat:	18-23% (weight)	33-43% (energy content)
Protein:	6-10% (weight)	5- 8% (energy content)

(b) Emergency provisions should consist of components that do not provoke thirst and which are not unpleasant to taste or eat.

(c) At least 25% of the contents of each unit of emergency provisions (based on food energy value) should be able to be mixed with water and drunk.

(d) The emergency provisions should be stable and suitable for storage in the container for a period of five years in temperatures ranging from -30°C to +65°C (-22°F to +149°F).

(e) The place where the provisions are packed should be clean and sanitary.

10 Containers for emergency provisions.

(a) Emergency provisions should be in hermetically sealed containers that are of corrosion resistant material or are treated to be corrosion resistant. If any component of the provisions can spoil due to oxidation, the container should either be evacuated or filled with a gas that will not react with the provisions. Vacuum packing is recommended for all flexible packages to help determine if the package is properly sealed.

(b) If the container is a can, it should be double seamed and, if lined, be lined with a material that is compatible with the emergency provisions.

- (c) If the container is a steel can, in addition to the requirements of paragraph (b) of this section, it should -
 - (i) have not less than .75 (lb./base box) electrolytic tin plating on its exterior surfaces, and
 - (ii) after filling and sealing, be dip-coated with one coat of clear lacquer meeting TT-L-32 using a process that assures complete coating of the exterior of the can.
- (d) A can which does not meet the requirements of paragraph (c) of this section can be approved if it has corrosion resistant properties equivalent to the can described in paragraph (c).
- (e) If the container is a flexible package, the package material should meet the following requirements of MIL-B-131:
 - (i) Seam strength.
 - (ii) Resistance to aging.
 - (iii) Water vapor transmission rate.
- (f) Emergency provisions and their containers must be capable of passing the tests and inspections prescribed in 25(b).

15 Marking and instructions.

- (a) The container should be clearly and permanently marked with -
 - (i) the name and address of the approval holder,
 - (ii) the Coast Guard approval number,
 - (iii) the total food energy value of provisions in the container in Calories and kJ,
 - (iv) the lot number,
 - (v) the month and year the provision was packed, and
 - (vi) The month and year of expiration (five years after the date of packing).
- (b) The emergency provision must include waterproof instructions for use, assuming consumption of 3350 kJ per person per day.

20 Independent laboratory.

The approval and production tests in these guidelines must be conducted by or under the supervision of an independent laboratory accepted by the Coast Guard under Subpart 159.010.

25 Procedure for approval.

- (a) Emergency provisions are approved by the Coast Guard under the procedures in 46 CFR Subpart 159.005.
- (b) The following tests and inspections must be performed on samples from the first lot of emergency provisions offered for Coast Guard approval:

- (i) Contents. The emergency provisions must be analyzed for the composition required under 5(a)
- (ii) Low and high temperature storage. Two empty sample containers must be prepared and sealed in the same manner as is used for regular provision containers. If the containers are flexible packages, they must be sealed in such a way as to contain as much air as possible. The two empty samples, and two filled samples must be placed in a chamber at the low temperature specified in 5(d) for 24 hours, followed by 24 hours at the high temperature. At the end of this period each container must be examined. There must be no evident deterioration of the container, any protective coating on the container, the sealing of the container, or the required markings on the container.
- (iii) Leakage. The two empty samples from the low and high temperature storage test must be subjected to the leakage test as described in Federal Test Method Standard 101, Method 5009, using the hot water technique for cans and the squeeze technique for flexible packages. There must be no leakage evident as a result of this test.
- (iv) Water immersion. The two filled samples from the high and low temperature test must be immersed in salt water having the approximate salinity of sea water for 24 hours. At the end of this period the container must be examined. There must be no evident deterioration of the container, the required markings on the container, or the sealing of the container.
- (v) Durability. When completely dry, the two samples from the water immersion test must be placed in a tumble tester as shown in Figure 25(b)(v) which must be rotated at approximately 10 rpm for a total of 100 revolutions. At the end of this period, each container must be examined. If the container is not a can as described in 10(d), then each container must be opened and the contents examined. There must be no evident deterioration of the sealing of the container, or the emergency provisions inside.
- (vi) Corrosion. If the container is a can as described in 10(d), the two samples from the durability test, must be subjected to salt spray test for 120 hours as described in ASTM B 117. At the same time, two reference cans meeting 10(c) which have also been subjected to the low and high temperature storage, immersion and durability tests, must also be subjected to the salt spray test procedure. The seams of the cans must face the salt spray mist during the test. At the end of the test period. each sample container must be examined, then the container must be opened and the contents examined. There must be no evident deterioration of the sealing of the sample container, or the emergency provisions inside. The sample containers must not have more corrosion than the reference containers.
- (vii) Drop. Two full containers must be dropped onto a concrete surface from a height of 3m (10 ft.). One of the containers must strike on the surface on its end, and the other must strike the surface on its side. There must be no evident deterioration of the sealing of the containers as a result of this test.

NOTE: Emergency provisions are carried in lifeboats and liferafts which may be dropped into the water from great heights. This test is intended no make sure that the container will survive such a drop. If actual experience with lifeboats and liferafts is unsatisfactory, modifications and additional tests may be required.

(viii) Flexible package material. Flexible package material which does not meet MIL-B-131 must be tested for conformance with 10(e).

30 Methods of sampling, inspections and tests.

- (a) Production tests must be conducted under the procedures in Subpart 159.007. For each lot of provisions produced, an inspector from the independent laboratory must inspect the place of manufacture, observe the sanitary conditions and the various operations involved in the preparation of the emergency provisions, and determine that they are in accordance with the plans and specifications submitted by the manufacturer and approved by the Commandant. Results of a government health inspection may be accepted for the sanitation portion of this inspection.
- (b) A production lot consists of the emergency provisions offered for inspection at one time. A new lot must be started with any change in materials or production methods, or when discontinued production is resumed. (Stopping of production over nights or weekends is not considered discontinued production.) Samples for production tests must be selected at random from each lot. The required sample size for various lot sizes is given in Table 30(b).

Table 30(b) - Sample size for various lot sizes

Lot Size	Sample Size	Acceptance Number
35- 800	35	0
801-1,300	50	1
1,301-3,200	75	2
3,201-8,000	110	3
8,001 and over	150	4

- (c) An independent laboratory inspector must select the required number of samples at random. The inspector must verify that the package, the markings on the package, and the contents of the samples selected are in accordance with the plans and specifications submitted by the manufacturer and approved by the Commandant. The number of samples found not to comply must not exceed the acceptance number in Table 30(b). To prevent destruction of finished packages, the inspector may examine the contents of an equivalent number of emergency provisions before they are packaged.

Revisions:

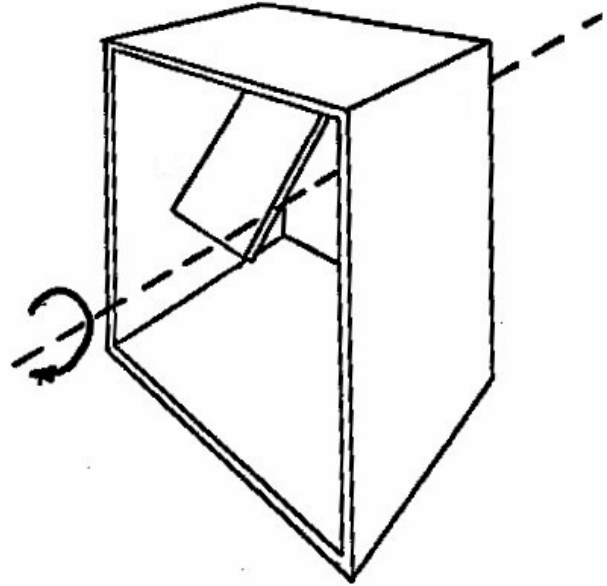
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Changed Fat content under sec. 5(a) to 18-23% to agree with IMO Recommendation (18-20% in May 1996 version believed to be typographical error.)

Tumble Test Apparatus

Description: Cubic (approximately) box, roughly 450 mm (18 inches) on each side. One end is shown removed for view of fixed barrier inside. Barrier extends out from one side in such a way that it turns rolling containers, but enough clearance is left between the barrier and the ends of the box for the pair of containers to slide through. (See detailed drawing of barrier side below.) Broken line represents the axis of rotation. Entire apparatus shall rotate at a speed of 10-20 RPM.

One end of the apparatus shall be hinged so that it can be opened and closed with ease. It shall be capable of being snugly closed.



(Note: Apparatus must rotate in the shown direction. (Clockwise direction.)

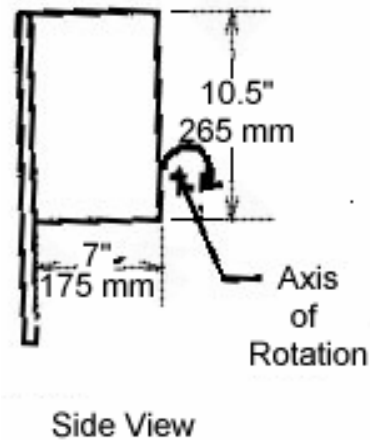
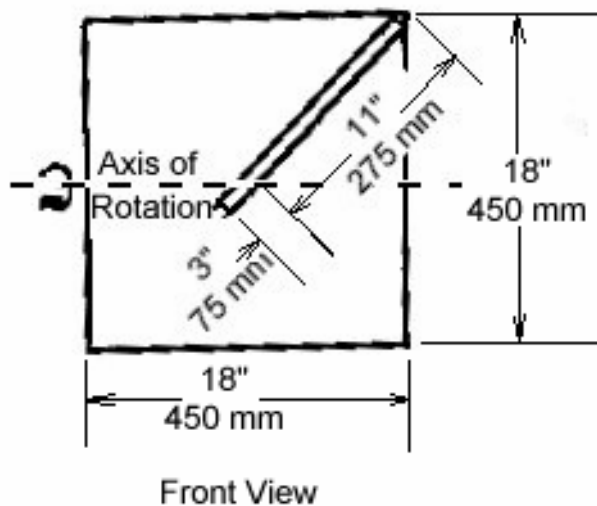


Figure 25(b)(v) - Tumble Test Apparatus