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INTERNATIONAL INSPECTION & SURVEYING
 INSPECTIONS REQUIRED BY REGULATIONS FOR
 DANGEROUS GOODS, SOLID BULK SUBSTANCES AND
 NOXIOUS LIQUID SUBSTANCES
 MARINE SURVEY AND CARGO INSPECTION
 MARINE CONSULTANT
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ORIGINAL
 (Ref. OT)

CERTIFICATE

YOKOHAMA
 Date: June 19, 2009
 Certificate No.K2016.1/09

THIS IS TO CERTIFY THAT we, the undersigned did, at the request of


Wakayama Prefecture,

did "**Burning rate test, Pyrophoric solids test & Self-heating substances test**" the substance submitted by the applicant as mentioned below in accordance with "The Japanese Regulations for the Carriage and Storage of Dangerous Goods by Ships" based on "The United Nations Recommendations on the Transport of Dangerous Goods - Model Regulations" for readily combustible solids, and hereby report as follows.

- 1. **Applicant** : Wakayama Prefecture
- 2. **Common name** : Charcoal
- 3. **Product name** : Bincho Charcoal made in Wakayama Prefecture / Powder
- 4. **Ingredient (Single product)** : Carbon
- 5. **Storage** : —

6. **Physical & Chemical Properties:**

- 6.1 **Appearance** : Black Powder
- 6.2 **Solubility(25°C)** : Not soluble in water
- 6.3 **Density** : —
- 6.4 **pH** : —

この写は原本と相違ないことを証明する。
 和歌山県農林水産部 山村整備課長
 No 4001


7 **Name of test:**

The United Nations Recommendations on the Transport of Dangerous Goods-Manual of Tests and Criteria Second Revised Edition SECTION 33 Classification Procedures, Test Methods and Criteria Relating to Class 4, Division 4.1 Flammable solids,

① Division 4.1 Flammable solids,

Test N.1: Test method for readily combustible solids, "Preliminary screening test & Burning rate test".

② Division 4.2 Substances liable to spontaneous combustion :

Test N.2: Test method for pyrophoric solids & test N.4: Test method for self-heating substances.

8 Test methods and results:

8.1 Test N.1: Test method for readily combustible solids

8.1.1 Preliminary screening test (for substance other than metal powders):

The substance in its commercial form, should be formed into an unbroken strip or powder train about 250 mm long by 20 mm wide by 10 mm high on a cool, impervious, low heat-conducting base plate. A hot flame (minimum temperature 1,000 °C) from a gas burner should be applied to one end of the powder train until the powder ignites or for a maximum of 2 minutes. It should be noted whether combustion propagates along 200 mm of the train within the 2 minutes test period; if the substance should not be classified as a flammable solid and no further testing is required. If the substance propagates burning of a 200 mm length of the powder train in less than 2 minutes, the full test programme should be carried out.

8.1.2 Burning rate test (for substance other than metal powders) :

(When test results are recognized to be "negative", as above no proper Burning rate test be needed)

1 ml of a wetting solution should be added to the pile 30-40 mm beyond the 100 mm timing zone. Apply the wetting solution to the ridge drop by drop, ensuring the whole cross-section of the pile is wetted without loss of liquid from the sides. The liquid should be applied over the shortest possible length of the pile consistent with avoiding loss from the sides. Any suitable ignition source such as a small or a hot wire of minimum temperature 1,000 °C is used to ignite the pile at one end. When the pile has burned a distance of 80 mm, measure the rate of burning over the next 100 mm. Note whether or not the wetted zone stops propagation of the flame for at least 4 minutes. The test should be performed six times using cool plate each time, unless a positive result is observed earlier.

8.1.3 Test criteria and method of assessing results:

Powdered, granular or pasty substances should be classified in Division 4.1 when the time of burning of one or more of the test runs, in accordance with the test method described in 7.2.2, is less than 45s or the rate of burning is more than 2.2 mm/s. Packing Group II should be assigned

if the burning time is less than 45s and the flame passes the wetted zone. Packing Group III should be assigned if the burning time is less than 45s and the wetted zone stops the flame propagation for at least four minutes.

8.1.4 Test result of Preliminary screening test:

The substance ignited red-hot while the ignition source had touched during 2minutes, however inflammation stopped at 2cm from the edge of train.

When test results are recognized to be "negative", as above no proper Burning rate test (8.1.2) be needed.

8.1.5 Evaluation:

As the results of the above tests & criteria, the test substance

"Bincho Charcoal made in Wakayama Prefecture / Powder" ,
"does not comes under a Flammable solid, except Self-reactive substance)
-combustible solid of division 4.1"

8.2 Test N.2: Test method for pyrophoric solids Pyrophoric substances test

8.2.1 Pyrophoric solids test:

One to two ml of the powdery substance to be tested should be poured from about 1 m height onto a noncombustible surface and it is observed whether the substance ignite during dropping or within 5 minutes of settling. This procedure should be performed six times unless a positive result is obtained earlier.

8.2.2 Test results of Pyrophoric substances test

In six times test, the test sample no ignition within 5 minutes.

8.2.3 Evaluation:

As the results of the above tests & criteria, the test substance "does not comes under a Spontaneous combustion solids-Pyrophoric solid of Division 4.2, Packing group I ."

8.3 Test N.4: Test method for self-heating substances.

8.3.1 Self-heating solids test:

Tests are performed to determine if substances in a 25 mm or 100 mm sample cube, at test temperatures of 100 °C, 120 °C, 140 °C, undergo spontaneous ignition or dangerous self-heating, which is indicated by a 60 °C rise in temperature over the oven temperature within 24 hours. The classification scheme is illustrated in figure 33.3.13.3.1. These criteria are based on the self-ignition temperature of charcoal.

If dangerous self-heating does not occur with the substance in a 100 mm sample cube at 140 °C then the substance is not a self-heating substance of division 4.2.

8.3.2 Test results of Self-heating solids test:

At the test, the substance in a 100mm sample cube at 140°C, which did not occur spontaneous ignition or indicated by a 60°C rise in temperature over the oven temperature within 24 hours.

8.3.3 Evaluation:

As the negative results of the above tests & criteria, the test substance “does not comes under a Spontaneous combustion solids-Self-heating solid of division 4.2”

8.3.4 Evaluation:

As the results of the above tests & criteria,

the test substance “Binchar coal powder in Wakayama Prefecture / Powder” ,

“does not come under a Flammable solid -Self-heating solid
(Spontaneous combustion solid) of Division 4.2 “

This certificate was made based on certificate No.K43.1/99.



NIPPON KAIJI KENTEI KYOKAI
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Enquiry, if any, please call:045-781-9971

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