U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue SE
Washington, DC 20590

JUN 10 2015

Sergio Bustamante M.
CSAV Portacontenedores SPA.
Dangerous Goods Department
Plaza Sotomayor 50
Valparaiso, Chile

Ref. No. 15-0046

Dear Mr. Bustamante:

This is in response to your January 30, 2015 e-mail requesting clarification on the proper classification of your customer's shipment of bone charcoal under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180).

In your letter, you state it is your understanding that bone charcoal containing 12% carbon is a Division 4.2 pyrophoric solid or self-heating substance when offered for transportation. However, you also provide laboratory test results that indicate your customer's product does not meet the definition of a Division 4.2 (Spontaneously Combustible Material). In addition, you provide documentation required by 3.3.1, Special Provision 925, of the International Maritime Dangerous Goods Code (IMDG Code) that confirms the product is not a self-heating or pyrophoric solid. You request confirmation that your customer's product is not subject to the requirements of the HMR.

In accordance with § 173.22 of the HMR, it is the shipper's responsibility to properly classify a hazardous material. This Office generally does not perform this function. However, based on the test data and certification you provided, we agree that your customer's product does not meet the definition of a Division 4.2 material. Therefore, if your customer's product does not meet any other hazard class as defined in part 173 of the HMR, and is not a hazardous substance, hazardous waste, or marine pollutant, it is not subject to the HMR.

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

T. Glenn Foster

T. Glenn Foster
Chief, Regulatory Review and Reinvention
Standards and Rulemaking Division

Stevens
§173.22 Shippers Responsibility
§173.124 Definitions
15-0046

Dodd, Alice (PHMSA)

From: Ciccarone, Michael CTR (PHMSA)
Sent: Friday, March 13, 2015 11:37 AM
To: Hazmat Interps
Subject: FW: Bone Charcoal - request of letter of interpretation,

Sorry guys, here's another one I'm not seeing in filemaker

-----Original Message-----
From: Ciccarone, Michael CTR (PHMSA)
Sent: Friday, January 30, 2015 2:10 PM
To: Hazmat Interps
Subject: FW: Bone Charcoal - request of letter of interpretation,

Shante/Alice,

Please submit this for a formal letter of interpretation.

Mr. Bustmante's physical address is:
Plaza Sotomayor 50
Valparaiso
Chile

Thanks,

Mike

-----Original Message-----
From: sbustamante@csavgroup.com [mailto:sbustamante@csavgroup.com]
Sent: Friday, January 30, 2015 12:34 PM
To: PHMSA HM InfoCenter
Cc: Geller, Shelby CTR (PHMSA); halvarez@csavgroup.com; pilot@csav.com; cherman@csavagency-na.com; security.global@csavgroup.com
Subject: Bone Charcoal - request of letter of interpretation,

Dears: i called few minutes ago to +1(202) 366-4488 and i spoke with Isaac.

We kindly ask you for a letter of interpretation, we need to know if the DOT as Competent Authority accept the import of this cargo as harmless and the transport inside the country as harmless based on the documentation and description of the manufacturing process received from the customer.

Thanks for your cooperation.

Best Regards,
Sergio Bustamante M.
Phone: 56-32-220 3666

P Please consider the environment before printing this email.

From: <shelby.geller.ctr@dot.gov>

To: <sbustamante@csavgroup.com>,

Date: 30-01-2015 12:11

Subject: RE: Bone Charcoal

Dear Sergio Bustamante M.,

We have received your inquiry about the hazardous materials regulations (HMR) (49 CFR Parts 171-180).

The HMR prescribes the requirements of the Department of Transportation governing the offering and transportation of hazardous materials in interstate, intrastate, and foreign commerce by rail car, aircraft, motor vehicle, and vessel. While we cannot provide an exhaustive list of each applicable requirement, we suggest you review section(s) **173.22 and 173.124(b) for additional information on the shipper's responsibility and the definition of division 4.2 (spontaneously combustible) materials. The hazardous materials regulations are available at the following URL:

http://phmsa.dot.gov/regulations

If you require additional assistance, you may contact the Hazardous Materials Information Center, which is staffed with regulatory specialists who can quickly answer your questions by phone, Monday through Friday, 9 AM - 5 PM EST at +1(202) 366-4488.

Sincerely,

Shelby, Hazardous Materials Specialist

An e-mail response from this office is considered informal guidance.
Formal guidance may be requested in accordance with 49 CFR 105.20.
http://phmsa.dot.gov/hazmat/regs/interps
----- Forwarded by Sergio Bustamante/Chile/CSAV on 30-01-2015 14:15 -----

From: Sergio Bustamante/Chile/CSAV

To: phmsa.hm-infocenter@dot.gov,

Cc: Pilot/Chile/CSAV@CSAV_VAP, Hector Alvarez/Chile/CSAV@CSAV_VAP, Security Global/Chile/CSAV@CSAV_VAP

Date: 30-01-2015 02:06

Subject: Bone Charcoal

Dears:

We belongs to CSAV Portacontenedores SPA (Shipping Company).
We have a customer who wants to carry "Bone Charcoal" from Brazil to USA as non dangerous good. When we detected this situation we reject the shipment because in our opinion the cargo is dangerous good: UN1361, CARBON, class 4.2

The customer says that the cargo is not dangerous good based on:

1) To be considered UN1361 the percentage of carbon must be higher that 88 % however in this case the percentage of carbon is around 12% (this is stated in the MSDS)

2) The shipper provided a document where it reads that the cargo passed the tests for self heating substances.

We consider that the cargo is dangerous good based on:

1) The cargo is declared by the customer as "bone charcoal", "charcoal" is included in the Index of the IMDG Code as synonym of "carbon". The raw material of this cargo are bones from bovines which passed through process of carbonization (we have attached the description of manufacturing process received from customer: "Carbonization of the bones is carried out at a temperature of about 750°C for 8 hours"), therefore the cargo is Carbon from animal origin which is clearly listed in the IMDG Code as dangerous good. On the other hand in the IMDG Code there is no mention about the percentage of carbon to be classified as UN1361

2) The documents received regarding the tests for self heating substances are not valid to exempt the cargo from the condition of dangerous good
because:
- There are no laboratories accredited by the Brazilian Competent Authority to do this test.
- In the document there is no mention about that "the product to be loaded has been correctly sampled by trained staff from that laboratory and that the sample was correctly tested " as required by the special provision 925 of the IMDG Code.

We have attached the documentation received from customer.

Please confirm if you agree with our position.

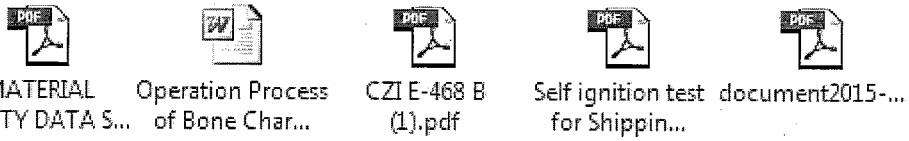
Thanks and Best Regards,
Sergio Bustamante M.
CSAV DG Dept
Phone: 56-32-220 3666

(See attached file: MATERIAL SAFETY DATA SHEET - MSDS - EN.pdf)(See attached file: Operation Process of Bone Charcoal (1).doc)(See attached
file: CZI E-468 B (1).pdf)

(See attached file: Self ignition test for Shipping (1).pdf)

(See attached file: document2015-01-29-101511.pdf)

P Please consider the environment before printing this email.



Bonechar

MATERIAL SAFETY DATA SHEET - MSDS

1. PRODUCT IDENTIFICATION AND COMPANY

Trade Name: Natural Bone Charcoal
Synonyms: Bone Char, Animal Bone Char, Bone Black.
Chemical Name: Bone Charcoal
Chemical Formula: C + $[Ca_{10}(PO_4)_6(OH)_2]$
Company Name: Bonechar - Carvão Ativado do Brasil Ltda.
Address: 980 Pioneira Maria Cavalcanti Ruy Street - Maringá/PR - Zip Code: 87065-090
Phone Company: (55) 44-3266-1517
Phone for Emergencies: (55) 44-3266-2014
Phax: (55) 44-3266-3673
E-mail: bonechar@bonechar.com.br

2. COMPOSITION AND INFORMATION OF INGREDIENTS

CAS No.: 8021-99-6
Reference EINECS: 232-421-2
Customs Tariff Number: 3802.9090
Generic Name: Hydroxyapatite $[Ca_{10}(PO_4)_6(OH)_2]$
Concentration: C = ~12%, $Ca_3(PO_4)_2$ = ~88%
Number of ONU: The bone charcoal is not listed in ONU number.

3. Physical and Chemical Properties

Property	Specification
Carbon	9 - 11%
Acid-soluble Ash	< 3%
Ash Insoluble	0,7
Tricalcium Phosphate	70 - 76%
Calcium Carbonate	7 - 9%
Calcium Sulfate	0,1 - 0,2%
pH	8,5 - 9,5
Total Specific Surface Area (BET N²)	200 m^2/g
Surface Area of Carbon	50 m^2/g
Iron	< 0,3%
Pore Size	7,5 - 60.000 nm
Pore Volume	0,225 cm^2/g

Moisture	< 5%
Apparent Density	0,60 - 0,70 g/cm³
Aspect	Granules
Odor	Odorless

4. FIRST AID

Inhalation: If a person inhale large amounts of particulate matter, transfer the person to an area of fresh air and ventilated, open the clothes and if necessary put oxygen mask. Provide medical care.
Prolonged Inhalation: The Bone Charcoal absorbs oxygen from the air in work for long periods indoors where it is stored can cause respiratory deficiencies. If present disordered breathing, give artificial respiration.
Skin Contact: There is no danger, and should only be washed with soap and water in abundance until its elimination.
Eye Contact: Wash immediately with running water in abundance for at least 20 minutes.
Ingestion: If swallowed in small doses, does not harm health, if swallowed in excess must give great volume of water and induce vomiting.

5. FIRE FIGHTING MEASURES

Explosion: Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
The bone charcoal does not enter burning (their point of combustion in pure oxygen is above 450 ° C).
Extinguishing Media: Use preferably water under pressure in the form of fog, foam extinguisher, dry chemical or carbon dioxide (CO_2).
Special methods: In case of fire fighting, position yourself with the wind at his back.
Protection of those involved in fire fighting: Stay in dangerous zone only with suitable chemical protection clothing and with an oxygen mask independent of the ambient air. In order to avoid contact with skin, keep a safe distance.

6. EXTENT OF SPILL OR LEAK

Personal precautions: Eliminate all sources of ignition, heat and sparks.
Environmental precautions: Prevent spilled material reaches waterways and sewers.
Procedure for emergency and alarm systems: In case of fire the fire alarm nearest you.
Recovery: Collect material in clean and dry packages identified. Using a water jet for cleaning location.
Neutralization: Not applicable.
Disposition: Dispose of waste in accordance with current legislation.

7. HANDLING AND STORAGE

HANDLING

Prevention of worker exposure: Use proper personal protective equipment.
Guidelines and precautions for safe handling: For safe handling, use personal protective equipment.
Hygiene measures: Use when needed adequate ventilation. Immediately change contaminated clothing and shoes. Contaminated clothing should be changed and washed before reuse. Prophylaxis skin. After the end of the work, wash hands and face and also after handling. It is recommended not to smoke, drink, eat or store food in place and is handling the product.

STORAGE

Chemical stability in the long term: Bone Charcoal is not dangerous in storage.
Proper storage conditions: Store in rooms where there are no other chemicals products or vapors in the air. Keep plastic bags or paper always tightly closed.
Storage Incompatibilities: The product should be kept away from strong oxidizers.
Recommended packaging: plastic or paper packages.
To avoid loss of property and contamination, the product should be stored in bags of 25 kg or 50 kg, or super bags of 500 kg to 1000 kg in dry and closed local.
It should not be in direct contact with the ground and stacking up to be twenty bags of height, three super sacks or three pallets

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Appropriate personal protective equipment: Handling the activated carbon in normal conditions does not present any risk to health or safety of persons at the facility. It is recommended to use equipment as appropriate for their handling.
Protection Eye / Face: Wear safety goggles to chemicals or wide vision. Contact lenses should not be used when working with charcoal
Skin and body: Wear boots, apron or clothing appropriate for the job. Although not a material irritating to the skin, it is recommended to use gloves scrapes, PVC and / or rubber so as not to dirty their hands.
Respiratory Protection: When handling with bone charcoal is recommended to use half-face mask for particulates. When the charcoal is wet and stored in tanks, the person may only enter into these tanks with breathing apparatus and mask with air or oxygen as the activated carbon removes all oxygen from the air indoors.

9. TOXICOLOGICAL INFORMATION

Local Effects:
Eyes: Irritation to be particulate matter.
Lungs: When excessively exposed in an environment with high concentration of dust.
Internal mucous membranes: Causes dryness, when exposed to high concentrations due to high power adsorbent.
Sensitization: In contact with the eyes causes irritation due to particulate matter, with the skin there are no records of major side effects, can only dry from dehydration and mucous membranes will absorb and therefore dry.

10. ECOLOGICAL INFORMATION

Potential environmental effects: The activated carbon does not cause damage to the environment and may even be incorporated into the land of agriculture, because it keeps the soil aerated and retains moisture. This is because coal is the source of calcium and phosphorus.
Ecotoxicity: No ecological problems are expected when the product is handled and used with due care and attention.

11. DISPOSAL CONSIDERATIONS

Product: On the disposal of the product, you should look for legislation at the municipal, state and federal.
Product residues: In the provision of product residue, must be attentive to the legislation at the municipal, state and federal.
Packaging used: In the provision of used packaging of this product should be alert to the legislation at the municipal, state and federal.

12. TRANSPORT INFORMATION

The Bone charcoal is not classified as hazardous for road, rail, sea and air.
The Bone Charcoal is not listed in the UN number.
The Bone Charcoal is delivered on paper or polypropylene bags containing 25 kg or 50 kg, or in super bags of 500 kg to 1000 kg.
Proper Shipping Name: Bone Charcoal.

13. REGULATIONS

This information sheet of chemical safety was based on the following standards:
"Products used for treatment of water intended for human consumption – Bone Charcoal." The European Standard BS EN 14456:2004 has the status of a British Standard.

"Products used for treatment of water intended for human consumption – Inorganic supporting and filtering materials – Methods of test." The European Standard BS EN 12902:2004 has the status of a British Standard.

14. OTHER INFORMATION

The information contained in this MSDS has been compiled from various technical publications taken as true. We do not guarantee the accuracy of the data. The sole purpose of this document is to be a guide for proper handling of the material. It is the responsibility of the user determine the suitability of this information for adoption of necessary safety precautions.

Bonechar

BONECHAR CARVÃO ATIVADO DO BRASIL LTDA.

Escritório: Rua Pioneira Maria Cavalcanti Ruy 980 - Parque Industrial II
CEP: 87065-090 **Fone:** 55-44-3266-1517 **Fax:** 55-44-3266-3673
MARINGÁ - PARANÁ - BRASIL
E-mail: bonechar@bonechar.com.br **Site:** www.bonechar.com.br

ISO 9001 CERTIFICADA

KOSHER B.K.A. PARVE

PROCESSO DE PRODUÇÃO DO CARVÃO DE OSSO NATURAL / *PRODUCTION PROCESS OF NATURAL BONE CHARCOAL*

1. Coleta de matéria-prima (ossos bovinos), provenientes de frigoríficos, abatedouros, açougues controlados pela saúde pública, serviços de inspeção estadual e federal . / Collect raw material (cattle bones) from slaughterhouses, butchers controlled by public health, state and federal inspection services.
2. A matéria-prima é transportada para a fábrica unidade Paiçandu (I) em caminhões apropriados. / The raw material is transported to the factory in Paiçandu unit in suitable trucks.
3. Na fábrica os caminhões são descarregados na recepção, na plataforma da máquina esmagadora. / In the factory the trucks are unloaded, in the overwhelming machine platform
4. Transporte de ossos e descarregamento no pátio para o início do processo de cura- no mínimo 90 dias. / Transport the raw material and discharge them in the courtyard to the beginning of the cure process – minimum 90 days.
5. Os ossos são classificados em uma peneira vibratória onde são removidos os ossos moles que não são usados para carvão. / The bones are classified on a vibrating screen which are removed the soft bones that are not used for bone charcoal.
6. A moagem dos ossos são feitos através de um moinho onde após a moagem os ossos são transportados em uma rosca elicoidal. / The grinding of the bones are made through a mill where after grinding the bones are transported in a elicoidal thread.
7. Transportar os ossos secos para 2º moagem através de rosca elicoidal. / Transporting the dry bones to 2nd grinding through elicoidal thread
8. Peneirar os ossos triturados antes de ir para 2º moinho para remoção de restos de resíduo. / Sieve the crushed bones before going to the second mill to remove trace residue.
9. Ossos moídos são armazenados prontos para alimentação dos forno. /The ground bones are stored ready for feed the kiln.
10. Alimentação do forno, os ossos são transportados através de um elevador de canecas . / Kiln feed, bones are transported via a bucket elevator.
11. Os ossos são depositados em uma caixa de metal sobre o forno. / The bones are deposited in a metal box on the Kiln.
12. A carbonização dos ossos é feita a uma temperatura em torno de 750 C° por 8 horas, isto é, em processo intermitente e a cada 1,5 horas são retirados em torno 10 kg de carvão em cada tubo. / Carbonization of the bones is carried out at a temperature of about 750°C for 8 hours, i.e. intermittent process and the time taken every 1.5 hs to about 10 kg of bone charcoal in each pipe.
13. O carvão semi-acabado é resfriado em uma peneira vibratória para ensaque, onde o mesmo fica no estoque para ser transportado para unidade Maringá (II). / The semi-finished product is cooled in a vibrating screen for bagging, where it is in stock to be transported to Maringa (II).
14. O carvão semi-acabado é transportado para unidade Maringá (II) para ser processado, isto é moído. / The semi-finished coal is transported to Maringa unit (II) to be processed, i.e. ground.
15. O carvão é moído de acordo com a especificação do cliente, em peneira vibratória e ensacado em sacos de 25 kg ou em big bag de 1000 kg e posto em pallets, prontos para embarque. / The bone charcoal is ground according to customer specification, in vibrating screen and bagged in bags of 25 kg or in big bags of 1000 kg and put on pallets ready for shipment.

ORIGINAL

CE.U.S.CW.BO.MAI.14

REPÚBLICA FEDERATIVA DO BRASIL
MINISTÉRIO DA AGRICULTURA, PECUÁRIA E DO ABASTECIMENTO – MAPA

CERTIFICADO ZOOSSANITÁRIO PARA EXPORTAÇÃO DE CARVÃO DE OSSOS DO BRASIL PARA OS ESTADOS UNIDOS DA AMÉRICA

ANIMAL HEALTH CERTIFICATE FOR BONE CHAR EXPORTATION FROM BRAZIL TO UNITED STATES OF AMÉRICA

CERTIFICADO NÚMERO/ *CERTIFICATE NUMBER* 003 2015

I. ORIGEM / *ORIGIN*

Nome e endereço do estabelecimento de origem/ ***Name and address of the stablishment of origin***	Bonechar-Carvão ativado do Brasil Ltda. Estrada para Ourizona, lote 6-C-13. Paiçandú -PR-Brasil
Nome do exportador/ ***Name of consignee***	Bonechar-Carvão ativado do Brasil Ltda
Endereço do exportador/ ***Address of consginee***	Rua Pioneira Maria Cavalcanti Ruy, 980 Maringá-PR- Brasil

II. DESTINO / *DESTINATION*

Nome e endereço do estabelecimento de destino/ ***Name and address of the establishment of destination***	Plymouth Technology, INC, 2925 Waterview Drive, Rochester Hills – MI – 48309 - USA
Nome do importador/ ***Name of consignor***	Plymouth Technology, INC
Endereço do importador/ ***Address of the consignor***	2925 Waterview Drive, Rochester Hills – MI - 48309 - USA

III. IDENTIFICAÇÃO E TRANSPORTE / *IDENTIFICATION AND TRANSPORTATION*

Quantidade / *Quantity*	*18.144Kg*

Meio de transporte/ *Means of transportation*	**Marítimo**
Identificação/ *Identification*	**Tamina 005N**

IV. INFORMAÇÕES SANITÁRIAS / *SANITARY INFORMATION:*

Eu, abaixo assinado, Veterinário Oficial, certifico que:
I, the undersigned Official Veterinarian, certify that:

1. O carvão de osso foi derivado de bovinos/ *The bone char was derived from bovine.*
2. Durante o processamento o carvão de osso foi aquecido a uma temperatura mínima de 800 graus C./ *During processing the bone char was heated to a minimum of 800 degrees C.*

Local / *Place:* Maringá - PR - Brasil Data / *Date:* 06 / 01 / 2015

Veterinário Oficial/ ***Official Veterinarian***

Nome/*Name:* Francismar Dias Ortega
Endereço/ *Address:* Daniela Zanin, 1015, maringá - PR, CEP 87.040-360
Email/ *email:* francismar.ortega@agricultura.gov.br

Carimbo e Assinatura do Veterinário Oficial/ *Stamp and Signature of Official Veterinarian*

FRANCISMAR DIAS ORTEGA
Médico Veterinário
CRMV - PR

MINTON, TREHARNE
& DAVIES LIMITED

Consulting Scientists, Mariners & Engineers
Analytical & Testing Laboratories
Public Analysts

Our ref: PS/ajr
Certificate No: R13- 08585

24th June 2013

We hereby certify that we have analysed the undermentioned sample of Material for propensity towards self heating. The sample was received from 18th June 2013 and tested as detailed below. Sample identified as:-

JERET W2060
PRODUCT

Test Method:	United Nations Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria – 5th revised edition Section 33.3 Division 4.2
Date of testing	21.6.2013

Section 33.3 1.3.1 Pyrophoric Solids

The Sample failed to ignite in air within 5 minutes

Section 33.3 1.3.3. Self heating substances

The sample was heated in air at 140°C in a 100mm test cube and its temperature monitored for 24 hours.

The sample temperature did not exceed 200°C.

Conclusion: **The sample is not a pyrophoric solid of Division 4.2.**

The sample is not a self heating substance of Division 4.2.

MINTON, TREHARNE & DAVIES LTD

J. Robinson
BSc, MSc, MChemA, CSci, CChem, FRSC, MAPA, MIFST

For the attention of: Jerry Elvin
Jeret Ltd
4 Birchgrove,
Houston
Pentrewshire
PA6 7DF

Enc: Neill Clerk & Murray cover letter & UPS Consignment Note:

Dangerous Goods. The applicable classification procedures, test methods and criteria, and an example of a suitable test report, are given in the current edition of the *UN Manual of Tests and Criteria, Part II*. The statement of approval must contain the classification and the relevant transport conditions.

3.4.1.2.5 Transport of Samples

Samples of self-reactive substances not listed in Appendix C.1, for which a complete set of test results is not available and which are to be transported for further testing or evaluation, may be assigned to one of the appropriate entries for "Self-reactive substances type C" provided the following conditions are met:

(a) the available data indicate that the sample would be no more dangerous than self-reactive substances type B;

(b) the sample is packed in a combination packaging consisting of a plastic inner packaging with a capacity not exceeding 0.5 L or 0.5 kg which is placed in a wooden box (4C1), plywood box (4D) or fibreboard box (4G) with a maximum net quantity per package not exceeding 1 L or 1 kg; and

(c) the available data indicate that the control temperature, if any, is sufficiently low to prevent any dangerous decomposition and sufficiently high to prevent any dangerous phase separation.

3.4.1.2.6 Temperature Control Requirements

With the exception of self-reactive solids of type B which are forbidden for transport by air under any circumstance, self-reactive substances, which require temperature control during transport are forbidden for transport by air unless exempted (see 2.1.2). Self-reactive substances must be subject to temperature control if their self-accelerating decomposition temperature (SADT) is less than or equal to 55°C. Test methods for determining the SADT are provided in the current edition of the *UN Manual of Tests and Criteria*. The test selected must be conducted in a manner which is representative of the package to be transported both in size and material of construction.

3.4.1.2.7 Desensitization of Self-reactive Substances

3.4.1.2.7.1 In order to ensure safety in transport, self-reactive substances may be desensitized by the use of a diluent. When a diluent is used, the self-reactive substance must be tested with the diluent present in the concentration and form to be used in transport.

3.4.1.2.7.2 Diluents which may allow a self-reactive substance to concentrate to a dangerous extent in the event of leakage from the package must not be used.

3.4.1.2.7.3 The diluent must be compatible with the self-reactive substance. In this regard, compatible diluents are those solids or liquids which have no detrimental influence on the thermal stability and hazard type of the self-reactive substance.

Note:
During the course of transport, packages or unit load devices containing self-reactive substances of Division 4.1 must be protected from direct sunlight and all sources of heat and be placed in adequately ventilated areas.

3.4.1.3 Solid Desensitized Explosives

3.4.1.3.1 Solid desensitized explosives are explosive substances which are wetted with water or alcohols or are diluted with other substances to form a homogeneous solid mixture to suppress their explosive properties. Entries in Subsection 4.2–List of Dangerous Goods for solid desensitized explosives are UN 1310, 1320, 1321, 1322, 1336, 1337, 1344, 1347, 1348, 1349, 1354, 1355, 1356, 1357, 1517, 1571, 2555, 2556, 2557, 2852, 2907, 3317, 3319, 3344, 3364, 3365, 3366, 3367, 3368, 3369, 3370, 3376, 3380 and 3474.

3.4.1.3.2 Substances that:

(a) have been provisionally accepted into Class 1 according to Test Series 1 and 2 but exempted from Test Series 6;

(b) are not self-reactive substances of Division 4.1;

(c) are not substances of Class 5:

are also assigned to Division 4.1. UN 2956, UN 3241, UN 3242 and UN 3251 are such entries.

3.4.2 Division 4.2—Substances Liable to Spontaneous Combustion

3.4.2.1 Definition

Division 4.2—Substances liable to spontaneous combustion. Substances, which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up in contact with air, and being then liable to catch

fire.

The following types of substances are classified in Division 4.2:

- pyrophoric substances; and
- self-heating substances.

3.4.2.2 Properties

Self-heating of a substance is a process where the gradual reaction of that substance with oxygen (in the air) generates heat. If the rate of heat production exceeds the rate of heat loss, then the temperature of the substance will rise which, after an induction time, may lead to self-ignition and combustion. Two types of substances can be distinguished with spontaneous combustion properties.

3.4.2.2.1 Pyrophoric Substances

Pyrophoric substances (liquid or solid) including mixtures and solutions are substances which, even in small quantities, ignite within 5 minutes of coming in contact with air. These substances are the most liable to spontaneous combustion.

3.4.2.2.2 Self-heating Substances

Self-heating substances are substances, which in contact with air without an additional energy supply are liable to self-heating. These substances will ignite only in large amounts (kilograms) and after long periods of time (hours or days).

3.4.2.3 Classification

3.4.2.3.1 Pyrophoric Solids

Solids are considered pyrophoric solids which must be classified in Division 4.2 if, in tests performed in accordance with the test methods and criteria of in the current edition of the *UN Manual of Tests and Criteria, Part III, subsection 33.3.1*, the sample ignites in one of the tests. IAU-0©

3.4.2.3.2 Pyrophoric Liquids

Liquids are considered pyrophoric liquids which must be classified in Division 4.2 if, in tests performed in accordance with the test methods and criteria of the current edition of the *UN Manual of Tests and Criteria, Part III, subsection 33.3.1*, the liquid ignites in the first part of the test, or if it ignites or chars the filter paper.

3.4.2.3.3 Self-heating Substances

3.4.2.3.3.1 A substance must be classified as a self-heating substance of Division 4.2 if, in tests performed in accordance with the test method and criteria in the current edition of the *UN Manual of Tests and Criteria, Part III, subsection 33.3.1*:

(a) a positive result is obtained in a test using a 25 mm sample cube at 140°C;

(b) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 100 mm cube sample at 120°C and the substance is to be transported in packages with a volume of more than 3 m^3;

(c) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 100 mm cube sample at 100°C and the substance is to be transported in packages with a volume of more than 450 L; and

(d) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a positive result is obtained in the test using a 100 mm cube sample at 100°C.

3.4.2.3.3.2 Self-reactive substances, except for Type G, which also give a positive result according to this test method must not be classified in Division 4.2 but in Division 4.1 (see 3.4.1.2.1).

3.4.2.3.3.3 A substance must not be classified in Division 4.2 if:

(a) a negative result is obtained in the test using a 100 mm sample cube at 140°C;

(b) a positive result is obtained in the test using a 100 mm sample cube at 140°C and a negative result is obtained in the test using a 25 mm cube sample at 140°C, a negative result is obtained in the test using a 100 mm cube sample at 120°C and the substance is to be transported in packagings with a volume of not more than 3 m^3; or

(c) a positive result is obtained in the test using a 100 mm sample cube at 140°C and a negative result is obtained in the test using a 25 mm cube sample at 140°C, a negative result is obtained in the test using a 100 mm cube sample at 100°C and the substance is to be transported in packagings with a volume not more than 450 L.

3.4.2.4 Packing Group Criteria

3.4.2.4.1 Pyrophoric Substances

Pyrophoric liquids and solids of Division 4.2 must be assigned to Packing Group I.

3.4.2.4.2 Self-heating Substances

Self-heating substances must be allocated to packing groups in accordance with the following criteria:

3.4.2.4.2.1 Packing Group II

Packing Group II must be assigned if the substance gives a positive result in the test using a 25 mm cube sample at 140°C.

3.4.2.4.2.2 Packing Group III

Packing Group III must be assigned to the substance if:

(a) a positive result is obtained in the test using a 100 mm sample cube at 140°C and a negative result is obtained in the test using a 25 mm cube sample at 140°C and the substance is to be transported in packagings with a volume of more than 3 m^3;

(b) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in the test using a 25 mm cube sample at 140°C, a positive result is obtained in the test using a 100 mm cube sample at 120°C and the substance is to be transported in packagings with a volume of more than 450 L; or

(c) a positive result is obtained in the test using a 100 mm sample cube at 140°C and a negative result is obtained in the test using a 25 mm cube sample at 140°C and a positive result is obtained in a test using a 100 mm cube sample at 100°C.

3.4.3 Division 4.3—Substances Which, in Contact with Water, Emit Flammable Gases

3.4.3.1 Definition

Division 4.3—Substances, which, in contact with water, emit flammable gases (Dangerous when wet). Substances which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

Note:
Where the term "Water-reactive" is used in these Regulations, it refers to a substance, which in contact with water emits flammable gas.

3.4.3.2 Properties

Certain substances in contact with water, emit flammable gases which can form explosive mixtures with air. Such mixtures are easily ignited by all ordinary sources of ignition, for example, naked lights, sparking hand tools or unprotected light bulbs. The resulting blast wave and flames may endanger people and the environment. The test method in 3.4.3.3 must be used to determine whether the reaction of a substance with water leads to the development of a dangerous amount of gases which may be flammable. It must not be applied to pyrophoric substances.

3.4.3.3 Classification

Substances which, in contact with water, emit flammable gases must be classified in Division 4.3 if, in tests performed in accordance with the methods and criteria in the current edition of the *UN Manual of Tests and Criteria, Part III, subsection 33.4.1*:

(a) spontaneous ignition takes place in any step of the test procedure; or

(b) there is an evolution of a flammable gas at a rate greater than 1 L/kg of the substance per hour.

3.4.3.3.1 Principle of the Method

MINTON, TREHARNE
& DAVIES LIMITED

Consulting Scientists, Planners & Engineers
Analytical & Testing Laboratories
Public Analysts

Our ref: PS/ajr
Certificate No: R13- 08585

24th June 2013

We hereby certify that we have analysed the undermentioned sample of Material for propensity towards self heating. The sample was received from 18th June 2013 and tested as detailed below. Sample identified as:-

JERET W2060
PRODUCT

Test Method:	United Nations Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria – 5th revised edition Section 33.3 Division 4.2
Date of testing	21.6.2013

Section 33.3 1.3.1 Pyrophoric Solids

The Sample failed to ignite in air within 5 minutes

Section 33.3 1.3.3. Self heating substances

The sample was heated in air at 140°C in a 100mm test cube and its temperature monitored for 24 hours.

The sample temperature did not exceed 200°C.

Conclusion: **The sample is not a pyrophoric solid of Division 4.2.**

The sample is not a self heating substance of Division 4.2.

MINTON, TREHARNE & DAVIES LTD

J. Robinson
BSc, MSc, MChemA, CSci, CChem, FRSC, MAPA, MIFST

For the attention of: Jerry Elvin
Jeret Ltd
4 Birchgrove,
Houston
Pentrewshire
PA6 7DF

Enc: Neill Clerk & Murray cover letter & UPS Consignment Note:

MINTON, TREHARNE & DAVIES LTD.

CONSULTING SCIENTISTS & ENGINEERS
ANALYTICAL & TESTING LABORATORIES

Head Office
Telephone: (01222) 540000
Fax: (01222) 549111
Telex: 497203 MINTON G
After Hours: (01222) 753731
(01222) 751289

Registration No.: England 435261

Head Office and Laboratories
MERTON HOUSE,
CROESCADARN CLOSE,
PENTWYN,
CARDIFF, CF2 7HE.

COPIES To
C. DAVIDSON
N. McMILLAN
J. R. ELVIN
J. RUSSELL

Our ref CRM/AJD
Certificate/Coal No. C3178:001/96

6 August 1996

We hereby certify that we have analysed the undermentioned sample in accordance with the self-heating test for Charcoal as specified by IMO Code of Safe Practice for Solid Bulk Cargoes test D.6. The sample was received by us via Tate & Lyle Process Technology on the 2nd August 1996. Sample identified as:-

"8 x 24 BONE CHARCOAL"

Test Method

The test sample was heated at 140°C for 12 hours in a 100mm side stainless steel mesh cage and its temperature monitored.

Test Results

The sample did not undergo spontaneous ignition during the test period.

The temperature of the sample did not reach 200°C during the test period.

Note The temperature indicated by the thermocouple in the middle of the sample indicated a maximum temperature of 142°C.

MINTON, TREHARNE & DAVIES LTD

C.R. Mullins

For the attention of Mr A. Newton
Maersk Line UK
1 Canada Square
Canary Wharf
London
E14 5DP