



U.S. Department
of Transportation
**Research and
Special Programs
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

JUL 31 2002

Mr. Bill Erickson
Operations Manager
Johnson Matthey, Inc.
1397 King Road
West Chester, PA 19380

Ref. No. 02-0162

Dear Mr. Erickson:

This is in response to your letter dated May 24, 2002, requesting clarification regarding the selection of a proper shipping name under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you asked whether your nickel catalyst material can be classified as "Self-heating solid, inorganic, n.o.s., 4.2, UN3190.

For a material not specifically identified by name in the Hazardous Material Table (HMT), the HMR requires that the material be described by the shipping name that "most appropriately describe" the material. In some cases, more than one shipping name could "most appropriately describe a material." Under § 173.22, it is the shipper's responsibility to properly classify and describe a hazardous material. This office generally does not perform this function. However, we provide assistance when we have the information available.

In your letter, you stated that the third party laboratory testing performed on the material was inconclusive due to the temperature of the test sample climbing rapidly from ambient to over 300 °C within the first three minutes. You further stated that the temperature continued to climb to over 400 °C within 10 minutes, where it remained for approximately 30 minutes before dropping back down to ambient temperature two hours after the start of the test.

In the HMR, § 173.124(b) defines a Division 4.2 (Spontaneously Combustible) as being one of the following:

- (1) A pyrophoric material. A pyrophoric material is a liquid or solid that, even in small quantities and without an external ignition source, can ignite with five (5) minutes after coming in contact with air when tested according to UN Manual of Test and Criteria.

- (2) A self-heating material. A self-heating material is a material that, when in contact with air and without an energy supply, is liable to self-heat. A material of this type which exhibits spontaneous ignition or if the temperature of the sample exceeds 200 °C (392 °F) during the 24-hour test period when tested in accordance with the UN Manual of Tests and Criteria, is classed as a Division 4.2 material.

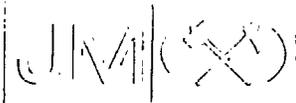
Therefore, ~~based on the information you provided, in addition to~~ the fact that your material is heating up to a temperature of over 300 °C within the first three minutes upon contact with air, it is the opinion of this office that the proper shipping name "Pyrophoric solid, inorganic, n.o.s., 4.2, UN3200" most appropriately describes your nickel catalyst material.

I trust this satisfies your inquiry. Please contact us if we can be of further assistance.

Sincerely,



Hattie L. Mitchell
Chief, Regulatory Review and Reinvention
Office of Hazardous Materials Standards


Johnson Matthey

BeHs
§ 173.10f
Classification
02-0162

May 24, 2002

Ed Mazzullo
Director of Office of Hazardous Material Standards
DHM-10 USDOT/RSPA
400 7th Street Southwest
Washington, DC 20590

Dear Mr. Mazzullo:

My company, Johnson Matthey Inc., is seeking an interpretation on third party laboratory testing which Stresau Laboratories Inc. performed on nickel catalyst material. The testing was inconclusive, however, Dr. Spence Watson of the DOT has recommended we classify this material as Division 4.2, Packing Group II - Self-heating solid. Would you please let me know if your Office concurs.

Thank you for your help in this matter. If you have any further questions, please contact me at 610-232-1953.

Sincerely,



Bill Erickson
Operations Manager
Johnson Matthey Inc.
Fuel Cells - GPT
1397 King Road
West Chester, PA 19380

Enclosure

STRESAU LABORATORY INC.

N8265 Medley Road, Spooner, WI 54801-7819, Tel. 715-635-2777, Fax 715-635-7979 www.stresau.com

May 13, 2002

Mr. Allen Foster
Johnson Matthey
1397 King Road
West Chester, PA 19380

Dear Mr. Foster:

Enclosed please find Laboratory Report # 02069 for Division 4.1 Flammable Solid and 4.2 Self-Heat testing of your sample. Full details are in the enclosed report.

An invoice to cover the cost of the laboratory examinations will be sent to your accounting department under separate cover. Your sample remnants will be returned to you shortly.

We appreciate your business. If we may be of further assistance or if you have any questions, please call me at (715) 635-2777.

Sincerely,



Thomas E. Basham
Hazardous Materials Manager

tb(02069)

STRESAU LABORATORY INC.

N8265 Medley Road, Spooner, WI 54801-7819, Tel. 715-635-2777, Fax 715-635-7979 www.stresau.com

LABORATORY REPORT # 02069

"FLAMMABLE SOLID AND SELF-HEAT TESTING"

May 13, 2002

for

Johnson Matthey
1397 King Road
West Chester, PA 19380

Attn: Mr. Allen Foster

Prepared by: Thomas E. Basham
Thomas E. Basham
Hazardous Materials Manager

Reviewed by: Michael J. Pesko
Michael J. Pesko
Chief Operating Officer

Over Thirty years of Development □ Evaluation □ Production of Energetic Devices
Classification □ Packaging □ Testing of Hazardous Materials

STRESAU LABORATORY, INC.
May 13, 2002

LABORATORY REPORTS NO. 02069
Page 1 of 2

Prepared for: Johnson Matthey
1397 King Road
West Chester, PA 19380

Subject: Preliminary Screen and Self-Heat Test

1.0 OBJECT

Your sample identified as Ni-3288 E 1/16" 3F Nickel Catalyst was subjected to a Preliminary Screen/Burn Rate and Self-Heating Test in accordance with the Code of Federal Regulations, Title 49, (also United Nations Test Method N.1 and Test Method N.4) as requested by Rob Smith, Cargopak Corp., P.O. # 02-2066 dated March 18, 2002.

2.0 PHYSICAL APPEARANCE

The sample was a black extrusions contained in a metal cylinder, 10"L x 1"od, with Swage-Lok pipe fittings and caps on both ends. The sample was prepared for testing by opening one end and pouring the contents into the proper test fixtures.

The sample arrived at Stresau at ambient temperature, and was tested in the form received.

3.0 TEST CONDUCTED

3.1 Class 4.1 Preliminary Screen Test, UN method N.1

Procedure

A portion of the sample is filled into a metal mold 250 mm long by 20 mm wide by 10 mm high, and inverted onto a cool, impervious base plate. The sample is ignited by application of a gas burner at one end, and the time needed to propagate 100 mm is recorded.

4.0 SUMMARY

Upon pouring the sample into the metal mould, it immediately began to heat in contact with air and without an ignition source. A color change from black to gray further indicated that a reaction was taking place. A gas flame was applied to one end, but no additional changes occurred.

5.1 Class 4.2 Self Heating Test, UN method N.4

Procedure

A portion of the sample (as received) was prepared for testing by filling a 10cm³ fine mesh stainless steel wire basket. The basket was tested by placing it into an oven set at 140°C (284°F) with a thermocouple probe and a wire mesh basket cover. The temperature of the sample and oven are recorded throughout the test.

6.0 SUMMARY

Approximately 100 grams of sample was poured into a 10cm³ fine mesh stainless steel wire basket at ambient temperature. The sample immediately began to generate heat. A thermocouple was placed in the sample. The sample temperature climbed rapidly from ambient to over 300°C within the first three minutes. The temperature continued to climb to over 400°C within 10 minutes after insertion, where it remained for approximately 30 minutes before dropping back down to ambient temperature two hours after the start of the test.

7.0 CONCLUSIONS

Test results from the Preliminary Screen and Self-Heat Tests are inconclusive due to the materials ability to generate significant heat before complete application of UN/DOT methodology such as flame contact in the Preliminary Screen and 140°C atmosphere in the Self-Heat Test.

8.0 DATA STORAGE

The field data for this report is contained in Data Book #SLF 2002-1, and will be filed with Stresau Laboratory Document Control. No photographic or video documentation was made.