U.S. Department of Transportation
**Pipeline and Hazardous Materials Safety Administration**

1200 New Jersey Ave, S.E.
Washington, D.C. 20590

SEP 11 2009

Mr. Michael D. Alston
Westinghouse Electric Company LLC
Principal Hazardous Materials Engineer
4350 Northern Pike
Monroeville, PA 15146-2886

Ref. No.: 09-0142

Dear Mr. Alston:

This responds to your June 11, 2009 letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) pertaining to the selection of a proper shipping description for your material. Specifically, you ask for the appropriate shipping description for Zirconium alloy chips and turnings from manufacturing processes.

According to your letter, the chips and turnings are mechanically produced fine-to-course chips and ribbons which are larger than 53 microns (0.002 inches). You have conducted laboratory tests that indicate the materials are Division 4.1 (Flammable solid) in either Packing Group II or III. Based on your laboratory tests and regulatory research you have determined that "Metal powders, n.o.s." is the most suitable proper shipping name because it provides the most relevant description, hazard class, and packing group and an appropriate reference to guide 170 of the ERG for emergency responders.

Under § 173.22, it is the shipper's responsibility to class and describe a hazardous material. This Office does not perform that function. However, based upon the information contained in your letter, it is the opinion of this Office that "Metal powders, flammable, n.o.s." is an appropriate proper shipping description for the material you describe.

If you believe that the existing proper shipping descriptions in the HMR are not appropriate for your material, you may submit a petition to amend the HMR in accordance with the procedures set forth in 49 CFR Part 106.

Sincerely,

Charles E. Betts
Chief, Standards Division
Office of Hazardous Materials Standards

Eichenlaub
§172.101
Proper Shipping Name
09-0142

Westinghouse Electric Company
Legal & Contracts, Environment, Health & Safety
P.O. Box 355
Pittsburgh, PA
15230-0355
U.S.A.

June 11, 2009

U.S. Department of Transportation
PHMSA Office of Hazardous Materials Standards
Attn: PHH–10
East Building
1200 New Jersey Avenue, SE
Washington, DC 20590–0001

Dear Sir or Madame,

Westinghouse is requesting a letter of interpretation regarding the proper shipping name for zirconium alloy chips and turnings from manufacturing processes at Westinghouse facilities and vendors in Connecticut, Pennsylvania, South Carolina and Utah. These chips and turnings can be described as mechanically produced fine-to-coarse chips and ribbons which are larger than 53 microns (0.002 inches). We have recently concluded that there is no clearly appropriate combination of technical description, hazard class and division, UN number and packing group.

Our sources within the industry indicate that "Zirconium scrap, 4.2, UN 1932, PG III" is a very commonly used shipping name for zirconium chips and turnings. That name historically has been used for Westinghouse shipments. However, our latest laboratory tests and regulatory research have demonstrated that our chips and turnings do not meet either of the Division 4.2 criteria for spontaneously combustible material. Our data indicates that Division 4.1, flammable solids, and packing Group II or III are applicable to these materials. More specifically, under certain conditions the zirconium chips and turnings would be readily combustible solids which do not cause a fire through friction, such as with matches.

There are four Division 4.1 proper shipping names in the Hazardous Materials Table [HMT] which are potentially applicable to our zirconium chips and turnings:

- Zirconium, dry, *coiled wire, finished metal sheets, strip* [thinner than 254 microns but not thinner than 18 microns], 4.1, UN 2858, PG III
- Zirconium powder, wetted *with not less than 25 percent water* [a visible excess of water must be present] (a) mechanically produced, particle size less than 53 microns; (b) chemically produced, particle size less than 840 microns, 4.1, UN 1358, PG II
- Flammable solid, inorganic, n.o.s., 4.1, UN 3178, PG II or III
- Metal powders, flammable, n.o.s., 4.1, UN 3089, PG II or III

The technical name "Zirconium, dry" is inappropriate because it is limited to Packing Group III. "Zirconium, wetted" is inappropriate because the mechanically produced fine-to-coarse chips

and ribbons are larger than 53 microns [0.002 inches]. "Flammable solid, inorganic" would appear to provide a suitable generic description, but Guide 133 of the 2008 Emergency Response Guidebook [ERG], which pertains to that shipping name and UN number, provides the potentially inappropriate recommendation to use water spray, fog, or foam for a large fire. Our experience is that ignited zirconium may separate water applied from a fire hose into hydrogen and oxygen and ignite them. As such, we are concerned that a responder could unintentionally worsen the situation by working in accordance with the ERG, whose use is prominently featured and often required in firefighter and hazardous materials technician training.

"Metal powders, flammable, n.o.s." therefore appears the most suitable proper shipping name by process of elimination, and because it provides the most relevant technical description ["powder" is not a defined term in 49 CFR 171, 172 or 173], hazard class and division, packing groups and UN number as well as the associated emergency response instructions. Guide 170 of the 2008 ERG, which pertains to that shipping name as well as many zirconium, hafnium, and other flammable metal listings in the HMT, warns that dousing metallic fires with water may generate hydrogen gas while providing appropriate guidance for fire suppression.

We consequently would appreciate an interpretation on two points:

1. Whether "Metal powders, flammable, n.o.s." is, in fact, the proper shipping name under these circumstances, and;
2. Whether these circumstances highlight a gap in the HMT, in which case a new technical description and UN/NA number would be appropriate.

Thank you for your timely consideration of this request.

Sincerely,

Michael D. Alston, Principal Hazardous Materials Engineer
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MDA/jlr