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May 31, 2017

Via Email to Steel232@bis.doc.gov

Brad Botwin, Director
Industrial Studies, Office of Technology Evaluation
Bureau of Industry and Security
U.S. Department of Commerce
14th Street & Constitutional Ave., N.W.
Washington, D.C. 20230

Total pages: 5

PUBLIC DOCUMENT

**Re: Section 232 National Security Investigation of Imports of Steel;
Exclusion of Ultrahigh Strength Mechanical Tubing for Use in
Airbags**

Dear Mr. Botwin:

Autoliv ASP, Inc. (“Autoliv”) respectfully submits the following comments in the above-captioned investigation in response to the Bureau of Industry and Security’s (“BIS”) April 26, 2017 *Notice Request for Public Comments and Public Hearing on Section 232 National Security Investigation of Imports of Steel*.¹

Autoliv’s is a U.S. producer of automotive safety systems with facilities in Michigan and Utah. Autoliv has developed a proprietary, unique ultrahigh strength (“UHS”) mechanical tubing with specific characteristics and qualities that it uses to

¹ 82 Fed. Reg. 19,205 (BIS, April 26, 2017).

produce airbags. This tubing is classified under item 7304.51.5060 of the Harmonized Tariff Schedule of the United States (“HTSUS”). As no U.S. steel producer is able to qualify to supply this particular UHS mechanical tubing to Autoliv, Autoliv has been sourcing the product from a few reliable foreign suppliers. It allows Autoliv to produce airbags in the United States for U.S. automobile producers, and to contribute to the safety of U.S. drivers. Therefore, the importation of this product poses no threat to U.S. national security and should be excluded in the event of the imposition of any restrictive measures arising from this investigation.

The UHS mechanical tubing at issue is a type of cold-drawn seamless carbon tubing of circular cross-section with a circumference of 25-50 mm and a wall thickness of 1.8-2.4 mm with a tensile strength in excess of 1000 Mpa (145 ksi) using the ASTM A370 test method. It must be produced using a quench and temper process after cold drawing and be able to exhibit 50 percent or greater ductile characteristics at temperatures of -60C or colder after cold working (production of final component), based on Autoliv’s modified ring charpy test method. UHS tubing after use in production of an airbag must be capable of maintaining a minimum inside pressure of 19,000 psi. Additionally, both inner and outer diameter surfaces must be free of pitting, scaling and surface anomalies. The average of the values of the surface roughness is not to exceed 25 µm in Rz and this measurement is taken on the final product. The product is made to a proprietary specification that is different from any ASTM or other industry specification.

In addition, the tube’s chemistry must meet Department of Transportation (“DOT”) requirements for compressed gas cylinder applications found at 49 CFR § 178.65: DOT regulation for pressure vessel for safety components for automotive market. This specification defines requirements for UHS and EU high strength (EU-HS) seamless steel

as raw material for pressure vessel for automotive safety components. The tubing also meets SAE/USCAR-24 3.2.9 – “The overall hermeticity limit shall be set at the resulting calculated value limiting the potential degradation of the inflator performance over the 15 year vehicle life to less than or equal to 10%.”

Autoliv’s UHS tubing is specifically designed to produce safety components with the following specifications:

- Holding internal pressures up to 12,500 psi during storage.
- Resist pressure impact up to 22,500 psi during the deployment.
- Hydroburst test at ambient and low temperature (-60° C) deployment.
- Bonfire and pressure cycle life with post deployment test to demonstrate capability to sustain inside pressure.
- Observe ductile fracture during the burst testing in order to prevent the fragmentation, shrapnel or burrs.

Autoliv’s UHS tube is different from mechanical tubing and also mechanical tubing used by other airbag producers. A few years ago, Autoliv, used a more generally available type of tubing for producing airbags. However, today Autoliv has emigrated to this UHS tube. Specifically, in comparison with other mechanic tubing, Autoliv’s UHS tube has stricter requirements and specifications. Examples of differences are as follows:

- Traditional airbag tubing achieves an ultimate tensile strength of around 100-110 ksi or around 700-750 Mpa. UHS tubing is engineered to achieve much higher tensile strengths exceeding 145 ksi and 1000 Mpa.
- Traditional airbag tubing has thicker walls to achieve its strength. UHS tubing is capable of achieving higher strength with a thinner wall. For

example, a 30mm traditional ASTM 519 tubing has a wall thickness of 2.5mm while a UHS tubing has a much higher tensile strength with a wall thickness of 2.0mm.

- For traditional airbag tubing, the charpy test is performed over a flat plate specimen. For UHS tubing the test must be performed using a cutout ring from the most reduced cold formed area. This makes achieving the testing standard significantly more challenging. This unique testing method was developed specifically by Autoliv to determine the ductile to brittle transition temperature (“DBTT”) measurement in the most significant cold worked/swaged areas.
- Traditional airbag tubing does not require quench and temper processing. Traditional airbag tubing goes through a high amount of cold working as it is cold drawn. The combination of the cold working that occurs in this process and the air hardening with this type of steel make it adequate for the mid-level performance requirement. However, this process tends to produce tubing that is prone to being brittle and having failures. Autoliv’s UHS tubing is much more difficult to produce, but the production process is able to achieve a more ductile product if performed correctly under Autoliv’s stringent standards.

In general, steel mills are not set up to follow this unique production process sequence, so most steel mills are not capable of producing this tube to Autoliv’s specifications. Autoliv is not aware of any U.S. steel mill that is capable of producing this tubing. Additionally, most steel mills do not even have the facilities and equipment to test the product. Over the years, Autoliv has been unable to find a U.S.-based supplier to meet

all of these criteria. Moreover, it is not economically feasible for a U.S. producer to modify its production process as Autoliv's volumes are not sufficient to justify such an investment. Even if a U.S. producer were to modify its production process to make this product, it presently takes three years to qualify the tubing.

Autoliv developed UHS tubing and today has only a few foreign sources – Argentina, Romania, Mexico, South Korea and China-- that have been qualified to supply this tubing. With the exception of China, these sources are traditional U.S. national security partners and thus imports from them should not be considered to negatively impact U.S. national security.

In sum, the UHS tube imported by Autoliv is a unique product needed to produce automotive safety systems in the United States. It differs from the general class or kind of mechanical tubing in numerous respects including production process and specifications. Accordingly, the importation of this product poses no threat to U.S. national security and should be excluded in the event of a restrictive measure arising from this investigation.

We appreciate your consideration of the above comments. Please contact the undersigned if you have any questions.

Respectfully submitted,

/s/ Kenneth G. Weigel

Kenneth G. Weigel

ALSTON & BIRD LLP