

Expert Statement

Applicability of the RoHS directive
Report No. A16091024

Dynisco Europe GmbH

**DEKRA Assurance
Services GmbH**
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SUMMARY

According to the information provided by Dynisco Europe GmbH, the products detailed below are exempt from Directive 2011/65/EU (RoHS 2).

INTRODUCTION

RoHS 2 (Directive 2011/65/EU) is a directive that restricts the use of the following four heavy metals and two groups of flame retardants in electric and electronic equipment.

1. Lead (Pb) < 0,1 %
2. Mercury (Hg) < 0,1 %
3. Cadmium (Cd) < 0,01 %
4. Hexavalent chromium (Cr^{VI}) < 0,1 %
5. Polybrominated biphenyls (PBB) < 0,1 %
6. Polybrominated diphenyl ether (PBDE) < 0,1 %

The restrictions apply to homogenous materials. If one material is not compliant, the entire product is not RoHS compliant.

Certain types of equipment are exempted from the area of application (e.g. fixed installations). Also, certain uses of the restricted substances are not subject to the restriction (e.g. lead can be used in high temperature solder).

The manufacturer/importer has to provide a declaration of conformity and place a CE mark on the product.

EVALUATION OF APPLICABILITY

Dynisco Europe GmbH has commissioned DEKRA to check the applicability of RoHS 2 (Directive 2011/65/EU) for their products (melt pressure sensors).

Products and Parts

Dynisco Europe GmbH has provided documentation for the following products:

- ECHO-MV3
- ECHO-MA4
- ECHO-VT1
- ECHO-VT5
- MDA4xx
- TDA4xx
- MDT4xx
- TDT4xx
- PT4xx
- TPT4xx
- SPX2xxx
- SPX3xxx
- SPX4xxx
- SPX5xxx

The products all contain a Hg-filled capillary, that transmits pressure from an extruder to a sensor. The capillary is closed with diaphragms, whereas the front diaphragm is inside in the extruder, in contact with the polymer. Due to high temperatures inside the extruder, the pressure sensor cannot be placed at the front. The Hg-capillary transmits the pressure to the strain-gage sensor. The products can also include a sensor for temperature. The sensors are operated with electricity (max. 32 V DC).

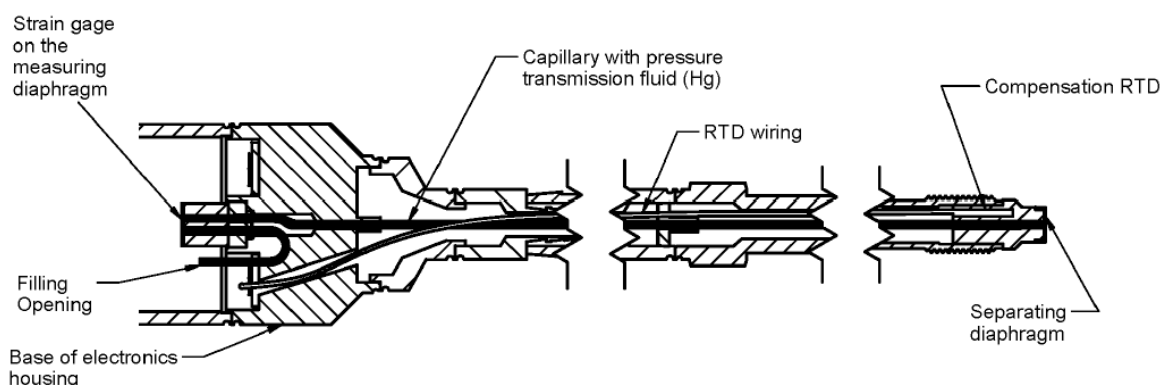


Figure 1: Functioning Principle of the SPX 3xxx Filled Assembly

Scope of the Directive 2011/65/EU (RoHS 2)

Article 2 No. 1:

This Directive shall, subject to paragraph 2, apply to EEE falling within the categories set out in Annex I.

Whereas EEE means

‘electrical and electronic equipment’ or ‘EEE’ means equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and fields and designed for use with a voltage rating not exceeding 1 000 volts for alternating current and 1 500 volts for direct current (Article 3 No. 1).

Annex I lists the following categories:

- 1. Large household appliances.*
- 2. Small household appliances.*
- 3. IT and telecommunications equipment.*
- 4. Consumer equipment.*
- 5. Lighting equipment.*
- 6. Electrical and electronic tools.*
- 7. Toys, leisure and sports equipment.*
- 8. Medical devices.*
- 9. Monitoring and control instruments including industrial monitoring and control instruments.*
- 10. Automatic dispensers.*
- 11. Other EEE not covered by any of the categories above.*

Interpretation:

The melt pressure sensors specified above are electric equipment that is dependent on electric currents, not exceeding 1 000 volts AC (1 500 volts DC). They can be classified as category 9 (Monitoring and control instruments). Therefore, they meet the criterion of Article 2 No. 1.

Article 2 No. 4 (Exceptions)

(c) equipment which is specifically designed, and is to be installed, as part of another type of equipment that is excluded or does not fall within the scope of this Directive, which can fulfil its function only if it is part of that equipment, and which can be replaced only by the same specifically designed equipment;

(d) large-scale stationary industrial tools;

(e) large-scale fixed installations;

whereas “large-scale stationary industrial tools” means

‘large-scale stationary industrial tools’ means a large-scale assembly of machines, equipment, and/or components, functioning together for a specific application, permanently installed and de-installed by professionals at a given place, and used and maintained by professionals in an industrial manufacturing facility or research and development facility; (Art. 3 (3))

and “large-scale fixed installations” means

‘large-scale fixed installation’ means a large-scale combination of several types of apparatus and, where applicable, other devices, which are assembled and installed by professionals, intended to be used permanently in a pre-defined and dedicated location, and de-installed by professionals; (Art. 3 (4))

According to the RoHS 2 FAQ Q3.1, examples for “large-scale industrial tools” are:

- *Machines for the industrial production and processing of materials and goods, such as*
 - *CNC lathes;*
 - *Bridge-type milling and drilling machines;*
 - *Metal forming presses;*
 - *Newspaper printing presses;*
- *Machines for the testing of work pieces, such as*
 - *Electron beam, laser, bright light, and deep ultra violet defect detection systems;*
 - *Automated integrated circuit board and printed wiring board testers;*
- *Cranes;*
- *Other machinery of similar size, complexity and weight.*

According to the RoHS 2 FAQ Q3.1, examples for “large-scale fixed installations” are:

- *Production and processing lines, including robots and machine tools (industrial, food, print media etc.);*
- *Passenger lifts;*
- *Conveyor transport systems;*
- *Automated storage systems;*
- *Electrical distribution systems such as generators;*
- *Railway signalling infrastructure;*
- *Fixed installed cooling, air conditioning and refrigerating systems or heating systems designed exclusively for non-residential use.*

Interpretation

The melt pressure sensors specified above are not used “as such”, but are part of a large system. They are screwed to the housing of the extruder to measure the melt pressure in the extruder. The rear end of the melt pressure sensors has electric connectors for input and output, it is connected to a monitoring and/or control device. Therefore, we can see that the melt pressure sensors are *“equipment which is specifically designed, and is to be installed, as part of another type of equipment”* according to Art. 4 nr. 4 c).

From the definition that is given in the Art. Nr. 4 e), we can see that the extruder / extrusion line where the melt pressure sensor is installed matches the definition of a large-scale fixed installation. As “production lines” are explicitly mentioned in the official FAQ document Q3.1, this confirms our assumption.

Therefore, the exemption of **Article 2 No. 4 (c)**

equipment which is specifically designed, and is to be installed, as part of another type of equipment that is excluded or does not fall within the scope of this Directive, which can fulfil its function only if it is part of that equipment, and which can be replaced only by the same specifically designed equipment;

is applicable.

Result

As a result, the melt pressure sensors as described above are exempt from the scope of Directive 2011/65/EU (RoHS 2).

STATEMENT

This report is based on information and documents that have been provided by Dynisco Europe GmbH. This report has been prepared to the best of our knowledge and belief.

Stuttgart, 13.10.2016



i.V.
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ANNEX

Documents

No.	Date	Document Name	Remark
1	08.06.2011	DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast)	RoHS 2
2	12.12.2012	RoHS 2 FAQ	http://ec.europa.eu/environment/waste/rohs_eee/pdf/faq.pdf
3	2013	ECHO series TDS ¹	
4	REV. 5/26/10	ECHO OI ²	
5	01/2004	MDA4X0 TDS	
6	06/2005	MDA4X2 TDS	
7	01.05.1996	MDA/LDA/TDA series OI	
8	09/2005	TDA4XX series TDS	
9	06/2005	MDT4X0 series TDS	
10	06/2005	MDT4XX F series TDS	
11	06/2005	MDT4X2 F series TDS	
12	06/2005	MDT4X2 F series TDS	
13	10/2006	MDT series OI	
14	09/2005	TDT 4XX X series TDS	
15	09/2005	TDT 4XX F series TDS	
16	04/00	PT4X0 series TDS	
17	04/00	PT4X2 series TDS	
18	04/00	TPT4XX series TDS	
19	-	TPT4XXX series TDS	
20	Rev 091715	SPXxxx series OI	

¹ Technical Datasheet

² Operating Instructions