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A SUPERIOR ESSEX COMPANY

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To: Customers of Essex Italy S.r.l

From: Regulatory Compliance at Essex Italy S.r.l

Re: Request for Certification of Compliance with Initiatives for Substance Restriction, such as EU-RoHS, REACH WEEE, GADSL, JIG-101, CEPA, CSCL, TSCA, etc. vs Essex Italy

Essex Italy S.r.l (Essex) is in receipt of inquiries involving 'initiatives for substance restriction' vs Essex finished magnet wire and Essex bare copper. These inquiries have included the following:

- Restrictions on Hazardous Substances (EU-RoHS);
- Waste Electrical and Electronic Equipment (WEEE);
- Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH);
- Global Automotive Declarable Substance List (GADSL), and Joint Industrial Guide-101 – Material Composition Declaration for Electrotechnical Products (JIG-101);
- Toxic Substances Control Act (TSCA) and Lautenberg Chemical Safety Act.
- Canadian Environmental Protection Act-1999 (CEPA) and Canada Chemicals Management Plan /Chemical Challenge;
- Japanese Chemical Substances Control Law (CSCL).

Nothing about Essex finished magnet wire (also referred to as 'winding wire') and Essex bare copper could be construed as contrary to these aforementioned initiatives.

Specific to RoHS: Based on our internal review of raw material inputs, Essex has determined that its finished magnet wire and Essex bare copper have no substantive content for lead, mercury, cadmium, hexavalent chromium, polybrominated flame retardants, nor free phthalates. This compliance statement holds for RoHS-2 (Directive 2011/65/EU) and RoHS-3 (EU 2015/863).

Specific to WEEE and ELV: Essex finished magnet wire and Essex bare copper will not interfere with the collection, treatment, recycling, and recovery of waste electrical and electronic equipment, nor will Essex magnet wire and Essex bare copper interfere with management of end-of-life vehicles (ELV). Essex magnet wire is based on copper or aluminum conductor, two metals of intrinsic value. Therefore, developed nations should already be well-equipped for managing the reclamation of scrap magnet wire and bare copper.

Specific to REACH SVHCs and Annex XVII: Essex has reviewed the REACH lists of Substances of Very High Concern (SVHCs) against raw material input for Essex finished magnet wire and Essex bare copper, **up to and including the SVHC additions finalized in June 2023**.

Some formulations for raw magnet wire enamel coatings do indeed contain REACH-SVHCs 1-methyl-2-pyrrolidone (aka NMP, CAS # 872-50-4) and/or N,N-dimethylacetamide (aka DMAC, CAS #127-19-5). However, analytical data acquired by independent laboratories on behalf of Essex found all samples of Essex finished magnet wire to have residual NMP at <0.1% after full curing. In addition, when considering physical

properties of DMAC vs. NMP, Essex further has no expectation about issues with residual DMAC in Essex finished magnet wire.

Ultimately, Essex is aware of nothing contrary about Essex finished magnet wire and Essex bare copper vs SVHC lists under REACH.

In addition, Essex reviewed the provisions of REACH Annex XVII. To that end, Essex is aware of no quantifiable presence of carcinogens, mutagens, nor reproductive toxins in Essex finished magnet wire and Essex bare copper. There is some history of light use of azo colorants in some magnet wire enamels. However, Essex notes that interest in azo dyes in REACH Annex XVII is directed at textiles and like products, for which direct skin contact might be expected. This is not at all a typical use for magnet wire.

Related to SCIP Database and Waste Framework Directive: Essex magnet wire is considered compliant for SVHC content in EU-REACH, and thus EU-SCIP Database is not applicable to Essex Magnet wire. As for EU Waste Framework Directive, Essex magnet wire is based on copper or aluminum conductor, two metals of intrinsic value, so economics inherently drives magnet wire toward reuse, recycling, and recovery.

Specific to Persistent Organic Pollutants (POPs): Essex has reviewed persistent organic pollutants as defined by the European Chemicals Agency and by the United Nations Stockholm Convention, and Essex is aware of no substantive content for persistent organic pollutants in Essex finished magnet wire and Essex bare copper.

Specific to GADSL and JIG-101: Essex has reviewed the GADSL and JIG-101 lists of declarable and/or prohibited substances, and there have been some inquiries involving specific substances on the GADSL and JIG-101 lists. Based on Essex' internal review of raw material inputs vs. what would be expected to remain in the final magnet wire product and Essex bare copper, weighed against specific inquiries received to-date plus Essex' aforementioned statements about RoHS and REACH, Essex notes the following about GADSL and JIG-101:

- Essex copper magnet wire and Essex bare copper contain metallic copper, a GADSL declarable substance.
- Essex is aware of no substantive use of ozone depleting chemicals, whether CFCs or HCFCs, in the production of Essex magnet wire and Essex bare copper.
- Some formulations for raw magnet wire enamel coatings do indeed contain phenol (CAS # 108-95-2), used as a carrier solvent during production of film-insulated magnet wire. However, phenol is removed during the curing process, and thus there is no substantive phenol content in Essex finished magnet wire.
- As noted previously in this document, there is some history of light use of azo colorants in some magnet wire enamels, but Essex notes that interest in azo dyes in REACH Annex XVII (the basis for inclusion in GADSL) is directed at textiles and like products, for which direct skin contact might be expected. This is not a typical use for magnet wire.
- Essex film-insulated finished magnet wire (cured enamel coating applied as a solution over copper or aluminum conductor) and Essex bare copper have no substantive halogen content. Note that halogens may indeed be present in some Essex fabric-wrapped magnet wire products; see text below re: polyfluorinated organics in specific polyimide tape.
- Essex film-insulated finished magnet wire (cured enamel applied as a solution over copper or aluminum conductor) and Essex bare copper contain no substantive perfluorooctane sulfonate

(PFOS) and no substantive perfluorooctanoic acid (PFOA). One fabric-wrapped Essex magnet wire product (a specific polyimide) contains polyfluorinated organics in its tape wrapping, but suppliers of that tape wrapping deny any declarable PFOA or PFOS among these polyfluorinated organics.

Specific to TSCA (USA): As for Toxic Substances Control Act (TSCA) and related Lautenberg Chemical Safety Act, Essex is aware of no use of Persistent, Bioaccumulative, and Toxic chemicals (PBTs) in production of Essex magnet wire and bare copper rod. Some solvents used in production of Essex magnet wire are listed as TSCA High-Priority chemicals (ex: NMP, xylenes), but Essex bare copper rod and fully cured Essex magnet wire would have no substantive content for TSCA High-Priority chemicals.

There's ongoing news in the United States at both Federal and State levels about regulatory activity involving PFAS, or per-and polyfluoroalkyl substances. Polytetrafluoroethylene (PTFE) is more commonly known by the brand name Teflon, and PTFE is reportedly a PFAS chemical. Essex offers magnet wire products with PTFE wrap as insulation. PFAS is a quite broad chemical family, reportedly including gases, liquids, and solids. Essex is confident that a PFAS solid like PTFE-wrapped magnet wire has inherently low mobility in the environment and thus can be well controlled by merely routine housekeeping.

Specific to Canadian Initiatives: Essex has reviewed Canadian expectations about Priority Substances List, Toxic Substances List, and Virtual Elimination List under CEPA as well as Chemical Challenge substances. A few chemical substances from these aforementioned Canadian initiatives may be found in raw magnet wire inputs, but ultimately Essex is aware of no substantive free content (ie, >0.1%) for these substances in finished Essex magnet wire and Essex bare copper. As for Domestic Substances under CEPA, note that Essex finished magnet wire would be considered a manufactured article, not a chemical substance, while also noting that there is no substantive free content for phthalates in Essex magnet wire and Essex bare copper. As for NPRI reporting, consider that Essex magnet wire is based on copper or aluminum conductor.

Specific to CSCL (Japan): Essex reviewed this Japanese regulation re: chemicals management, and it's apparent that CSCL addresses manufacture and importation of chemical substances, whereas magnet wire is a manufactured article. As a courtesy to its customers, Essex will advise to being unaware of any substantive content for Priority Assessment Chemicals (PACs) in Essex finished magnet wire and Essex bare copper. A few PACs may be found in raw magnet wire enamels, but ultimately Essex is aware of no substantive free content for these PAC substances in finished Essex magnet wire and Essex bare copper.

Specific to Packaging: Essex has reviewed European Union expectations about packaging vs current practices at Essex magnet wire operations in North America. Based on this review, Essex considers itself compliant with EU expectations about packaging and packaging waste.

EU regulates packaging and packaging waste under Directive 94/62/EC. Goals include reducing quantity and hazard of packaging waste plus recovery and recycling of packaging. To that end, Essex magnet wire makes use of reusable plastic spools, reels, and buckets plus reusable wooden reels, boxes, and pallets. Standard terms & conditions for sale of Essex magnet wire demand that customers return this reusable packaging. As for contents of packaging, Essex specification for plastic spools, reels, and buckets excludes noteworthy bad-actor chemicals such as heavy metals and halogens.

In addition, specific to wooden reels, boxes, and pallets, Essex specifies that such wooden packaging must comply with 'International Standard for Phytosanitary Measures', aka ISPM15, typically by heat treatment.

This concludes this review of Essex magnet wire against the more commonly referenced initiatives for substance restriction.

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