

Monday 25th March, 2024

Dear Customer,

Re: Outgassing data for current Harwin products

The following is a list of all the outgassing data that Harwin have collected on the plastics used in our active products.

If the product you require is not listed, do please contact our Technical Team at Harwin via <https://www.harwin.com/contact/> and we will contact the relevant plastics manufacturer.

Plastic material	Outgassing data	Used in Harwin products
Flex copperclad base Pyralex LF9111	0.79% TML, 0.02% CVCM (Manufacturer's data)	Data applicable for Pyralux FR9120R , used on: Flex Circuit assemblies G125-F1, M80-F1.
Flex coverlay base Pyralex LF0110	0.77% TML, 0.01% CVCM (Manufacturer's data)	Data applicable for Pyralux FR0120 , used on: Flex Circuit assemblies G125-F1, M80-F1.
Flex FR4 rigid laminate Isola 370HR	0.22% TML, 0.01% CVCM, 0.07% WVR (Manufacturer's data)	Flex Circuit assemblies: G125-F1, M80-F1.
Flex sheet adhesive Pyralex FRO200	0.99% TML, 0.04% CVCM (Manufacturer's data)	Data applicable for Pyralux FR0100 , used on: Flex Circuit assemblies G125-F1, M80-F1.
LCP Vectra E130	0.04% TML, 0.02% CVCM (NASA data)	Data applicable for Vectra/Laperos E130i , used on: M22-654, M22-655, M22-713, M22-714, M402VF, M402VM, M40-301, M40-302, M40-401, M40-600, M40-620, M50-310, M50-312, M50-355, M50-365, M50-430, M50-470, M50-480, M50-490, M50-491, M701-340542. Data applicable for Vectra/Laperos E471i , used on: F10, F11, F12, F20, F30 Data applicable for Vectra/Laperos E480i , used on: M55-600, M55-601, M55-602, M55-610, M55-700, M55-701, M55-702, M55-710
PA46 Stanyl TE250F6 Black	Fog = 0.06mg after 16h @ 100°C (DIN 75201-G gravimetric) Test data for similar Stanyl 46HF5050: Pellets = 0.75% TML, <0.01% CVCM Moulded part = 1.01% TML, <0.01% CVCM	Selected Datamate L-Tek: M80-611, M80-613, M80-681, M80-690, M80-691, M80-753, M80-754, M80-770, M80-771, M80-782, M80-788, M80-790, M80-792, M80-798, M80-806, M80-807, M80-808, M80-809, M80-810, M80-811, M80-812, M80-813, M80-831, M80-832, M80-840, M80-841, M80-842, M80-843, M80-844, M80-845, M80-850, M80-851, M80-852, M80-853, M80-854, M80-882. All M80-7XX Legacy 3-row series: M80-700, M80-701, M80-702, M80-703, M80-704, M80-705, M80-706, M80-707, M80-708, M80-709, M80C107422C, M80C107424C. Datamate J-Tek Trio-Tek: M80-454, M80-455, M80-456, M80-459. Datamate J-Tek (<i>backshells only, not connector housing</i>): M80-940, M80-941, M80-942, M80-943. Other products: D01-992, D01-993, D01-994, D2899-42, S8401-46.

Plastic material	Outgassing data	Used in Harwin products
PA4T ForTii F11 GN61400 Green	0.68% TML, 0.01% CVCM, 0.26% WVR (Water Vapour Recovered)	Gecko: G125-204, G125-224, G125-304, G125-324, G125-F1, G125-FC, G125-FD, G125-FS, G125-FV, G125-MC, G125- MD, G125-MH, G125-MS, G125-MV. M300: M300-22X, M300-32X, M300-FC, M300-FV, M300-MC, M300-MV.
PA66 Zytel 101F White	1.14% TML, 0.01% CVCM (NASA data)	Plastic Spacers: R30-161, R30-670, R40-671.
PA6T Arlen CH230N	854ppm total emission after 10 minutes at 320°C	Data applicable for Arlen CH230NK , used on: M20- 610, M20-611, M22-600, M22-601, M22-603, M50-350, M50-360, M50-390, M50 Pin Header Variants. Data applicable for Arlen E430N , used on: M20-785, M20-890, M20-972, M20-973, M20-974, M20- 975, M20-976, M20-977, M20-995, M20-996, M20-997, M20-998, M20-999, M20 Pin Header Variants, M22-201, M22-202, M22-203, M22-204, M22-251, M22-252, M22- 253, M22-254, M22-258, M22 Pin Header Variants, M50- 300, M50-315, M50-361, M52-505, M52-515, M52 Pin Header Variants. Data applicable for Arlen E430N(T5) , used on: M20- 786, M20-787, M20-789. Data applicable for Arlen E430NK-T5 , used on: M20-875, M20-876, M20-877, M22-530, M22-532, M22- 602, M52-500, M52-510.
PBT Valox 420SEO Black	95-97% reflectance (DIN 75201) 0.33% TML, 0.07% CVCM (NASA data)	Selected Datamate L-Tek: all B5740, all B5741, all B5743, M80-101, M80-103, M80- 864, M80-866, M80-867, M80-868, M80-869, M80-876, M80-877, M80-878, M80-879, M80-880, M80-887, M80- 888, M80-889, M80-897, M80-898, M80-899, M80- FCxxxxLO, M80-FD. Other products: M22-19X, M7565, M7566, M7567, M7571, M7765, M7766, M7767, M7771, M7965, M7966, M7967, M7971, R30-940. Data applicable for Valox 310SESO , used on: M7680 to M7687.
PCT ThermX CG907	0.67% TML, 0.01% CVCM (NASA data)	Data applicable for ThermX CG933 , used on: D01-995, D01-997, D07XX, D08XX, D09XX, D26XX, D27XX, D28XX, D29XX, D8864, D95XXX.
PPE+PS Noryl SE100 Gray	0.09% TML, 0.00% CVCM (NASA data)	Data applicable for Noryl SE100X , used on: M20-106, M20-107

Plastic material	Outgassing data	Used in Harwin products
PPS Fortron 1140L4 Natural	VOC <0.95µg/g, Fog <0.95µg/g (to VDA 278 / PB VWL 709) 0.05% TML, 0.00% CVCM (NASA data)	<p>Data applicable for Fortron 1140L4 Black, used on Kona: KA1-201, KA1-301, KA1-MV1.</p> <p>Data applicable for Fortron 1140A6 Black, used on: M20-615, M20-616, S8411, S8421.</p> <p>Data applicable for Fortron 1131L4 Black, used on: Selected Datamate: M80-263, M80-273, all M80-4 (other than M80-454, M80-455, M80-456, M80-457, M80-458, M80-459), all M80-5, M80-665, M80-666, M80-826, M80-828, M80-836, M80-837, M80-F1, M80-FB, M80-FC (other than M80-FCxxxxLO), M80-FE, M80-FF, M80-MC, M80-MH, M80-MV. Datamate Hooded J-Tek (connector mould, not backshells): M80-940, M80-941, M80-942, M80-943. All M83 connectors (Datamate 3-Row). <i>Does not include any cable or coax insulation.</i></p>

NOTES ON NASA DATA:

- The NASA outgassing data was obtained using test ASTM E 595-77/84/90 "Total Mass Loss (TML) and Collected Volatile Condensable Materials (CVCM) from Outgassing in a Vacuum Environment".
- Materials having a value of 1% TML or less, and 0.1% CVCM or less, are described by NASA as "Low Outgassing".
- The data is listed on the following website: <https://outgassing.nasa.gov>.

If you have any further questions regarding this letter, please do not hesitate to [contact our Technical Experts](#).

Yours faithfully,

Mrs Wendy Jane Preston, BEng (Hons)
Senior Technical Sales Engineer