

World's first manufacturer to receive UL approval for halogen-free TPE cables

Long service life of igus chainflex high-end TPE cables convinces inspectors and gives customers certified safety

igus is the first cable manufacturer in the world to receive UL AWM certification from US validation agency Underwriters Laboratories (UL) for its high-end TPE cables, which do not require fire-retardant halogens as additives. This is the first time that the testing organization has recognized that halogen-free TPE cables can also meet the fire protection requirements in industry.

The independent organization Underwriters Laboratories (UL) is one of the most important authorities in the US for product safety. Since 1894, it has been testing the suitability of machine and system components for industrial use. UL's seal is one of the prerequisites for successful entry into the electronics market in North America. A decisive criterion here is fire protection.

According to the US National Fire Protection Association, machine fires rank 4th most common among causes of fire in the industrial environment in the US, closely followed by fires that are connected to electrical causes. "That is why we are particularly pleased that igus is now the world's first manufacturer to receive a UL seal for halogen-free TPE cables," says John Barker, Product Manager of the chainflex cables at igus UK. "The approval proves to our customers that they are on the safe side with chainflex high-end TPE cables."

Fire protection is feasible without halogen

To win this certification, igus engineers had to do some novel work.

Until now, the flame retardancy of cables was the central factor for obtaining UL certification. Only products that are manufactured with flame retardants, such as chlorine, fluorine or bromine, were approved. These additives increase flame retardancy, but they also usually change the chemical structure of the coating and thus reduce its mechanical strength.

Cable specialist igus started looking for a new solution, focusing less on preventing the spread of fire, but instead on the origin of the fire through the

cable itself. Thus, the TPE jacket mixtures formulated by igus prove to be extremely resistant to high mechanical loads as well as external influences. This makes them very versatile, suitable for small installation spaces of down to 4 x cable diameter, on highly dynamic, short travel distances with accelerations of 100 m/s² or on long distances operating from -35°C up to +100°C.

They are extremely resistant to external media and fluids, even to special bio-oils. The halogen-free TPE jackets from igus applied to all these energy chain applications minimise premature aging fractures in the jackets by up to a factor of 10, compared to the same cable jackets that contain flame retardants. The root cause of fire is thus reduced. The cable is far less likely to cause a fire because the outer jacket will not crack and remains intact for much longer. This important feature convinced UL to certify the TPE cables.

Flame retardancy in TPE cables is no longer the be all and end all

With this development, igus is making a big contribution to better machine safety. The load capacity, fatigue strength and service life of chainflex cables in e-chains are the subject of numerous practical tests in igus's test laboratory, not limited to TPE cables. "Previously, customers had the opportunity to order 1,044 chainflex cables with UL approval," John Barker says. "With the new certification, more than 200 TPE cables are added, so we can now offer a nearly complete UL certified program." European customers also benefit from halogen-free cables as well as those who build machines for the North American market, where UL certification of the individual components is the required standard.

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Image PM6221-1



Caption: Change of perspective: The long service life of chainflex high-end TPE cables convinced Underwriters Laboratories. For the first time, halogen-free TPE cables now receive UL certification. (Source: igus)

The terms "igus", "Apro", "chainflex", "CFRIP", "conprotect", "CTD", "drygear", "drylin", "dry-tech", "dryspin", "easy chain", "e-chain", "e-chain systems", "e-ketten", "e-kettensysteme", "e-skin", "e-spool", "flizz", "ibow", "igear", "iglidur", "igubal", "kineKIT", "manus", "motion plastics", "pikchain", "plastics for longer life", "readychain", "readycable", "ReBeL", "speedigus", "triflex", "roboLink" and "xiros" are legally protected trademarks in the Federal Republic of Germany and if necessary also internationally.