

Plastics and Fasteners in Terms of New Tightened Regulations of the EU

by Jozef Dominik

Vice-president of the European Commission for Sustainable Development said: "If we don't change the way we produce and use plastics, then by 2050 there will be more plastics in the ocean than fish. We must stop the penetration of plastics into our water, into our food and even into our organisms. The only long-term solution to reduce the volume of plastic waste is more intense recycling and reuse".

And we can continue:

The Europeans produce 25 million tonnes of plastic waste every year, with just a little less than 30% collected for recycling. Plastics make up 85% of the world's waste. Half of all plastics have become waste in as little as four years from the start of use. According to the new report of a "Plastic and Climate", plastics will contribute greenhouse gases equivalent to 850 million tons of carbon dioxide (CO₂) to the atmosphere in 2019.

The Situation in the Area of Fasteners

In particular, we must distinguish between recyclable and non-recyclable plastic products. The first category includes fasteners made of plastics only, i.e., without any combination with metals such as screws, nuts, washers, etc. In the following text, our focus will be oriented on combined fasteners. A typical representative of this category is a DIN 985 lock nut (Fig. 1).



Fig. 1

As shown in Figure 1, the DIN 985 nut consists of two parts. The steel threaded nut and a plastic retaining ring pressed on the nut's output part (Fig. 2).



Fig. 2

The ring weight is about 4.8% of the weight of the nut, e.g. with M18 it is ca 0.002KG. Is it a lot or little? Certainly most would say that this is a negligible amount and there is no point in dealing with it. But what is the reality?

The lock nut DIN 985 is one of the most widely used fasteners in construction and is produced on a mass scale. Accurate statistical data is not available, so we need to base the reasoning only on assumption.

If daily production is about 1 mil. DIN 985 nuts, then it means 2,000KG of plastics which are burned together with metal waste in the melting furnace. Compared to plastics and the climate report, it's the minimum, but must it be?

Solution Options

An equivalent replacement of DIN 985 lock nuts is their all-metal version. However, there are other options. One of them is the lock nut IstLock with replaceable locking plastic ring (Fig. 3 and 4).

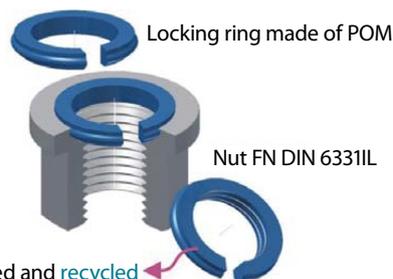


Fig. 3

An attractive feature of this system is the almost infinite life of the nut, because the plastic ring can be easily replaced and recycled and has high locking effect.



Fig. 4

The current fasteners market offers a wide range of safety features that are able to eliminate the risk of spontaneous loosening of threaded joints without the plastic components.

Conclusion

The classic saying: "every technical drawing is a compromise among functionality, price and ecological impacts on the environment." This is also the case here. The given article is meant to be an attempt to evaluate the possible influences of the often used parts for mechanical joining on the environment. As it was mentioned above, not all the fasteners are ecologically acceptable. Fortunately, they can be replaced. It is up to designers to know the possibilities and limits.

The present article points out the current problem - disproportionate contamination of nature by plastic rubbish, and suggests possible solutions in the field of fasteners. ■

