

NEW RULES OF ACCESS TO LIGHTING TECHNICAL PRODUCTS IN THE EAEU MARKET: COMPLIANCE WITH FOUR TECHNICAL REGULATIONS

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ABSTRACT

The article discusses the new technical regulations of the Eurasian Economic Union: “On the Requirements for the Energy Efficiency of Energy-consuming Devices” (TR EEU048/2019) and “On the Limitation of the Use of Hazardous Substances in Electrical and Radio Electronics” (TR EEU037/2016), which establish uniform requirements for energy-consuming and containing regulated (hazardous) substances of products, including products for lighting. It is shown that the compliance of lighting products with existing and newly introduced technical regulations during its manufacture and the implementation of conformity assessment procedures will protect the Eurasian market from low-quality, unsafe and energy-inefficient products.

Keywords: lighting products, energy efficiency, resource saving, Eurasian Economic Union, technical regulation, conformity assessment, safety, energy efficiency classes, standards, label, directives and regulations of the European Union

1. INTRODUCTION

The prerequisite for product access to the market of the countries of the Eurasian Economic Union (EEU) is the compliance of the delivered products with the requirements of the EEU technical legislation, guided by which the products are put into circulation on the territory of the Union only if it meets the requirements of the EEU technical regulations

(TR of the Customs Union). Product compliance with the TR requirements is carried out through the conformity assessment procedure of technical TR requirements, the effect of which extends to it in order to obtain permits established in the EEU: certificates of conformity and declarations of conformity, which have equal legal force and the right to apply the conformity mark – EEU marking. Products that have not passed the conformity assessment procedure of the TR requirements, which apply to it, should not be marked with a single sign of circulation on the Union market and shall not be allowed on its territory to be put into circulation. Such a system of technical regulation in the EEU not only helps protect the internal market of the Union from low-quality, unsafe and energy-inefficient products, but also contributes to the development of export potential and promotion of products to the markets of other countries.

2. NEW TECHNICAL REGULATIONS: ENERGY EFFICIENCY REQUIREMENTS AND THE CONTENT OF HAZARDOUS SUBSTANCES IN LIGHTING PRODUCTS

The process of establishing common requirements and rules for access of lighting products to the Russian market began with the bring into force on February 15, 2013 of two TRs [1, 2], used in the form of certification with an assessment of electrical and fire safety, as well as electromagnetic compatibility. Starting from 2016, in assessing the

conformity of lighting products with these TRs, requirements for photo-biological safety and for restrictions related to the exposure of a person to electromagnetic fields are additionally included.

In March 2018, TP [3] was put into action, establishing new requirements for products of electrical engineering and radio electronics in terms of limiting the use of harmful substances in their composition during development and manufacture. According to this TR, the list of products covered by it includes “Light Sources and Light Equipment, Including Equipment Built into Furniture”, for which special requirements have been established to limit the use of hazardous substances – mercury and lead. The content of this TR is maximally harmonized with international standards and rules, including the legislation of the European Union (EU) on the restriction of the use of hazardous substances in electrical and electronic equipment, according to the EU directive [4].

Considering the need for a lot of preparatory work in connection with the implementation of the TR [3], the decision of the Board of the Eurasian Economic Commission (EEC) dated February 28, 2017 No. 24 approved the transitional provisions of this TP, according to which production was allowed until March 1, 2020 and the release into circulation of products of electrical and radio electronics, including lighting, without a conformity assessment and documents on conformity assessment requirements of the regulations. Such an approach with a delay in the implementation of the TP [3] in terms of assessing the conformity of products to the requirements of this TP was necessary for preparatory work for the fulfilment of TP requirements by certification bodies, accredited testing laboratories and importers of products. Thus, starting from March 1, 2020, for access to the EEU market, lighting products, the list of which is given in the TR [3], must undergo a conformity assessment procedure and be released to the Union market only if they comply with the standards of this TR, as well as the requirements of the TR [1, 2].

In order to ensure energy efficiency and resource conservation within the framework of the EEU, as well as to prevent actions that mislead consumers about the energy efficiency of energy-consuming devices, on August 8, 2019, the EEC Council adopted the TR [5], which establishes requirements for energy efficiency and resource conservation of energy-consuming devices, which include light-

ing products. TR [5] will enter into force on September 1, 2021. The new TR will be able to prevent the actions of unscrupulous entrepreneurs who mislead consumers about the energy efficiency of energy-consuming devices. The new TR sets the energy efficiency classes of energy-consuming devices, and for better informing customers, such devices will be equipped with special labels and technical sheets containing information about their energy efficiency. Energy-consuming devices will be released to the Union’s market only if they comply with the TP [5] standards and the requirements of other TPs that apply to them and pass the conformity assessment procedure. Such products receive the right to be marked with a single sign of product circulation on the EEU market. In accordance with the decision of the EEC Council, a phased implementation of the individual requirements of the EEU TR048/2019 is planned, which will ensure a smooth transition of manufacturers of energy-consuming devices to uniform mandatory requirements.

Requirements for energy efficiency of specific types of energy-consuming devices are formulated in 19 appendices to TR [5], of which three relate to lighting products:

- Electric lamps;
- Fluorescent lamps without built-in ballasts, gas discharge lamps HP, ballasts and luminaires for such lamps;
- Directional light bulbs, LED bulbs and related equipment.

The annexes to TR [5] for lamps, ballasts and luminaires with such lamps contain the necessary terms and definitions, requirements for product identification, labelling, operational documents, conformity assessment and energy efficiency, contain information on permissible deviations of the energy efficiency parameters for electric, fluorescent lamps, without built-in ballasts lamps, HP gas-discharge lamps, ballasts and luminaires with such lamps, directional lamps, LED lamps and related equipment for testing (measurements) after they are put into circulation, including requirements for the content of labels and technical sheets as well as classes of lamps energy efficiency establishing.

According to TR [5], the requirement to contain information on the energy efficiency class in the technical documentation attached to these devices, in their labelling and on their labels, applies to the following lamps put into circulation in the customs territory of the EEU:

- Electric lamps of non-directional light for domestic and similar purposes, which can also be used for other purposes in addition to lighting or built into other electrical energy-consuming devices;

- Fluorescent lamps without built-in ballasts, gas discharge lamps HP, ballasts and luminaires for such lamps, also if they are built into other energy-consuming products;

- Both individual and built-in other products directional lamps, LED lamps, as well as related equipment intended for installation between the power supply network and lamps, including ballasts, control devices and luminaires.

To designate lamps with the highest energy efficiency, the energy efficiency classes “A +” and “A ++” are used, the class “E” is given as the least efficient, and the previously used classes with the lowest energy efficiency of the lamps “F” and “G” in TR are absent.

The Table shows, as an example, the energy efficiency classes of electric lamps, determined in accordance with the energy efficiency index (*EEI*), which is calculated by the method described in TP [5].

TR [5] defines new requirements for energy efficiency and operational characteristics of lamps and luminaires, which, depending on their type, will be introduced in stages, starting from September 1, 2021, and then annually, with a delay in the introduction of the final stage until September 1, 2024. Such a phased introduction of requirements for the characteristics of products will allow manufacturers of lighting products to conduct a comparative analysis of the actual values of energy efficiency parameters and operational characteristics achieved in production and established in the normative and technical documentation (ND) with parameters regulated by TR [5]. According to the results of the analysis, enterprises will need to carry out a range of works to introduce appropriate changes in the normative documents if the indicators achieved in production are not lower than the standardized TR, or bring the product characteristics to the level established by the TR [5], with subsequent updating of the normative documents in order to bring it in accordance with the requirements of this TR.

Until the date of entry into force of the TR [5], that is Until September 1, 2021, the EEC Council must approve a list of standards containing the rules and methods for research (testing) and measurements, including the rules for sampling, necessary for the application and implementation of the

requirements of this TR and the implementation of conformity assessment. Currently, there is a public discussion of the draft list of standards with the participation of interested parties (the protection of the interests of which the development of this list is aimed at), including product manufacturers, certification bodies, testing laboratories, state control and supervision bodies, consumers of products and other interested parties. In terms of lighting products in the draft, a list of standards is given for electric lamps; fluorescent lamps without built-in ballasts, gas discharge lamps HP, ballasts and luminaires for such lamps; on directional light bulbs, LED bulbs and related equipment, and is grouped in accordance with the TR [5] Annexes 9, 13, 14.

It should be emphasized that according to the provisions of the EEU agreement [6] for the objects of technical regulation, in respect of which the TR of the Union comes into force, these requirements become mandatory, and the previously existing laws of the Member States become invalid. Thus, after the entry into force of the TP [5], all are previously existing national regulations regarding the requirements for lighting devices and electric lamps used in AC circuits, as well as their energy efficiency classes, which should be contained in the technical documentation attached to these products in the marking and on their labels, will lose their force.

In TR [5], certification is established for evaluating the conformity of all types of lighting products as a single form of conformity assessment. After the TR [5] is put into action, the applicant will have the opportunity to obtain one certificate of compliance with the requirements of four TRs immediately [1–3, 5] to carry out certification of lighting products. Moreover, the analysis of the state of production, which is mandatory for certification of mass-produced products, can be carried out once, which will significantly save the applicant’s money. If there is an act of analysis of production carried out earlier by the certification body in the framework of certification of lighting products for compliance with the requirements of TR [1], and (or) TR [2] and (or) TR [3], when certifying products for compliance with the requirements of TR [5] additional analysis of the state of production is not required if no more than three years have passed from the date of analysis. We emphasize that obtaining a certificate of compliance with four TRs in one certification body will be possible subject to accreditation by the Federal Accreditation Service and inclusion in the unified reg-

Table. 1. Energy Efficiency Classes for Electric Lamps (EEU TR048/2019, sect. VI, Table. 1 of Appendix No. 14)

Energy efficiency class	Energy efficiency index	
	For lamps (light sources) of non-directional light	For lamps (light sources) of directional light
A ++	$EEI \leq 0.11$	$EEI \leq 0.13$
A +	$0.11 < EEI \leq 0.17$	$0.13 < EEI \leq 0.18$
A	$0.17 < EEI \leq 0.24$	$0.18 < EEI \leq 0.4$
B	$0.24 < EEI \leq 0.60$	$0.4 < EEI \leq 0.95$
C	$0.60 < EEI \leq 0.80$	$0.95 < EEI \leq 1.20$
D	$0.80 < EEI \leq 0.95$	$1.20 < EEI \leq 1.75$
E (least effective)	$EEI > 0.95$	$EEI > 1.75$

ister of certification bodies and testing laboratories (centres) of the EEU (Customs Union). Moreover, the certification body must have in the field of accreditation all four TR and experts in lighting products with certificates of competence in this field.

TR [5] establishes the obligation of sellers to inform buyers about the energy efficiency class of energy-consuming devices and about other energy efficiency parameters when selling, including remotely. The energy efficiency label for electric lamps should contain the following information: name or trademark (if any) of the manufacturer; model designation; energy efficiency class; estimated energy consumption in kWh per 1000 hours of lamp operation. The label for energy efficiency of luminaires should contain the following information: name or trademark (if any) of the manufacturer; model designation; information about the lamp (type, design, compatibility); energy efficiency class; information in accordance with one of the options specified in the technical regulations.

The TR [5] does not provide label forms for energy-consuming devices; therefore, the EEC Council established that this TR will not enter into force without approving the labels of energy-consuming devices of different types and the rules for their design, which the EEC should develop before March 1, 2021. In this regard, TR [5] will begin to operate no earlier than September 1, 2021 after the requirements establishing the label forms of energy-consuming devices of various types and the rules for their design come into force.

In order to prepare the business community for the transition to the requirements of the TR [5], it is assumed that until September 1, 2023, the production and circulation of products in the territories of the EEU Member States will be allowed:

- A mandatory assessment of compliance with the mandatory requirements for energy efficiency established by acts that are part of Union law or the legislation of the EEU Member State, without documents on a mandatory assessment of compliance and without marking with a national conformity mark (a market circulation mark);

- If there are documents on the assessment of the conformity of products with the mandatory requirements for energy efficiency, previously established by acts that are part of Union law or the legislation of the EEU Member State issued or adopted before the TR entry into force. The draft decision of the EEC Board also provides that the circulation of such products is allowed during its service life, established in accordance with the legislation of the EEU Member State.

It is important to note that the requirements of TR [5] are based on the European approach and are largely harmonized with the requirements of directives and regulations of the European Union. Currently, in the EU, in accordance with the regulation [7], the system of energy efficiency classes is being reviewed, which are reflected on the label of energy efficiency of products. A new product labelling will be established with an updated system of energy efficiency classes in comparison with the directive [8], which was repealed on August 1, 2017 by the regulation [7]. Changes in labelling and energy efficiency class systems will also affect lighting products, as delegated regulation [9], supplementing directive [8] regarding energy efficiency labelling of electric lamps and luminaires and described in detail in article [10], will continue to be applied in the EU until the relevant changes, the introduction of which according to regulation [7], is planned to be completed by 2030.

3. CONCLUSION

Energy-consuming devices, including lighting products, are widely used products that have a significant share in the energy balance of the Russian Federation and thus have a significant impact on the total consumption of fuel and energy resources, greenhouse gas emissions and energy security of the state, and the state of the environment. The adoption of TR [5] is a necessary and relevant solution to ensure the energy and environmental safety of the Russian economy. The introduction of requirements for energy efficiency and the phased tightening of the criteria for classifying lighting products as more energy efficient are based on scientific and technical prerequisites, structural reserves and fundamental possibilities for increasing the energy efficiency of products.

The compliance of lighting products with their assessment of the requirements of the newly introduced TR [3, 5], as well as the requirements of the existing TR [1, 2], will serve as a guarantee of safe, high-quality and energy-efficient products entering the Eurasian market.

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