

Railway Transport Products Conformity Proving Principles Applied on the European Market and in Poland, Survey Over Sources of the Requirements and Overview of the Railway Research Institute Formal Authorisations

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Summary

The paper starts with a presentation of the conformity proving principles, which are utilized all over the European Union as a basis for the common market. Then, it shows how these principles are being applied in the case of railway transport, taking into account European and national requirements. It describes European requirements applicable before and after implementation of the fourth railway package. It also shows different complementary requirements. The paper ends with a short overview of the Railway Research Institute test capabilities and formal authorisations.

Keywords: conformity proving, railway transport, interoperability, safety

1. Conformity proving concept

Each product that is being put on the Polish, European or any other market has to be safe for users and for the environment. Hence, products, in order to be admitted to be put on the market, have to be designed and fabricated fulfilling predefined requirements. Safety belongs to the most important requirements. However, in the majority of cases, self-declarations provided by producers or other organizations or legal entities that products conform with predefined requirements are not sufficient. Such a declaration, named a declaration of conformity, has to be linked with the product conformity assessment conducted by an authorised, competent and independent certification body, which proves conformity with predefined requirements issuing relevant certificates of conformity after conducting conformity assessment processes. In short, conformity proving means activities devoted to proving that a defined type of product, as well as associated production processes, conforms with requirements defined in standards and legally binding rules, which are applicable to products of the type in question.

As a result of conformity proving processes, frequently named certification processes or simply certifi-

cation or attestation, conducted by certification bodies, a producer fabricating products of a defined type receives a certificate of conformity proving that the type fulfils the requirements defined in applicable rules and regulations. The producer issues a declaration of conformity referring to the certificate and thereby declares on his sole responsibility that individual products conform with the type and were fabricated in an accepted manner verified technically and formally.

The free movement of goods is a conceptual idea guiding market participants, e.g. producers and consumers. The free movement, however, has to respect predefined general requirements named essential requirements, including safety which belongs to the most important ones.

2. Railway transport versus conformity proving – railway interoperability concept

This is also, or even especially, important in the case of railway transport. We all wish to travel in a safe way, regardless of whether we are using trains

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running within our countries or trains crossing the state borders. At the same time, the common market of the European Union requires products, which are produced in different EU countries and belong to the same type or have somehow unified characteristics, to be capable of being implemented or embedded in railway rolling stock or on the railway infrastructure EU wide. In order to make this happen, all the interested countries defined together many requirements for products. They also agreed the principle that putting a product type into service as well as putting a product type on the market in one country means, at the same time, admission in all other EU countries, under the condition that the agreed requirements are fulfilled.

Such an approach is challenging because railway systems have already existed for a long time and we won't start to construct them from scratch tomorrow. Railways do exist in the majority of countries worldwide. They were constructed in accordance with the requirements existing in each independent state. Therefore, they have to be differentiated, and they are differentiated. We do have in the Member States of the European Union, for instance, different track gauges, different traction power supply voltages, different control command and signalling systems as well as different requirements regarding fire safety and facilities for persons with disabilities. This is why works dedicated to unification of the requirements have been conducted for many years. At the same time, assessing procedures as well as basic requirements applicable to conformity assessing bodies are being unified to achieve a standardised approach to conducting conformity assessments. All of this is for the principle "once tested, certified and admitted in one Member State of the European Union means admitted in each Member State of the EU". That requires not only common technical requirements for products, but also common requirements for certification bodies. Products fulfilling these requirements are called interoperable constituents. Railways fulfilling these requirements are called interoperable railways. Converging railways towards interoperability is the principle being applied for the modernization and purchase of rolling stock as well as for the construction and modernization of infrastructure by the power of law and is obeyed in all Member States of the European Union.

3. Complementarity of the European and national requirements for railways

Up to now, there is no railway which is fully interoperable. Each country has its own railway peculiarities and it is not possible to unify everything in a short time. However, everything that it is possible

to unify is being done so. Railway technical requirements common for all Member States of the European Union are already binding. They are defined in the so-called Technical Specifications for Interoperability (TSI specifications – TSIs). TSI specifications mainly define common requirements. They, however, also provide information about specific cases for individual Member States as well as open points, meaning fields where national rules are still in power. Moreover, because of the existing infrastructure, there are also requirements, in each Member State, which are there to prove conformity (namely to ensure appropriate cooperation) with existing infrastructure.

There are different types of bodies conducting type conformity assessment processes. Notified Bodies, referred to as NoBo or NBs ("-s" for plural), verify conformity with European requirements. National Designated Bodies, referred to as DeBo or DBs ("-s" for plural), verify conformity with complementary national requirements. National authorised bodies also conduct conformity verifications for locally utilized vehicles which do not fulfil the requirements of the TSIs e.g. for vehicles dedicated for junctions, narrow gauge lines and metro. In the case of Poland, in order to obtain the status of a notified body and/or designated body, it is necessary to first obtain accreditation from the Polish Centre for Accreditation PCA as well as authorisation from the Office of Rail Transport UTK. The bodies which are authorised regarding locally utilized vehicles being competent and accepted by the Office of Rail Transport UTK are listed in the Regulation of the Minister of Infrastructure and Development of 15 December 2015 amending the Regulation on railway system interoperability (Polish Official Journal dated 31.12.2014, pos. 1976). The only body in Poland with all the above listed formal authorisations, namely being a notified body (NoBo), designated body (DeBo) and authorised body entitled to assess all railway subsystems, all interoperability constituents and applying all modules for the procedures for assessment of conformity is the Railway Research Institute (notified body no. 1467 having Polish Centre for Accreditation PCA accreditations AC 128 and AC 185 QMS).

Different legal rules, different technical specifications, different European and national standards as well as other normative documents apply for different products being certified (railway subsystem, interoperability constituent, type of construction, type of equipment or railway vehicle). Due to different products, there are also differences regarding procedures and required documentation provided for conformity assessment processes.

Legally binding requirements defined by the TSI specifications, which are in power on the basis of the regulations issued by the European Commission in

conjunction with the Railway Interoperability Directive, show that EU Member States are striving for full interoperability of the European railway systems.

The TSI specifications comprise common requirements covering a wide, but not full, scope. There are two domains, one which contains technical requirements successfully agreed, which are common, European, unified technical requirements, and one which contains technical requirements specific for countries which are also binding in individual Member States. Differentiated requirements have not yet been replaced by unified ones mainly due to the current railway condition and large differentiation of the technical solutions. The second domain contains still binding technical rules which are specific for individual countries, which are called national requirements. Therefore, national requirements are dedicated for fields which are not ruled by the European requirements commonly called interoperability requirements.

4. Subsystems of the railway system and the interoperability constituents

In order to properly organize all the requirements, the railway system was subdivided into the following subsystems: “infrastructure”, “energy”, “rolling stock”, “control command and signalling – trackside equipment” and “control command and signalling – on-board equipment” classified as structural subsystems. Each of these subsystems is composed of different sub-assemblies and components. Some of them, which are the most important ones and indispensable for railway functioning, were set apart and named interoperability constituents. Common requirements are defined for the products defined in such a way, i.e. for interoperable subsystems and interoperability constituents.

Railways also require procedures and personnel. In that respect, at the same time, there was also a need for good organization on the European level. In that scope, the following subsystems were defined: “operation and traffic management”, “maintenance” and “telematics applications” classified as functional subsystems. The functional subsystems are not directly linked with products, although they are, of course, not fully self-reliant.

Changes in structural subsystems and their elements, and the following assessment processes, take place in the case of different technical works, disregarding replacement of the elements which take place within the maintenance of the rolling stock and infrastructure. Changes in functional subsystems are introduced on the level of railway networks of individual countries. Here, converging to unified solutions is also present. However, for practical reasons,

it is necessary to keep compliance with existing rolling stock, infrastructure and European and national requirements regarding procedures and personnel. Further steps regarding functional subsystems are introduced on a scale of individual countries e.g. by changes in national law and/or in railway infrastructure managers rulebooks and do not form a subject for certification processes, which are conducted for products. Therefore, the following part of the paper presents only formal sources of the European and Polish technical requirements, omitting requirements applicable to procedures and personnel.

4.1. TSI specifications before entering into force of the fourth railway packet on the EU level

The first TSI specifications were adopted in the year 2002. They were dedicated only for high-speed railways. The first TSI specifications for conventional railways were published in the year 2006. Published specifications, as a rule, apply for projects which start after the date of entry into force of the legal regulations. It would be difficult to accept, for example, changing already accepted design documentation for rebuilding railway lines or already constructed, but not yet put into service, rolling stock.

Later changes in the TSI specifications entered into force on 16 June 2019 – on the day in which the so-called fourth railway packet entered into force on the EU level and in some Member States. This packet comprises one directive and two regulations forming the so-called market pillar [1, 2, 3] as well as two directives and one regulation forming the so-called technical pillar of the fourth railway package [4, 5, 6], which are currently not introduced into Polish legislation. New directives on the interoperability of the rail system [4] and on the railway safety [5] will be binding in Poland after transposition to national legislation, but changes introduced in the middle of the year in the TSI specifications are already binding by European law. Nevertheless, currently conducted infrastructure investments, mainly railway line and station modernization as well as rolling stock investment, both construction of new rolling stock and modernization of existing vehicles, are conducted in the majority of cases in accordance with the following requirements:

- subsystem “infrastructure” – requirements for lines, stations and station buildings including requirements for tracks, turnouts, bridges, tunnels, platforms, zones of access accessible for passengers and restricted areas defined by TSI INF [8], TSI PRM [9], TSI SRT [12] as well as standards indicated in those regulations as obligatory,

- subsystem “energy” – requirements for the electrification system including requirements for traction power substations, sectioning locations, overhead contact line systems, return circuits as well as for electrical protection and electricity consumption measuring systems defined by TSI ENE [10] and the TSI ENE amendment as regards traction energy measuring on-board of the vehicles [15], TSI SRT [12], and standards indicated in those regulations as obligatory,
- subsystems “control command and signalling – trackside equipment” and “control command and signalling – on-board equipment” – requirements for equipping lines and stations as well as traction vehicles with control command and communication, including requirements for European Train Control System ETCS and Global System for Mobile Communications – Railway GSM-R as well as train detection systems for track occupancy checking defined by TSI CCS [14], as well as many detailed documents and standards indicated in this regulation as obligatory,
- subsystem “rolling stock” in matters of freight wagons – requirements for wagons and their components defined by TSI WAG [7], TSI SRT [12], TSI NOIS [13] as well as standards indicated in those regulations as obligatory,
- subsystem “rolling stock” in matters of passenger rolling stock and traction vehicles – requirements for passenger coaches, multiple units, locomotives and for their components defined by TSI L&P [11], TSI PRM [9], TSI SRT [12], TSI NOIS [13] as well as standards indicated in those regulations as obligatory.

4.2. Changes in the TSI specifications with entering into force of the fourth railway packet on the EU level

As already mentioned, the later changes of the TSIs entered into force on 16 June 2019 – on the day in which the so-called fourth railway packet entered into force on the EU level and in some Member States. They were introduced by regulations, which are binding since 16 June 2019, regardless of whether an individual Member State has already transposed the fourth railway package into national legislation or not. The final date for transposition of the fourth railway package for all Member States is 16 June 2020. Changes in the TSI specifications, however, are already binding now. As mentioned above, they are not applicable to projects at an advanced stage of development, but are applicable to all new projects.

The TSI PRM specification [9] that defines requirements relating to accessibility of the Union’s rail system for persons with disabilities and persons with reduced

mobility, including pregnant women, was amended by a regulation [16] especially as regards the inventory of barriers to accessibility and providing information for such persons. The TSI NOIS specification [13], which defines requirements regarding railway noise, was amended by a regulation [17] especially as regards defining quieter routes forming zones with lowered railway noise. By contrast, a regulation [18] changed and amended many other specifications, including TSI WAG [7], TSI INF [8], TSI ENE [10], TSI L&P [11], TSI SRT [12], TSI CCS [14] as well as requirements regarding a European register of the types of railway vehicles. Changes in these specifications affect both complete subsystems and chosen individual products, which belong to these subsystems. As an example, it could be pointed out that a full set of requirements was introduced for track gauge changeover facilities for wheel gauges 1435/1520/1668 mm, which became a product on the European market as a new interoperability constituent.

The European Commission amended the TSI specifications together with the fourth railway package and, at the same time, adopted a regulation which defines templates for documents confirming infrastructure and rolling stock conformity with TSI requirements [20]. This regulation, unlike the TSI specifications which mainly define technical characteristics, will enter into force on 16 June 2020, which is the final date for transposition of the fourth railway packet to national legislation in all Member States. It should be underlined that the change in the templates of the documents [20] will enter into force on the basis of European legislation also in those countries which are late with the transposition of the fourth railway package.

4.3. Applying TSI Technical Specifications for Interoperability

The quoted TSI specifications have a unified construction regarding the subdivision into sections. In each TSI, Section 4 describes a subsystem as a whole defining requirements e.g. requirements regarding the geometry of the railway lines and tracks. Section 5 describes individual interoperability constituents belonging to the subsystem e.g. requirements for rails and railway wheels. Section 6 describes principles which are applied for assessing conformity of the interoperability constituents and for verifications of the complete subsystems. Section 6 defines especially applicable conformity assessment procedures of so-called modules for the procedures for assessment of conformity for interoperability constituents and for the verifications of the subsystems.

Modules for the procedures for assessment of conformity are precisely described by Commission Decision no. 2010/713/EU [19] adopted on the basis of the European Parliament Decision defining a common Eu-

European framework for the marketing of products. Each TSI gives several applicable modules for the procedures for assessment of the interoperability constituents and verifications of the subsystems, which can be chosen by the applicant requesting the conformity assessment. The choice is not fully free as applicability conditions are sometimes given together with the modules. Conformity assessments which are conducted in accordance with these modules, as well as the names of the certificates, are supplemented with the acronym EC indicating the common European requirements.

EC assessment of conformity for the interoperability constituent as well as EC verification of the structural subsystem can only be conducted by a competent body notified to the European Commission in a defined scope by the Member State. The Railway Research Institute is such an authorised body notified by the Republic of Poland as the only one in Poland with the full scope of certification capabilities for all subsystems, all interoperability constituents and all modules for the procedures for assessment of conformity (notified body no. 1467). On the basis of those competences and authorisations, the Railway Research Institute issues EC certificates of conformity for interoperability constituents and EC verification certificates for subsystems and conducts production audits.

Precise rules applicable for conducting verifications of the subsystems and assessments of conformity of the interoperability constituents are defined in a dedicated regulation [22] issued on the basis of the Railway Transport Act. It is expected that this regulation will be amended together with transposition of the fourth railway package to Polish legislation.

It should be underlined that the EC certificates issued by notified bodies on the basis of European law are valid all over the European Union by the power of law. Processes are conducted for production and for investments being carried out on the whole territory of the Union. They also cover production outside the EU if the products are to be offered on the Union territory. European certificates are also sometimes requested by investors outside the EU as facultative from the local legislation point of view but required, for instance, on the basis of contractual agreements.

5. Construction products in railway transport

The modernization of railway lines requires not only interoperability constituents but also other products admitted to the common European market, especially construction products. European legal rules applicable for construction products are very similar. Construction and modernization works on railway lines and stations require appropriate construction product admissions, for instance, for:

- aggregates including railway broken stone ballast,
- concrete and metal construction elements, including platform slabs, pavement elements for level crossings, overhead contact line supporting structures, noise barriers,
- plastic construction elements, including geo-grids, geo-textiles and track vibration damping elements.

In that range, the Railway Research Institute also possesses test capabilities and appropriate legal authorisation for assessing construction elements utilized for railway lines. On the basis of those capabilities and authorisation, the Railway Research Institute issues National Technical Assessments and conducts factory production controls.

6. Assessing how changes affect railway system safety

The railway system is changed by each subsequent investment. Parts of the line, station or rolling stock, which were changed or are being changed, become interoperable whilst others still have characteristics according to previously binding regulations. Even if the defined line were fully interoperable and the running rolling stock new and put in service according to the currently binding rules, such a line would only form a piece of the network and vehicles would almost certainly also run on the existing infrastructure put in service many years ago. Therefore, it is required to conduct risk analyses, risk evaluations and obtain safety assessment reports when introduced changes are significant, according to European legislation.

Safety assessment reports are issued by inspection bodies, which are called Risk Assessment Bodies, referred to as AsBo or ABs ("-s" for plural) in European legislation. Assessment bodies verify conformity of the risk analyses and evaluations with the European requirements binding on the basis of the Railway Safety Directive.

In that range, the Railway Research Institute also possesses research capabilities (PCA accreditation no. AK 029) and appropriate legal authorisation. On the basis of those capabilities and authorisation, the Railway Research Institute issues safety assessment reports which are necessary for closing infrastructure investments or limiting the amount of tests in the case of modernization of existing rolling

7. Complementary Polish regulations

As already mentioned above, the TSI specifications comprise a relatively small number of specific cases i.e. notified requirements which are specific for

individual countries, as well as open points i.e. areas for which requirements are to be finally agreed on the European level, but which are presently still verified according to differentiated national rules.

For a small number of important elements belonging to “infrastructure” and “energy” subsystems, including bridge sleepers, supporting blocks, turnouts as well as current coils and return circuits, it is required to obtain national type certificates. Moreover, there is one big technical area which is not covered by the European requirements. This is railway traffic signalling comprising station interlockings, line blocks, rail-road level crossing protection systems as well as cooperating components, like point machines and colour light signals. National type certificates are required for individual solutions, whilst complete installations are verified as part of the subsystem “control command and signalling – trackside equipment” for which the TSI requirements are not applicable.

Obtaining national certificates for constructions and equipment is regulated by the Railway Transport Act and a regulation dedicated to admitting defined types [21, 23]. Admitting processes start with tests being conducted according to requirements and normative documents which are indicated on a dedicated Office of Rail Transport requirements presidential list.

In that range, the Railway Research Institute also possesses confirmed test capabilities and appropriate legal authorisation. On the basis of those capabilities and authorisation, the Railway Research Institute issues type conformity certificates and certificates of conformity with type which respectively form the basis for the type admissions which are issued by the Office of Rail Transport and declarations of conformity with type, which are issued by producers of the constructions and equipment for which obtaining national type admissions is obligatory.

The mentioned regulation defines, among others, procedures for issuing, refusing and withdrawing type admissions, lists of types of constructions, equipment and rolling stock for which obtaining type admissions is obligatory, scopes of required technical verifications for proving type conformity with requirements and for proving conformity with type, as well as conditions applying to operational verifications and templates for certificates and declarations of conformity. It is important that the regulation defines complete lists of types requiring admissions, subdividing them into types of constructions which belong to subsystem “infrastructure” (e.g. railway turnouts, railway track crossings, steel sleepers, bridge sleepers and supporting blocks), types of equipment which belong to subsystem “energy” (e.g. current coils, current wires, high-speed circuit-breakers, and return circuit systems), as well as

types of equipment which belong to subsystem “control command and signalling – trackside equipment” (e.g. station interlockings, gravity shunting equipment together with hump brakes, line block equipment, rail-road level crossing protection systems, equipment detecting vehicles running gear failures and incorrect distribution of the wagons load, etc.).

In the case of putting non TSI conformed vehicles into service on the Polish market, conformity proving processes are also defined by a national regulation, which defines the procedures and ways to conduct the certification of non TSI conformed vehicles, modules for the procedures for assessment of conformity (other than modules for the procedures for assessment of conformity for interoperable vehicles) and lists the Railway Research Institute as the certification body authorised for conducting tests and issuing certificates for such vehicles.

8. Summing up the Railway Research Institute test capabilities and formal authorisations

The Railway Research Institute has full capabilities regarding tests required for EC assessment of conformity and national assessment of conformity which are required for putting products on the Polish and European market, having accredited testing and calibration laboratories:

- Materials & Structure Laboratory; PCA accreditation no. AB 369,
- Rolling Stock Testing Laboratory; accreditation no. AB 742,
- Signalling and Telecommunication Laboratory; accreditation no. AB 310, as well as,
- Metrology Laboratory; accreditation no. AP 024.

The Railway Research Institute has legal authorisations, based on accreditations of its own laboratories and internal units as well as on statements in legal regulations, required for proving conformity for different types of products:

- structural subsystems “infrastructure”, “energy”, “control command and signalling – trackside equipment”, “rolling stock” both in matters of freight wagons and in matters of passenger rolling stock and traction vehicles, as well as “control command and signalling – on-board equipment” being subject to the European requirements,
- parts of the structural subsystems for which the TSI requirements are not applicable,
- railway vehicles, dedicated for running on the main railway network, which are not compliant with the TSI requirements,

- railway vehicles, dedicated for running on other infrastructure,
- road-rail vehicles,
- interoperability constituents in all structural subsystems subject to the European requirements as well as in all types of railway rolling stock,
- construction products, dedicated for utilization for railway lines and stations within the “infrastructure” subsystem, subject to the European requirements,
- types of constructions, subject to the Polish national admitting regulations, dedicated for utilization within the “infrastructure” subsystem,
- types of equipment, subject to the Polish national admitting regulations, dedicated for utilization within the “energy” subsystem and both “control command and signalling” subsystems, as well as,
- verification of the risk analysis and risk evaluation and issuing safety assessment reports, taking into account both changes covered and not covered by these assessments of conformity processes.

The Railway Research Institute has accreditations of the Polish Centre for Accreditation PCA as a product certification body (accreditation AC 128), management systems certification body (accreditation AC 185 QMS), as a testing centre (PCA accreditations AP 024, AB 310, AB 369 and AB 742) and as an inspection body (PCA accreditation AK 029).

9. Conclusions

Poland intensively uses European funds for investments in railway transport. Public funds for railway investments in infrastructure and rolling stock in the current budgetary perspective are over one hundred billion Polish zloty. Non-compliance or even infringements in respecting changing regulations devoted to the acceptance of new and modernized lines and stations, as well as new and modernized rolling stock, may lead to European financing corrections that would be very troublesome for beneficiaries. As a result, railway infrastructure managers and railway operators as beneficiaries may need to charge important penalties on entities carrying out construction and implementation works and from producers. Such threats should be countered, among others, by building and updating the competences of the personnel involved in railway transport upgrading in Poland. In that range, this paper should be recognised mainly as paying attention to the scale of the challenge. At the same time, it should be indicated that Polish testing and certification bodies, especially the Railway Research Institute, are ready to support investors and contracting entities.

Literature

Market pillar of the fourth railway package:

1. Directive (EU) 2016/2370 of the European Parliament and of the Council of 14 December 2016 amending Directive 2012/34/EU as regards the opening of the market for domestic passenger transport services by rail and the governance of the railway infrastructure (EU.OJ.L.2016.352.1).
2. Regulation (EU) 2016/2337 of the European Parliament and of the Council of 14 December 2016 repealing Regulation (EEC) No 1192/69 of the Council on common rules for the normalisation of the accounts of railway undertakings (EU.OJ.L.2016.354.20).
3. Regulation (EU) 2016/2338 of the European Parliament and of the Council of 14 December 2016 amending Regulation (EC) No 1370/2007 concerning the opening of the market for domestic passenger transport services by rail (EU.OJ.L.2016.354.22).

Technical pillar of the fourth railway package:

4. Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union (EU.OJ.L.2016.138.44).
5. Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (EU.OJ.L.2016.138.102).
6. Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004 (EU.OJ.L.2016.138.1).

Requirements applicable to structural subsystems (TSI specifications before the fourth railway package):

7. Commission Regulation (EU) No 321/2013 of 13 March 2013 concerning the technical specification for interoperability relating to the subsystem ‘rolling stock — freight wagons’ of the rail system in the European Union and repealing Decision 2006/861/EC (EU.OJ.L.2013.104.1).
8. Commission Regulation (EU) No 1299/2014 of 18 November 2014 on the technical specifications for interoperability relating to the ‘infrastructure’ subsystem of the rail system in the European Union (EU.OJ.L.2014.356.1).
9. Commission Regulation (EU) No 1300/2014 of 18 November 2014 on the technical specifications for interoperability relating to accessibility of the Union’s rail system for persons with disabilities and persons with reduced mobility (EU.OJ.L.2014.356.110).
10. Commission Regulation (EU) No 1301/2014 of 18 November 2014 on the technical specifica-

tions for interoperability relating to the ‘energy’ subsystem of the rail system in the Union (EU.OJ.L.2014.356.179).

11. Commission Regulation (EU) No 1302/2014 of 18 November 2014 concerning a technical specification for interoperability relating to the ‘rolling stock — locomotives and passenger rolling stock’ subsystem of the rail system in the European Union (EU.OJ.L.2014.356.228).
12. Commission Regulation (EU) No 1303/2014 of 18 November 2014 concerning the technical specification for interoperability relating to ‘safety in railway tunnels’ of the rail system of the European Union (EU.OJ.L.2014.356.394).
13. Commission Regulation (EU) No 1304/2014 of 26 November 2014 on the technical specification for interoperability relating to the subsystem ‘rolling stock — noise’ amending Decision 2008/232/EC and repealing Decision 2011/229/EU (EU.OJ.L.2014.356.421).
14. Commission Regulation (EU) 2016/919 of 27 May 2016 on the technical specification for interoperability relating to the ‘control-command and signalling’ subsystems of the rail system in the European Union (EU.OJ.L.2016.158.1).
15. Commission Implementing Regulation (EU) 2018/868 of 13 June 2018 amending Regulation (EU) No 1301/2014 and Regulation (EU) No 1302/2014 as regards provisions on energy measuring system and data collecting system (EU.OJ.L.2018.149.16).

Requirements applicable to structural subsystems (amendments of the TSI specifications with the fourth railway package):

16. Commission Implementing Regulation (EU) 2019/772 of 16 May 2019 amending Regulation (EU) No 1300/2014 as regards inventory of assets with a view to identifying barriers to accessibility, providing information to users and monitoring and evaluating progress on accessibility (EU.OJ.L.2019.139.I.1).
17. Commission Implementing Regulation (EU) 2019/774 of 16 May 2019 amending Regulation (EU) No 1304/2014 as regards application of the technical specification for interoperability relating to the subsystem ‘rolling stock — noise’ to the existing freight wagons (EU.OJ.L.2019.139.I.89).
18. Commission Implementing Regulation (EU) 2019/776 of 16 May 2019 amending Commission Regulations (EU) No 321/2013, (EU) No 1299/2014, (EU) No 1301/2014, (EU) No 1302/2014, (EU) No 1303/2014 and (EU) 2016/919 and Commission Implementing Decision 2011/665/EU as regards the alignment with Directive (EU) 2016/797 of the European Parliament and of the Council and the implementation of specific objectives set out in Commission Delegated Decision (EU) 2017/1474 (EU.OJ.L.2019.139.I.108).

Assessment rules for products and products’ fabrication processes:

19. Commission Decision 2010/713/EU of 9 November 2010 on modules for the procedures for assessment of conformity, suitability for use and EC verification to be used in the technical specifications for interoperability adopted under Directive 2008/57/EC of the European Parliament and of the Council (EU.OJ.L.2010.319.1).
20. Commission Implementing Regulation (EU) of 12 February 2019 on the templates for “EC” declarations and certificates for railway interoperability constituents and subsystems, on the model of declaration of conformity to an authorised railway vehicle type and on the “EC” verification procedures for subsystems in accordance with Directive (EU) 2016/797 of the European Parliament and of the Council and repealing Commission Regulation (EU) No 201/2011 (EU.OJ.L.2019.42.9).
21. Rozporządzenie Ministra Infrastruktury i Rozwoju z dnia 13 maja 2014 r. w sprawie dopuszczania do eksploatacji określonych rodzajów budowli, urządzeń i pojazdów kolejowych [Regulation of the Minister of Infrastructure and Development of 13 May 2014 on admitting defined types of railway constructions, equipment and vehicles to exploitation] (Dz.U. 2014.720).
22. Rozporządzenie Ministra Infrastruktury i Budownictwa z dnia 21 kwietnia 2017 r. w sprawie interoperacyjności systemu kolei [Regulation of the Minister of Infrastructure and Construction of 21 April 2017 on railway system interoperability] (Dz.U. 2017.934).
23. Rozporządzenie Ministra Infrastruktury z dnia 3 września 2019 r. zmieniające rozporządzenie w sprawie dopuszczania do eksploatacji określonych rodzajów budowli, urządzeń i pojazdów kolejowych [Regulation of the Minister of Infrastructure of 3 September 2019 amending the Regulation on admitting defined types of railway constructions, equipment and vehicles to exploitation] (Dz.U. 2019.1765).