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European Commission
European Union Agency for Railway (ERA)
European Union Railway Agencies
Union Internationale des Chemins de fer (UIC)
Italian Ministry of Sustainable Infrastructure and Mobility (MIMS)
Italian General Directorate for Transport and Railway Infrastructure
Italian General Directorate for Railway and Maritime Investigations
Italian National Agency for the Safety of Railways and Road and Highway Infrastructure
(ANSFISA)
Italian Civil Protection Department
Italian Department of Fire Brigade, Public Rescue and Civil Défense
Italian National Labor Inspectorate

CC Associazione Il Mondo che Vorrei O.N.L.U.S.
to all Workers

Subject: Application in Italy of the EU legislation "NOISE TSI" (reduction of noise caused by trains) and related effects on the safety of rail traffic, workers, users and the population.

The writing Trade-Union Organization (hereinafter OS) CUB TRASPORTI sets out as follows:

1) The Member States of the European Union, in compliance with EU-Regulation 1304/2014 "Technical specification of interoperability for the "Rolling stock - noise "subsystem with subsequent amendments in EU-Regulation 2019/774, are intervening structurally on trains in order to reduce the noise generated by railway traffic.

2) These interventions mainly converge (at least in Italy) on the braking system of freight trains. The aforementioned braking system works with compressed air generated by the locomotive and, through a vacuum (exhaust) of air that occurs along the pipeline of the train, the adherence of the brakes-blocks to the rolling surface of the wheels is activated mechanically to obtain braking. The brakes-blocks employed are composed of various types of material: cast iron, sintered (made up of compressed metal powder) and organic.

3) Traditionally the brakes blocks used on freight trains are made of cast iron. However, in line with the provisions of the EU "NOISE TSI" legislation, the cast iron blocks (which roughen the surface of the wheel during braking and therefore generate vibrations / noise) are being replaced with blocks in synthetic or sintered composite material, or with the organic ones. At the moment, as far this OS is aware, the only method adopted in Italy to mitigate the noise generated by freight trains is the replacement of cast iron blocks with those made of organic / sintered material. This last category of strains / blocks is essentially divided into two types, K and LL, which in turn can be of the sintered or organic type [sources Fiche UIC 541.4 (**attachment 1**); ISPRA / ARPA / APPA Convention on environmental noise "**attachment 2**"].

The following are the technical characteristics:

K type block.

- i. It allows a reduction of the noise generated by the train -during braking- of 8-10 dB (A) compared to cast iron blocks.
- ii. It offers a high level of wheel-block friction.
- iii. Type K brakes would have replacement / adaptation costs of € 4,500–8,500 per wagon. The K brakes cost twice as much as the cast iron one and need to adapt the wheels and carriages.
- iv. It offers consistent performance at different speeds.
- v. As to knowledge of this OS, the K-type blocks -if of the organic type- do not contribute to the dissipation of the heat generated during braking on the wheel surface. The wheels must therefore be of the thermostable type in order not to generate overheating / flames of the block and sticking of the same to the wheel during braking. On the contrary if the K block is sintered it should contribute to the transmission and dissipation of the heat generated during braking on the wheel surface.
- vi. The consumption of the wheel profile is slightly higher than the cast iron block (1.2 mm per 100,000 km travelled). The wheels need to be re-profiled at 300,000 km travelled.

Sintered LL type block

- i. It allows a reduction of noise generated by the train - during braking - of 6-8 dB (A) compared to cast iron blocks.

- ii. It offers a low level of wheel-block friction.
- iii. The sintered LL blocks would not involve any additional cost to the normal costs of replacing traditional brakes, for they don't require any additional adaptation. As to knowledge of this OS, the sintered LL type blocks costs 4-5 times more than the cast iron ones.
- iv. Performance depends on speed.
- v. This type of block is made of compressed metal powder and should contribute to the transmission and dissipation of the heat generated during braking on the wheel surface.
- vi. The consumption of the wheel profile is very high (2 mm per 100,000 km travelled). The profile tends to sink, increasing the taper gradually. Wheels typically need re-profiling at 150,000 km.

Organic LL type block.

- i. Allows a reduction of noise generated by the train -during braking- of 6-8 dB (A) compared to cast iron blocks.
- ii. It offers a low level of wheel-block friction.
- iii. The organic LL blocks would not involve any additional cost to the normal costs of replacing traditional brakes, for they don't require any additional adaptation. As to knowledge of this OS, the organic LL type blocks don't need to be adapted to the wheelhouse and can be put in place of cast iron without special measures. The organic LL block costs 3 times more than the cast iron ones.
- iv. Performance depends on speed.
- v. This type of block is not made of compressed metal powder. It does not contribute to the transmission and dissipation of the heat generated during braking on the wheel surface. The wheels must be therefore of the thermostable type in order not to generate overheating / flames of the block and sticking to the wheel during braking.
- vi. The consumption of the wheel profile is very high (numerical values not received). The profile tends to sink, increasing the taper gradually. Wheels typically need re-profiling at 200,000 km.

Cast iron block.

- i. The consumption of the wheel profile is 1mm every 100,000 km travelled and tends to stabilize. The wheels do not need to be re-profiled up to 350,000 km.
- ii. The cast iron block is made of metal. It contributes to the transmission and dissipation of the heat generated during braking on the wheel surface.

iii. It is economic.

In addition to the above technical characteristics, we highlight that the document "Usage guidelines for composite (LL) brake blocks (10th edition)", drawn up by UIC (the international authority that certifies both the compatibility of composite material blocks with freight train wheels the blocks themselves), shows, as an additional feature, a low braking efficiency in freight trains traveling at speeds below 50 km/h and made up of more than half trains with wagons equipped with LL blocks, either organic or sintered.

In summary, from the comparison between the various types of strain/blocks, it would appear that:

- a) The organic block, regardless of type K or LL, does not dissipate the heat generated during braking. This can cause overheating/flame problems if the wagons are not equipped with heat-stable wheels or other solutions aimed to overcome this problem.
- b) The type K block has technical characteristics very similar to the traditional cast iron block, both as regards the programming of the wheel re-profiling and the consumption of the wheel profile.
- c) The LL type block (both organic and sintered) involves a high wear of the wheels and frequent profiling following above mentioned consumption.
- d) It is possible to conclude that the cast iron block has noise as its main defect, while in the anti-noise K and LL blocks there are problems not only in the compound (organic or sintered), but also in the type K or LL, less in the first, greater in the second. Some of these problems involve overheating / fires, low braking efficiency at low speeds and high wheel consumption.

4) In Europe, to the best of the knowledge of this OS, keepers of freight wagons use on a large scale -as a substitute for cast iron blocks- the LL type of the organic type blocks. This would follow from what is stated in the first point (ease of adaptation of the aforementioned blocks to the already existing wagons and therefore lower economic costs) and from the deliberation of the Commission in the European Parliament and the Council - Anti-noise measures for the existing rolling stock (8.7.2008): "the effectiveness of the so-called "*K-blocks*" has been demonstrated on new wagons, but the costs for retrofitting existing wagons are considerable. For this reason, blocks of different types are currently being developed, called "*LL blocks*", designed specifically for the adaptation of existing wagons" (...) " Thanks to the technology currently available, the adaptation would involve investment costs in the order of 200-700 million euros (LL blocks) or 1.0-1.8 billion euros (K blocks) and additional maintenance costs of 200-400 million euros (aggregate data up to 2025, for both technologies)". There are no causes for this OS other than economic savings in connection with the European Commission's choice to invest the funds in LL type blocks.

5) Certifications of compliance and compatibility of LL blocks with freight wagons are issued by the international organization **UIC** (Union internationale des chemins de fer). The compatibility of LL blocks with freight-train wheels is explained in the document "Usage guidelines for composite (LL)

brake blocks 10th edition (**attachment 3**)". In particular, we extract that the distribution of LL blocks is allowed only if:

- ✓ The maximum train speed is ≤ 120 km/h
- ✓ The maximum mass per axle of the wagon does not exceed 22.5 t
- ✓ The type of brake block turns out to be 2xBg or 2xBgu
- ✓ The maximum slope of the line does not exceed 40 ‰

It is also written in the same paper that **a)** in the case of monobloc wheels, the LL blocks cannot be applied to wagons with monobloc wheels of the type R2, BV2, R8, R9 **b)** the profile of the wagon wheels must be monitored at regular intervals (the first inspection after wheel re-profiling must take place after 100,000 km and subsequently after 50,000 km).

6) Following the replacement of cast iron blocks with those in organic/sintered material and, as far as this OS is aware, mainly due to the use of type LL blocks, railway accidents have occurred in Europe potentially damaging workers, train users and the population that lives, carries out activities or transits near the railway room and the circulation tracks:

- i. **On 27 May 2016**, near Breda in the Netherlands, a freight train carrying LPG remained braked -during the journey- for about 6 km. The train in question was equipped with LL blocks, which due to the braking blocks overheated and caught fire. In a wagon all the blocks caught fire and the wheels consequently deformed. **The train risked derailing** and, considering that it was carrying LPG, it is possible to assume that the serious risk of explosion was incurred, that is, to have a reference yardstick, repeat what happened in Viareggio on 29 June 2009 where a railway massacre caused 32 deaths (including children) and serious and very serious injuries. The European Agency has indicated human error in the design phase as the cause of the accident. The Dutch Railway Agency (ILT) has instead indicated the problem of the organic block as the cause, which does not conduct heat like the cast iron block. ILT also reports that with K blocks there have been no cases like the one that occurred on May 27, 2016.
- ii. Examining the "LL blocks overheating events template" (**attachment 4**), from 2019 to 2021, **29 accidents and incidents** (events) occurred in Italy with freight trains carrying wagons equipped with organic and sintered LL blocks. Events that therefore occurred after May 27, 2016, despite the awareness of the inherent danger of using LL type blocks (accident in the Netherlands). This OS is not aware of any other events that may have occurred between 2019 and 2021 in addition to the 29 cases mentioned above, nor of events that may have occurred in Italy before 2019 with freight trains carrying wagons with organic LL blocks. In the "LL blocks overheating events template" 8 out of 29 events involved trains carrying **dangerous goods**. After examining the document, it is possible to find the following criticalities:

- a. Only in 4 events out of 29 we find the presence of affirmative answers to the questions relating to **a)** the compliance of the block with the reference technical specifications (Fiche UIC 541.4) and **b)** the compatibility of the same blocks with the wheels ("Usage guidelines for composite (LL) brake blocks (10th edition).” On the other hand, no event is found in response to the question of whether the block-wheel friction coefficient meets the manufacturing specifications.
- b. **In 69%** (20 cases) the brake tests carried out by train staff before departure gave regular results. In 10.3% (3 cases) there were no findings, while in 13.8% (4 cases) the wording "inbound train exchanged with a foreign railway company" was reported.
- c. **In 79.3%** of cases the trains reported in the template were stopped thanks to the human factor: opposing train that spots and reports anomaly to the traffic regulator; station master who, beholding on platform, spots a train in transit with anomalies; railway staff on the line or at stations who notices anomalies on a train in transit; driver of the same train who becomes aware of an anomaly in progress; others.
- d. In the majority of the 29 events mentioned above, the bushings temperature detectors (RTB) and the brake temperature detectors (RTF), technological systems installed on the entire railway network managed by the **Italian Railway Network (RFI)** which have the purpose of determining the temperature of bushings and brakes, they don't have detected abnormal temperatures and have not determined the stop of the trains. In this case, it should be noted that in 69% (20 cases) the RTB/RTF plants did not detect any anomalies. In 20.7% they detected anomalies even if, in event 1 (train with a towed mass of 1409 tons, carrying dangerous goods fully loaded), the RTB RTF at Treviglio (Bg) and the one at Rezzato (Bs) did not stop the train despite the Treviglio plant measured 312 °C and the Rezzato plant measured 152 °C. Only the Peschiera del Garda (VR) plant, detecting 340 °C, caused the train to stop. In this case it would seem possible to assume that the train travelled from Rho to Peschiera del Garda with wagon temperatures ranging between 152 °C and 312 °C. The remaining 10.3% of the RTB/RTF do not report any specific data.
- e. **In the sum of all cases** -wagons equipped with LL blocks- registered consequences are: overheating of the brakes, starts of fire, defects on the rolling surface of the wagon wheels, development of flames later extinguished by themselves or by train staff with fire extinguishers or upon intervention of the Fire Brigade (Vvf). Event 3 reports a case of derailment due to brake blocking with LL blocks.
- f. **In 58.6%** of cases, the anomalies were generated by the operation of the braking system of the wagons. In 20.7%, the causes of the anomalies were not identified by the investigations conducted by the railway companies.
- g. **In the section "measures adopted in response to an accident"** the following is found: **a)** issuing advices (4 cases out of 29) to train staff about carrying out brake tests and driving activities, **b)** issuing advice to RFI (2 cases out of 29) to raise awareness on the lack of

alerts of the RTB/RTF, **c**) issuing requests/awareness on the causes of accidents (9 cases out of 29) addressed to wagon keepers, to the manufacturers/suppliers of LL blocks and to international authority UIC, **d**) 7 cases out of 29 ended with labelling of the wagon, **e**) 8 cases out of 29 do not report information on the measures adopted, **f**) one case refers to an Ansfisa safety alert. The writing OS points out that in event 4 the manufacturer was "aware of the possibility of occurrence of such events (development of flame following overheating due to undue and prolonged braking)" and that "the block was in compliance with current regulatory requirements". There is an evident short-circuit between the manufacturer company and the supervision authority when the latter doesn't shape its intervention to the application and relies on the first-one to act responsibly on events while the first-one believes it has done everything due by adapting to mere compliance with generic standards.

7) As far as this OS is aware, **ANSFISA has issued the first "Safety Alert" (attachment 5)** concerning problems occurred to the composite brake blocks on **09/02/2021**, so 5 years after the accident occurred in Holland and after 7 accidents in Italy caused by LL blocks. In the Safety Alert the railway companies (IIFP) and entities in charge of maintenance are asked to evaluate the compatibility of the LL type blocks with the railway wagons in operation, also verifying the presence of the specific LL pictogram on the wagons and the piston stroke of the brake cylinder. ANSFISA also requires "the effectiveness of train drivers training, referring to compliance with the maximum running speed, non-technical skills and management of cases of not consistent behaviour of the rolling stock with pre-set running conditions (resistance to motion, abnormal noises, etc.).

On **06/08/2021** ANSFISA issues the note (**attachment 6**) "Emergency preventive action following repeated accidents and incidents to freight wagons equipped with" LL "type composite brake blocks where, with an increase of 14 accidents occurred between 9 February 2021 and 6 August 2021, the same indications expressed in the first Safety Alert are substantially repeated, which relate to requests -addressed to manufacturers and wagon holders- for verification of compatibility and compliance with technical specifications reference of the LL blocks and on specific training for train staff. Added to these points is a reference to RFI in relation to a request to increase attendance at passage and transit of trains by its own staff where RTB/RTF systems are not working".

Finally, on **02/11/2021**, the note (**attachment 7**) "Accidents and incidents in freight wagons equipped with brake blocks called "LL" in organic composite material (IB116 *). Adoption of emergency preventive measures referred to in Article 7, paragraph 3, letter c) of Legislative Decree 50/2019 (Article 8, paragraph 3, letter c) EU Directive 798/16)" is issued. **The note** provides for a repetition of the previous recalls and, in substance, a single urgency provision such as the speed limitation for "freight trains having in their composition one or more wagons equipped with LL brake blocks of organic type IB116 * with the brake not isolated, unless otherwise limited, must not exceed the speed of **a**) 80 km/h, if these wagons do not carry dangerous goods **b**) 60 km/h, if these wagons carry dangerous goods". In the meantime, from the note of 6 August 2021 to the one issued on 2 November 2021, there were 8 more incidents for a final total of 29.

7) On 29/10/2021 ANSFISA sends to ERA the document "JNS urgent procedure on Braking wagon system concerning flames on organic composite Brake Blocks (LL) IB116*". And on 02/11/2021 ANSFISA sends to ERA the document "JNS Urgent Procedure notification form". ANSFISA informs ERA that accidents/incidents are occurring in Italy with freight trains equipped with LL IB116 * blocks and that, following these events, restrictive measures are being adopted. This OS is not aware whether, in Europe, ERA is adopting similar measures to ANSFISA or more restrictive ones.

8) **Italian Railway network provider (RFI)** by a note issued on 11/08/2021 (**attachment 8**), concerning "Emergency preventive measures following repeated accidents and incidents to freight wagons", which takes up note no. 17573 of 06/08/2021 of ANSFISA, orders "following the occurrence of some accidents and problems attributable to the overheating of the brake blocks in composite material of type LL, (...) the traffic staff [... in cases in which the exemption from the presence of trains in transit is provided for in the Register of service provisions (RdS)], must, when attending freight trains, pay particular attention to any overheating of the brakes." At a careful reading of the RFI note would therefore **not reveal an intensification of the attendance of the traffic staff** as requested by ANSFISA (*the dislocation of the train attendance points by its own staff, specifying the side from which it takes place and the time in which it is active, at the same time verifying the possibility of adapting this location to the needs expressed by the railway companies*), limiting itself instead to soliciting the attention of the staff already existing in the facilities. There are also no provisions aimed at solving the problems of RTB/RTF plants.

9) **Railway undertakings** -with safety certificate for freight service- must guarantee according to the ANSFISA notes, in addition to what is already listed in point 8 of this communication, the following dictates: **a)** verify training of train drivers and control staff; **b)** the effectiveness of technical visits to vehicles and brake tests; **c)** make their own staff aware of the issue in question. As far as this OS is aware, the training of the staff did not take place through training courses, and the distribution of the provisions (which arrived months after the ANSFISA Safety Alert of 9 February 2021) was carried out only by sending them to the staff's electronic devices. It should be noted that in some cases they also arrived by company emails. We are not aware of any checks carried out by the IIFF on the correct acquisition of the provisions issued by the train staff.

In the opinion of this OS it seems , **in view** of what Commission decided in the European Parliament and the Council -Noise-abatement measures for the existing rolling stock (8.7.2008)- **in relation** to EU Regulation 1304/2014 "Technical specification of interoperability for "Rolling stock - noise" subsystem" with subsequent amendments in EU Regulation 2019/774, **in application** of the aforementioned EU NOISE TSI regulation and in relation to the installation of blocks in synthetic or sintered composite or organic material on freight trains:

- i. The underestimation by the National Agency for the Safety of Railways and Road and Highway Infrastructures (ANSFISA) about the danger associated with the use of blocks in synthetic or sintered composite or organic material, in relation to the events that occurred since 2016 until now. In fact, there would be no special provisions apart from

recommendations or awareness-raising addressed to the Provider of the Network, to the Railway Undertakings, to the entities in charge of maintenance of freight wagons and to the keepers of freight wagons. The note issued on **02/11/2021**, which provides for the "speed limitations of freight trains having in composition one or more wagons equipped with organic type IB116 LL brake blocks * with non-insulated brake" does not eliminate warning the risk inherent in using organic LL block: speed reductions are not enough to eliminate the risks in any way, as the LL blocks -once the braking system is activated- **can remain adherent to the wheels and overheating at any speed**, generating the problems highlighted in this letter. In addition to this we consider it appropriate to remember that Fiche UIC 541.4 contemplates other types of organic LL blocks (and therefore potentially dangerous because they do not conduct heat) and that LL blocks (both sintered and organic) **dangerously consume the profile of the wheels**, which tends to sink by increasing the conicity in a progressive way. The wear caused in this way produces an increase in the height of the rim of the wheel, with a thinning (reduction in thickness) and an increase in the angle of inclination. Factors that negatively affect the anti-derailment safety requirements as changes to the wheel and rail profiles can compromise the stability of the wagons and increase the risk of derailment.

- ii. Failure to seek -or possible suppression- by the authorities responsible for possible alternatives to the use of blocks in composite material, both in the design phase and subsequently when accidents and inconveniences to freight trains began to occur. For this purpose, we report the study conducted by the ISPRA / ARPA / APPA Convention on environmental noise", which suggests (in addition to the use of K and LL blocks) **a)** grinding of the rail associated with the use of disc brakes or with K blocks, **b)** tuned dampers applied to the rail, **c)** wheel re-profiling, **d)** silenced wheels with viscoelastic material, **e)** silenced wheels with steel and polymeric absorbers materials, **f)** silenced wheels with absorbent ring, **g)** silenced wheels with damping ring, **h)** silenced wheels with vibration absorbers, **i)** flange lubrication. We therefore ask to know if these options, or other solutions, have been taken into consideration before and/or after the railway accidents that occurred.
- iii. The non-compliance of the Italian Railway Network provider (RFI) regarding the presence of traffic staff in all the service points affecting freight traffic, as claimed in the ANSFISA notes and as this is still an irreplaceable efficacy, proven by the sighting's history.
- iv. Critical issues about professional training of train personnel. Based on what is reported in point 10 of this letter, violations of Italian Legislative Decree 81/08 (on labour health and safety). In the present case there is a lack of respect about following articles: **art. 36 paragraph 2** ("the employer also ensures that each worker receives a proper information on the specific risks to which he is exposed in relation to the activity carried out, the safety regulations and company provisions on the subject") **and paragraph 4** ("the content of the information must be easily understandable for workers and must allow them to acquire the relevant knowledge "); **art. 37 paragraph 1** ("the employer ensures that each worker receives sufficient and adequate training in health and safety"), **paragraph 3** ("the employer also ensures that each worker receives sufficient and adequate training in on specific risks "), **paragraph 4** (" training and, where envisaged, specific training must take place on the

occasion of the introduction of new work equipment or new technologies "), **paragraph 6** (" the training of workers must be periodically repeated in relation to the evolution of risks or the emergence of new risks ") **paragraph 13** (" the content of the training must be easily understandable for workers and must allow them to acquire the necessary knowledge and skills in the field of health and safety at work"). **Attachment I** ("Serious violations, punishable with the suspension of entrepreneurial activity, violations that expose to general risks"), regarding the lack of education and training.

- v. The possible violation, pursuant to Legislative Decree 81/08, of Articles: **art. 17** "Obligations of the employer that cannot be delegated", paragraph 1 (the employer cannot delegate the following activities): a) the assessment of all risks with the consequent processing of the document provided for by article 28. **Art.28** (SECTION II - RISK ASSESSMENT) "subject of risk assessment". **Art 2**, paragraph 1 letter n) "prevention": the set of provisions or measures necessary also according to the particular nature of the work, experience and technique, to avoid or reduce professional risks while respecting the health of the population and integrity of the external environment; **Art.18** (Obligations of the employer and the manager) paragraph 3 bis "The employer and managers are also required to supervise the fulfilment of the obligations referred to in articles 19, 20, 22, 23, 24 and 25 , without prejudice to the exclusive responsibility of the subjects obliged pursuant to the same articles if the failure to implement the aforementioned obligations is attributable solely to the same and there is no evidence of a lack of supervision by the employer and managers " Furthermore, it is possible to hypothesize a non-compliance with what is prescribed both in the normal mandatory procedures and in the ANSFISA notes and safety alerts on staff training and awareness, regarding the compatibility of LL type blocks with respect to the type of use of the railway wagons in operation, on the maintenance of the brake system in application of maintenance plans and returns from operation. In addition, the constant reminders of ANSFISA on the intensification of attendance in the service areas and the launch of a plan for the adaptation, integration and replacement of technological RTB / RTF systems are not found in training - as well as in the work organization and its number of staff employed.
- vi. The possible failure -in whole or in part- to verify the safety standards of the LL brakes in use on freight trains by the international organization UIC based on **1)** the feedback of railway accidents that have occurred over time **2)** on ANSFISA reports relating to Italian events which occurred on **08/09/2021** (notified to UIC on 14 September "UIC B126") and **28/07/2020** - communication to the suppliers of the IB116 * KNORR blocks was made Bremse and Wabtec and the UIC brake group B126.3 responsible for the approval of the brake components, for further information aimed at searching for events similar to those recorded regarding the presence of flames from overheated blocks. On 09 October the event was notified to the UIC B126 group. On 23 October the event was communicated to the blocks manufacturer with a request for information on previous cases and possible measures (...) the manufacturer KB replied indicating the compliance of the block's component with the regulatory requirements in force. *He has shown awareness of the possibility of occurrence of such events* (flame development following overheating due to undue and prolonged braking), declaring that the

block is self-extinguishing when it is detached from the thermal energy source (incandescent wheel 9. This OS asks to know if, in the case of accidents occurring from 2019 to 2021, the "Unified handbook of distances for international freight traffic, referent MERCITALIA RAIL" has been taken into account, which in the various points establishes and verifies whether the stations are authorized to transport certain dangerous goods to conditions provided for in the legislation that regulates the transport of dangerous goods on railways (RID). It is also required to know who, and in what way, carries out the related checks listed in point 5 of this letter.

This writing OS believes, **on the basis of the elements acquired and exposed in this communication**, that the brake-blocks in sintered or organic composite material, of any type and denomination that are in possession of the complete certification according to the Fiche UIC 541-4 sheet, are not suitable for their use in rail transport. The safety of rail traffic, workers, users and the population -in the Member States of the European Union that equip freight trains with LL blocks- has been jeopardized, by analysing the feedback, by the indiscriminate use of a typology of brakes (LL blocks) which, even today, are used despite the alarm and risk events. In view of the foregoing, it is therefore necessary not only their complete and immediate removal regardless of their type, denomination and certification, but also the start of an adequate research that complies with the EU "NOISE TSI" legislation without compromising the railway safety.

It should be noted that following the use of LL blocks, in Italy alone, from 2019 to 2021, 29 events were recorded that could have had disastrous consequences. The last event, dated 22/10/2021 in Sarzana, concerned the Mercitalia Rail train no. 66440, carrying a towed material weighing 951 tons, loaded with LPG. The wagon that caught fire, following the blocking and overheating of the LL blocks, had a load of 80 tons of LPG and was stopped only thanks to the "sighting" of sparks by the staff of an opposing train. In this case, the reference to the historical model of the chain of contributing causes that led to the Viareggio massacre (similarly to the Dutch case) is evident and we wonder what the consequences would have been without the intervention of reporting. For this purpose, we highlight that the "LL blocks overheating events template" reveals a series of underestimations, shortcomings, critical issues, delays and negligence on the part of decision-making agencies, of the supervision agencies on what has been decided and of the implementers of these decisions:

- i. **The Commission in the European Parliament** and the Council - Noise-abatement measures for existing rolling stock (8.7.2008) stated that "noise is one of the most widespread threats to public health in countries". As a result of this resolution, the EU has provided economic subsidies to Member States to replace the (too noisy) cast iron blocks with LL type ones. As OS we do not agree that this political aid was used only in the direction of noise, instead of moving primarily and simultaneously in the more stringent field of railway safety. We cite, as a single example, but there are many more, the Derailment Detection Device (DDD). DDD (pneumatic devices which, following strong vibrations or jolts, instantly brakes the entire train) could have avoided or mitigated accidents such as that of Viareggio, Pioltello, Fossacesia, if the wagons/trains had been equipped with these devices. DDDs are present on the market in various types and patents; the more sophisticated type has a total cost of about 700 euros and, given that two wagons are needed for each wagon, it could be possible -at a

figure of just under 1500 euros- to solve the phenomenon of trains traveling for kilometres with derailed wagons/carriages, as in the case of the Dutch train which travelled for 6 km with a braked and burned wagon. It would therefore be desirable that the European funds earmarked for the battle against railway noise (in 2008 the figures were in the order of 200-700 million euros for the use of LL blocks, with additional maintenance costs of 200-400 million euros, aggregate data up to 2025) are first of all directed towards a resolution of mandatory and safety problems

- ii. **In our opinion, the Italian Ministry of Sustainable Infrastructure and Mobility (MIMS),** which exercises a supervisory function over the work of ANSFISA and also carries out the legal controls provided for in relation to the legal form identified for the Agency, should not only to monitor the provisions of ANSFISA, but also to intervene directly in the event that the provisions of the Agency are ineffective or of poor consistency. In fact, what emerges is that the management of any kind of criticality relies solely -or mainly- on the responsibility of the companies and on the reports until the next recommendation. A system of dubious effectiveness because there is a lack of timely and specific controls and real penalties for avoiding or violating the provisions. At the same time, the speed limitations are encountering criticism from business carriers who, given the immobility of ERA and Europe in terms of precise prescriptions and controls, are turning to politics with complaints aimed at eliminating these limitations, considered as a simple annoyance or disruption to business (interoperability). However, the interest in the protection and safeguarding of public health and safety cannot and **must not be overruled by economic interests** and we therefore require the Ministry to take direct interest in the matters set out in this letter. For this purpose, the reason is requested why the provision issued by the then State Railways Authority, protocol P.RI / R.03 / 1 / 35.7 (2) / 00271 of 20/01/1990 (**attachment 9**), having as object "Spacing of wagons carrying liquefied petroleum gas (LPG)" is, to date, disregarded not only for the rail transport of LPG but also for the remaining goods classified as dangerous. We quote from the aforementioned provision *that in order to reduce, as far as possible, the harmful consequences in the event of operating problems (investments, collisions, diversions, etc.), (...) tank wagons or wagons carrying tank containers, loaded with LPG must be spaced at least with one vehicle from the leading locomotive and one from the tail of the train. These vehicles must not carry heavy materials, such as rails, iron sections (..)*. In addition, we recall chapter 7.5 (provisions relating to loading, unloading and handling), article 7.5.3 (protective distance) of the Regulation concerning the international transport of dangerous goods by rail (RID), which provides that *each wagon, large container, mobile tank or road vehicle containing substances or articles of class 1 and bearing plates conforming to models N ° 1, 1.5 or 1.6, must be separated in the same convoy from wagons, large containers, mobile tanks, tank-containers, MEGCs or road vehicles bearing plates conforming to models Ni 2.1, 3, 4.1, 4.2, 4.3, 5.1 or 5.2 or from road vehicles carrying, according to the indications of the transport document, packages bearing a label conforming to models Ni 2.1, 3, 4.1, 4.2, 4.3, 5.1 or 5.2, from a protective distance. The condition of this protective distance is fulfilled if the gap between the buffer plate of a wagon or the wall of a large container, of a portable tank or road vehicle and the buffer plate of another wagon or the wall of another large*

container, portable tank, tank container, MEGC or road vehicle is: (a) at least 18 m, or (b) occupied by 2 wagons with 2 axles or by a wagon with 4 or more axles. In the light of the foregoing by this OS, considering the tragic events that occurred in Italy and the inconveniences that occurred over time that could have generated other tragedies, it is required **a)** the extension of the regulation provided for in the RID to every type and quantity of dangerous goods **b)** the immediate application of the provision P.RI / R.03 / 1 / 35.7 (2) / 00271, extended to all types and quantities of dangerous goods and directed to all railway companies that transport dangerous goods.

- iii. The intensification of the monitoring activities required by ANSFISA, as well as the adoption of technological systems that allow, on board the train, the timely detection of the anomalous temperature of the braked axles and bushings, supporting their adoption at national and Community level in special institutional offices, which we share, are uncertain without effective control by the Supervisory Authorities. The methods of monitoring are not detailed (simple forms to be filled in by the staff? where is the monitoring in this case?) And the methods and timing of the adoption of the aforementioned technological systems are not regulated. In our opinion, guaranteeing maximum safety in rail transport becomes even more important when the transported goods are dangerous goods, as the effects of a possible accident can be even more catastrophic, as in the case of the Viareggio accident in 2009. Today, various types of products are concentrated on the market, based mainly on the GPS localization of wagons and on the monitoring of the conditions of transport of goods. There are detailed studies online on technological devices designed to observe and analyse parameters indicative of the conditions of the wagons. However, in the working reality, it does not appear that any wagon keeper adopts these systems, nor that there are legal obligations on their adoption. We also point out that the Mercitalia Rail Railway Company, with Prescription 34.4 (PEIF) of 02/12/2021, in force since 03/12/2021, identifies the LL blocks of the organic type "J847" as a sintered block, otherwise from what is indicated in Fiche UIC 541.4 which identifies the aforementioned blocks in the organic type.
- iv. **The RTB/RTF plants**, provided and managed by RFI, do not guarantee the signalling and prevention function (in 69% of the cases reported in the template, the plants did not detect any anomalies). We also intend to highlight that the RTB / RTF systems, when they detected something, intervened late and that **human intervention**, due to the wide range of experiences and detectable details (visual, acoustic, etc.), is still an unmatched safety element: the presence of specialized personnel at the passage of trains is essential not only by reading the data (in 79.3% of cases the trains shown in the template were stopped thanks to the human factor) but also by thinking about recent history. On 29 June 2009, in the Viareggio station, after the derailment of the LPG-carrying freight train which caused one of the most serious Italian railway massacres, the Station Master "closed the signals" (that is, he placed them in red, "via impedita"), Thus preventing other trains from crossing the tanks that occupied the railway shape, thus saving human lives. Unfortunately, we must instead register as the G.I. has deserted the service locations by eliminating any type of presence, including the verifiers of railway trains. In light of what is happening we claim, as OS, a total

inversion of strategy, restoring the presence in the service locations with specialized personnel, and guaranteeing verification posts 24 hours a day, 365 days a year.

- v. The start of studies and research aimed at the alternation -in freight wagons- of the type of blocks braking with other solutions, such as the use of disc braking equipment or electromagnetic brakes. Considering the direct economic effort in replacing the cast iron blocks with those made of less noisy materials, and given the negative consequences in terms of safety in the use of blocks in organic and sintered material, a general rethinking of the design of the brake system of freight wagons is considered necessary.

In conclusion, pending any analyses, proposals, and provisions by the Authorities in charge in relation to the critical issues reported, we request the Italian Department of Civil Protection, in agreement with the Head of the Fire Brigade, Public Rescue and Civil Défense Department, to promote a synergy aimed at coordinating with the Italian railway infrastructure manager and with the railway companies. We believe it is extremely important and urgent to establish a coordination on the sharing of all types of information - in real time- regarding every single transport of dangerous goods on the railway network, thus ensuring a forecasting and risk prevention activity in the event that accidents of any order of severity occur.

That said, the Supervisory Authorities are asked to:

1. first ascertain the validity of the above;
2. urgently intervene to ensure the safety and security of workers, train users and the population passing near the railway sites as well as the traffic tracks;
3. the adoption of procedures that, in relation to the risk manifested, are able to operate in a stringent manner without ending up in the delaying swamp of the rebound with the IIFF between recommendations and new reports;
4. ascertain the legitimacy of the conduct adopted by all parties responsible for managing the railway network and railway trains, in order to exclude those administrative irregularities or acts and / omissions of a criminal nature have been committed;

This writing OS CUB Trasporti also request to be informed about everything that will be undertaken by the various levels of competence in relation to the above.

Attached to this letter:

Attachment 1) Fiche UIC 541.4;

Attachment 2) ISPRA / ARPA / APPA Convention on environmental noise;

Attachment 3) Usage guidelines for composite (LL) brake blocks 10th edition;

Attachment 4) LL blocks overheating event template;

Attachment 5) ANSFISA Safety Alert, 09/02/2021;

Attachment 6) ANSFISA Note "Emergency preventive measures following repeated accidents and incidents to freight wagons equipped with" LL "type composite brake blocks;

Attachment 7) ANSFISA Note "Accidents and incidents to freight wagons equipped with brake blocks called "LL" in organic composite material (IB116 *). Adoption of emergency preventive measures referred to in Article 7, paragraph 3, letter c) of Legislative Decree 50/2019 (Article 8, paragraph 3, letter c) EU Directive 798/16);

Attachment 8) Note RFI-DCI \ A0011 \ P \ 2021 \ 0001825, "Emergency preventive measures following repeated accidents and incidents to freight wagons"

Attachment 9) State Railways Authority, protocol P.RI / R.03 / 1 / 35.7 (2) / 00271 of 20/01/1990

Confederazione Unitaria di Base Trasporti
Coordinatore Nazionale
Antonio Amoroso

