

## 3M Technical Bulletin Regulatory Updates – EN 352:2020 Family of Standards Further Explained

### Understanding the Importance of Approved Compatibility with Named Accessories

There are many types of hearing protection, but the two simplest categories at a high level are earplugs and earmuffs. Within earmuffs there are different variants that are typically described as

1. Over-the-head (headband), they also include foldable
2. Earmuffs suitable for mounting on head protection or face protection
3. Earmuffs with a neckband – these products are normally worn behind-the-head with the aid of a head strap to keep them secure around the ears



This bulletin focuses on the 2nd category, earmuffs which can be mounted on to head and/or face protection. They are sometimes referred to as ‘separate’, ‘mountable’ or ‘attachable’ earmuffs. The key feature of this type of earmuff is that they cannot be used on their own and require a ‘carrier’, this can be head protection and/or face protection.

**So, can you attach them to anything?** There are multiple types of ‘carriers’, most commonly earmuffs are attached to industrial safety helmets. Safety helmets or hard hats usually have an accessory slot which allows them to be mounted with earmuffs and other accessories, such as face shields. Often the fitting points or accessory slots are a ‘standard’ size that might support a ‘standard’ adaptor on an attachable earmuff, meaning one earmuff could attach to or support multiple types of helmet design. Even though it might be physically possible to attach an earmuff to a helmet, it does not necessarily mean that the combined unit is fit for use without the necessary testing and certification.

**Did you know that it is a mandatory requirement to use mounted earmuffs and carriers that are officially approved against the PPE Regulation 2016/425 (EU)?**

This bulletin will explain the basis of this requirement in EN 352-3, the importance of the approvals and where the approvals are detailed. Helping you to be informed, protected and compliant.

Examples on carriers:



## I - More About EN 352 Family of standards:

All hearing protectors sold in Europe with the purpose of protecting the wearer against harmful noise must be CE approved. This is typically done by testing the product against the relevant parts of the Harmonised European family of standards, EN 352.

Following periodic revision, the revised EN 352 family of standards were published in 2020. For more information on this update please refer to the 3M Technical Bulletin 'Regulatory updates - EN 352:2020'.

When certifying hearing protectors against the Harmonised European standard (whether passive or electronic), they must meet the requirements of one of the following three standards as appropriate for a given device.

- EN 352-1 Hearing protectors - General requirements – Part 1: Earmuffs
- EN 352-2 Hearing protectors - General requirements – Part 2: Earplugs
- EN 352-3 Hearing protectors - General requirements – Part 3: Earmuffs attached to head protection and/or face protection devices

## II - Testing to EN 352-3

This standard focuses on earmuffs that are attached to head protection and/or face protection. The requirements can be broken down into three main steps.

1. Defining the carrier that you want to test your earmuffs with. It can be industrial safety helmets, helmets for mountaineers, rigid head tops of powered and supplied air respirator systems (P+SA) or face protection.
2. Once you have selected the 'carrier' you need to verify that it is fully CE approved and is appropriate for use
3. Having selected the chosen carrier and confirmed that it is fully CE approved, you can perform the full comprehensive testing, which includes both physical and acoustical tests.

### What does the testing consist of?

For more information on the physical or acoustical testing and how it is performed please refer to the [3M Technical Bulletin 'Regulatory Updates – EN 352:2020 Further Explained'](#). Understanding the acoustic performance of hearing protectors'. Here you can find more information on the test method and equipment used, like anechoic chambers and how the tests are reported.

### What is the outline of EN 352-3 for testing and reporting?

Earmuffs are normally tested against a named head protection, which is also referred to as a 'basic combination'.

The basic combination testing comprises of a full comprehensive suite of testing, which includes both physical and acoustical testing. The physical testing involves a wide range of tests such as headband flexing, cushion pressure, material safety, sizing adjustability for which of the three head size(s) the combined system meets i.e. Small, Medium or Large (S, M, L). The acoustical testing is carried out in an anechoic chamber involving sixteen subjects and the full attenuation results expressed as baseline figures for octave band, HML (High, Medium, Low) and SNR (Single Noise Rating) values.

### What about additional models after the basic combination?

This is normally defined as supplementary combination testing. It does not require the full scale physical and acoustical testing, as described in the basic combination testing, on any further combination testing with other carrier models. Instead, some abbreviated testing is performed such as headband force, sizing and adjustability and ignitability, for example. The attenuation data derived from the basic combination testing can be read across to other additional supplementary combinations, so long as the results of the abbreviated testing, such as the headband force, fall within an acceptable level compared with the baseline value. With regards to headband force, some of the criteria as outlined in EN 352-3:2020 must be met, such as:

- The mean value of headband force for each supplementary combination testing must not be less than 8 Newton
- The mean value of headband force for each supplementary combination testing must not be less than 80% of the basic combination set

Each supplementary combination must also be assessed for sizing and adjustability for one or more of the head size ranges (S,M,L).

It is perfectly acceptable for a given combination not meeting all three different head sizes (S, M, L) as outlined in EN 352-3 to be fully CE approved against the Personal Protective Equipment (PPE) Regulation, as long as it is accompanied by an appropriate warning statement on the packaging and/or user information. In instances where specific adaptors are required to attach the earmuff to a specific 'carrier', it must be clearly stated on the packaging or user instructions.

## III - EN 352-3:2002 vs EN 352-3:2020

### Has EN 352-3 changed at all between the 2002 and 2020 version?

Yes. There are essentially three main changes in the EN 352-3:2020 revision:

1. The scope of the standard has been extended. From the original scope including industrial safety helmets only, to the new revised standard which can now be used for testing and certifying earmuffs that can be attached to industrial safety helmets, helmets for mountaineers, rigid head tops of Power and Supplied Air (P+SA) respirator systems and face protection (visors).
2. The conformity assessment has been updated so now the combination system must meet minimum attenuation criteria of 12, 11 and 9 for High (H), Medium (M), and Low (L) frequency noise respectively. For further information on this change refer to the 3M Technical Bulletin 'Regulatory Updates – EN 352:2020 Further Explained. Understanding the acoustic performance of hearing protectors'.
3. The sizing and adjustability requirement has been modified to allow for more combinations that help meet all three head size requirements (S, M, L).

### How does the wearer benefit from these changes?

1. They will be better protected as the revised standard now covers a wider range of carriers.
2. There is an increased possibility for combinations of earmuffs and helmets meeting all different head size requirements (S, M, L), meaning the combined system fits a wider range of head sizes and more people/head types and could mean more options to pick from.

### Can I use any earmuffs with my choice of carriers from other manufacturers?

Yes, but you need to make sure the combined system is fully certified against the PPE Regulation 2016/425 (EU). This is typically done by testing against EN 352-3.

There may be benefits from using earmuffs and helmets from the same manufacturer. For example, the combination system may be designed to offer enhanced comfort and wearability and reduce possible interaction with one another, rather than selecting products from different manufacturers to form a combination system. However, it is the wearers prerogative if they prefer to or need to combine earmuffs and carriers from different sources. The important point to keep in mind is that whatever their decision, the combined system must be fully certified against the PPE Regulation 2016/425 (EU), which is typically carried out by testing the combined system against EN 352-3.

Manufacturers are aware of this customer want or need and there are examples of earmuffs approved and placed on the market with multiple carriers.

Additionally, 3M strongly recommends personal fit testing of hearing protectors. Research suggests that users may receive less noise reduction than indicated by the attenuation label value(s) on the packaging. Different items of PPE have the potential to interfere with each other. For example, if you use eyewear which have a thicker side arm, it can have a negative effect on earmuffs performance resulting in acoustic leakage. Therefore, where possible, it is always a good idea to fit test your hearing protectors when worn with other items of PPE to validate the actual attenuation achieved.

### What happens if I use products that are not certified as a combination system?

Bearing in mind that earmuffs mounted on accessories cannot be used on their own, you need to check and verify that the combination is fully certified before use. This can be achieved by examining the CE certificate and Declaration of Conformity (DOC). In addition, you will find details of the approved combination, including information on sizing and adjustability, as well as any adaptors required (where relevant), on packaging and/or wearer information. The manufacturer has a legal obligation to provide this information with each minimum quantity they make available to the market.

If this information is not supplied with the product, the combination should not be used. The stated performance claims of the given earmuff and the carrier, such as a safety helmet, are very specific to each combination and should not be read across to any other carrier without the same supporting data. If the earmuffs are not accompanied with the appropriate approval information, the combined system may not offer the expected level of protection. If in doubt, contact the manufacturer or seek professional advice.

Additionally, if the earmuffs are used in combination with a non-approved carrier, the combination certificate is null and void as the certification is based on the premise that the carrier is fully approved independent of the earmuffs.

## Summary

- ▶ Earmuffs are available in different styles, including separate attachable earmuffs which can be mounted on to head and/or face protection.
- ▶ Mounted separate earmuffs require a carrier and cannot be used on their own.
- ▶ These earmuffs should only be used in combination with approved carriers.
- ▶ There are specific tests and approvals under EN 352:2020 that determine the performance of these items in combination with each other.
- ▶ The earmuff performance rating is applicable only to those carriers which it has been tested and certified with, and performance documented in the compliant packaging and wearer information as required by the standard.
- ▶ It is the wearers responsibility to check and ensure that the combination is fully tested and certified.
- ▶ If you want to use an earmuff with a particular safety helmet or any other carrier defined within EN 352-3, make sure that they have been appropriately tested and certified.
- ▶ You should always check the earmuff user instructions.
- ▶ Remember, just because it fits, does not mean it is approved.

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## Who do I speak to if I want to learn more?

3M has a team of dedicated hearing technical and regulatory specialists around Europe ready to assist you.

Please contact your local 3M representative for more information.

3M strongly recommends personal fit testing of hearing protectors. Research suggests that users may receive less noise reduction than indicated by the attenuation label value(s) on the packaging due to variation in hearing protector fit, fitting skill and motivation of the user. Refer to your applicable regulations for guidance on how to adjust label values and estimate attenuation. In addition, 3M™ E-A-Rfit™ Dual-Ear Validation System can support your fit testing needs for improved wear and compliance.

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