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Road vehicles — Brake linings friction materials — Visual inspection

Véhicules routiers — Matériaux de friction des garnitures de freins — Inspection visuelle

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 33, *Vehicle dynamics, chassis components and driving automation systems testing*.

This first edition cancels and replaces the first edition (ISO/PAS 22574:2007), which has been technically revised.

The main changes are as follows:

— product characteristics of metal lining carriers have been included.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Friction linings are composite materials with complex structure. Due to their composition and their production process, visual appearance characteristics can occur which in a precisely defined design are to be regarded as specific to the product. In this document, the product characteristics of metal lining carriers, for example, of bonded lined brake shoes or backing plates for disc brake linings, have been included.

This document is based on the "Catalogue of characteristic features for friction materials" of the Federation of European Manufacturers of Friction Materials (FEMFM) issued for the first time in 1980. The FEMFM is a European organization of national associations formed by companies engaged in the development and production of friction materials of various product forms. The description of the characteristic features and their design was reviewed in 1996 when technological processes, especially safety aspects and the demands made by the brake and automobile industry, were given careful consideration.

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Road vehicles — Brake linings friction materials — Visual inspection

1 Scope

This document defines visual aspects for the identification and assessment of product characteristics for friction materials in terms of quality and for commercial and technical agreements. The sequence of the product characteristics represents no order of priority. Inspection is carried out in unused, "as supplied" condition.

In some characteristic features, there are differences between brake linings with an effective lining pad area less than 120 cm^2 and larger than 120 cm^2. The acceptance criteria ensure exclusion of any characteristics that could impact the function and performance of brake linings and applies unless other agreements between the customer and the supplier.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

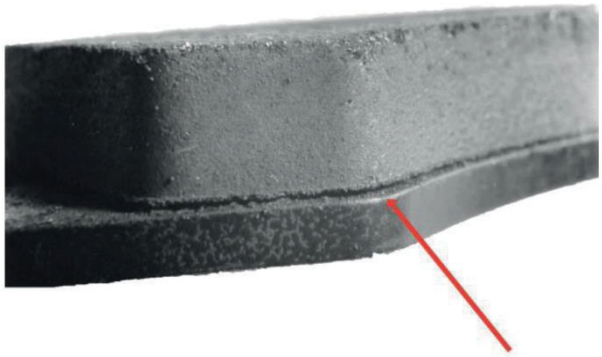
— IEC Electropedia: available at https://www.electropedia.org/

4 Characteristic features for friction materials

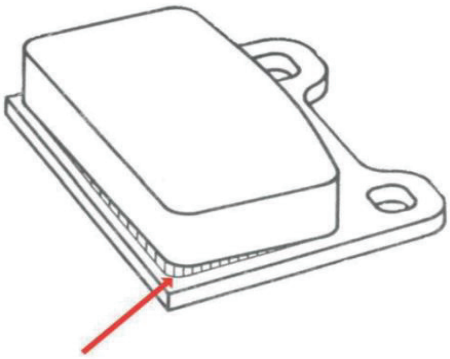
4.1 Characteristic features for disc brake pads

4.1.1 Gapping between material and plate

Gaps as shown in Figure 1 are not acceptable.



a) Photo view



b) Schematic view

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Figure 1 — Example for gapping

4.1.2 Edge chipping

In the case of a disc brake pad [see Figure 2 a)] with an area less than 120 cm^2, a maximum of 1 % of the edge may chip.

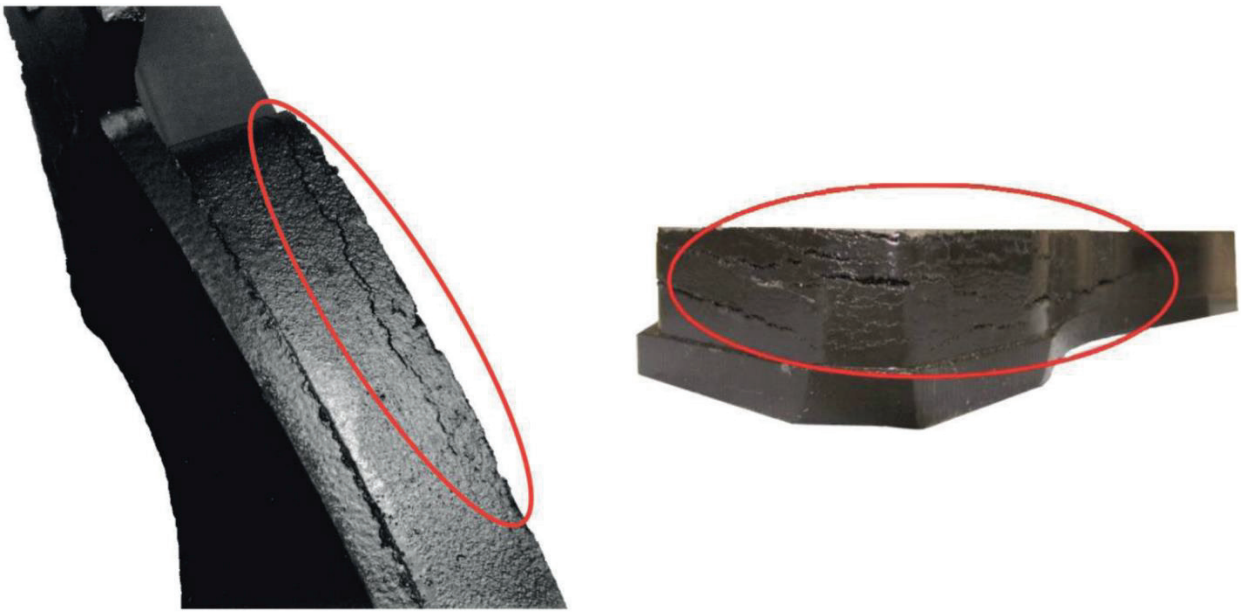
In the case of a disc brake pad [Figure 2 b)] with an area equal or more than 120 cm^2, a maximum of 0,5 % of the edge may chip.

a) Example less than 120 mm^2 b) Example larger than 120 mm^2

Figure 2 — Example for edge chipping

4.1.3 Splits

Splits having a length of more than 30 mm or more than 10 mm on corners or deeper than 1,5 mm shall not be accepted [see Figure 3 a) and b)].



a) Example of length split b) Example of deep split

Figure 3 — Example for splits

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4.1.4 Minor splits

Splits having a length of less than 30 mm or less than 10 mm on corners or with a depth less than 1,5 mm may be accepted (see Figure 4).

Figure 4 — Example for minor split

4.1.5 Plucked and indented spigots

The disc brake pad shown in Figure 5 is acceptable on each spigot up to 50 % of area and 0,5 mm deep.

NOTE Spigots physically indented in the pad design are included in this description.

Figure 5 — Example for plucked and indented spigots

4.1.6 Poor consolidated spigot holes

The disc brake pad shown in Figure 6 is acceptable if only one spigot is affected with up to 20 % of the volume being low density. This definition also applies where spigots have been physically indented in the pad design.

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Figure 6 — Poor consolidated spigot holes

4.1.7 Excess adhesive on plate

Excess adhesive on plate is acceptable provided the fitment of the part is not affected [see Figure 7 a) and b)].

a) Example 1

b) Example 2

Figure 7 — Example for adhesive on plate

4.1.8 Material flash on plate

A material flash on plate is acceptable up to 1 mm thick outside functional zones. Flash shall be secured to back plate [see Figure 8 a) and b)].

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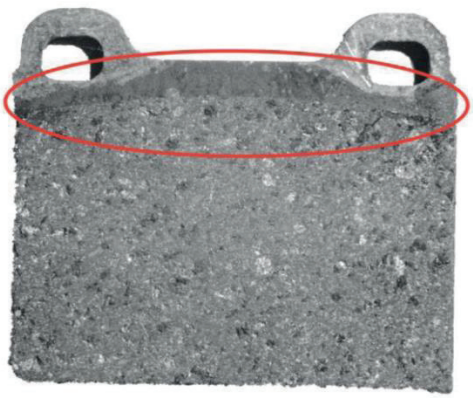


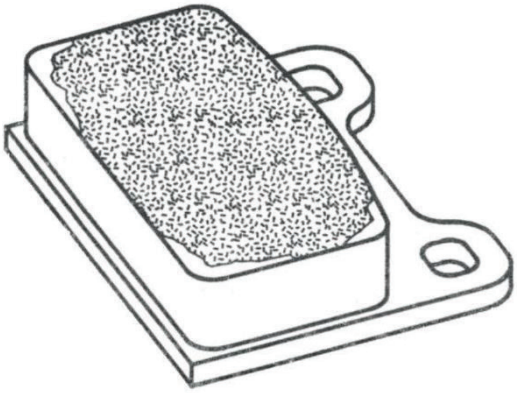
a) Example 1

b) Example 2

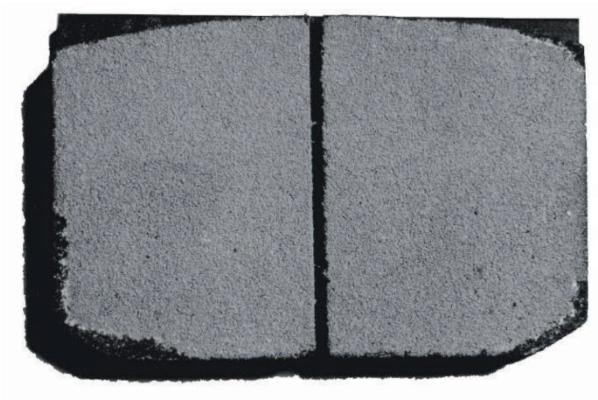
Figure 8 — Example material flash on plate

4.1.9 Abrasive coating

The disc brake pad is acceptable if at least 90 % of the surface is coated [see Figure 9 a) and b)].



a) Example with schematic view



b) Example with photo view

Figure 9 — Example material flash on plate

4.1.10 Anti-noise coating runs

The anti-noise coating runs is acceptable provided fitment of part is not affected [see Figure 10 a) and b)].

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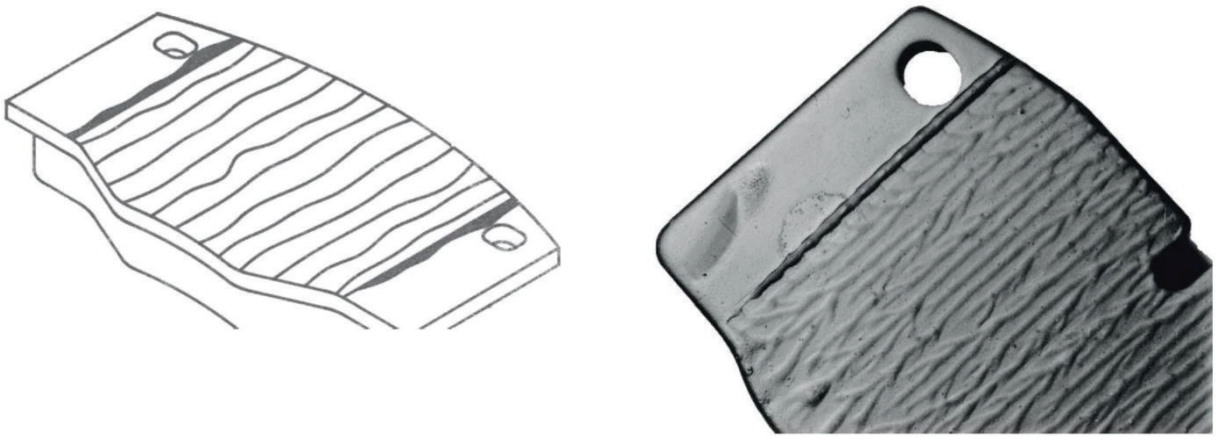

a) Example with schematic view b) Example with photo view

Figure 10 — Example noise-coating runs

4.1.11 Skin crazing

Skin crazing as shown in Figure 11 is acceptable.

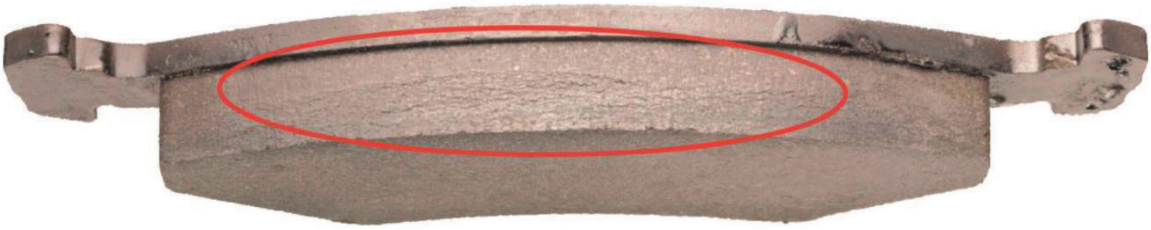

Figure 11 — Example for skin crazing

4.1.12 Underlayer distribution

Presence of underlayer is acceptable on pad surface up to 2 % of area if the distribution is according to the specification (see Figure 12).

Figure 12 — Example for underlayer distribution

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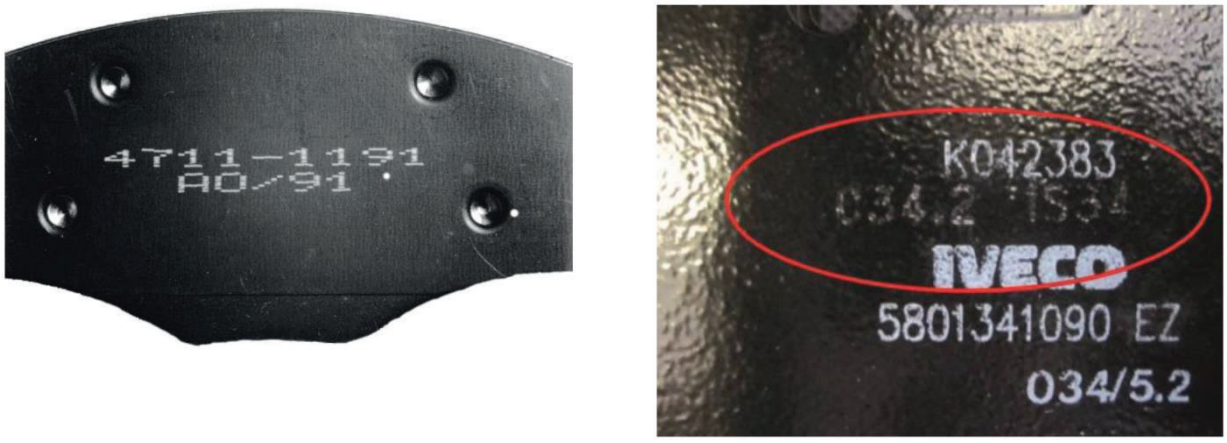
4.1.13 Marking

The marking shall be clear and legible [see Figure 13 a) and b)].

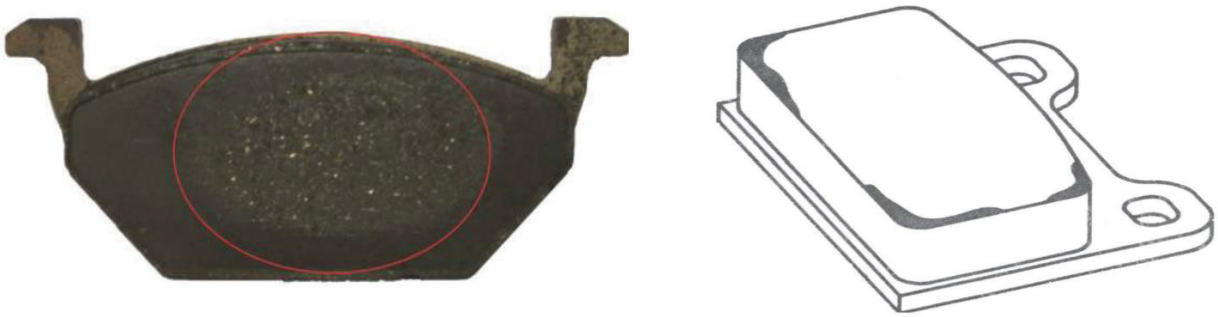


a) Example 1 b) Example 2

Figure 13 — Examples for marking

4.1.14 Unground material surface

An unground material surface equal or less than 10 % of the area is acceptable provided flatness and parallelism tolerances are not exceeded [see Figure 14 a) and b)].



a) Example as photo view b) Example as schematic view

Figure 14 — Examples for underground material surface

4.1.15 Paint on friction material surface

Paint on friction material surface is acceptable up to 10 % of the surface area [see Figure 15 a) and b)].

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