

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Magnetic powder cores – Guidelines on dimensions and the limits of surface irregularities – Part 4: Block-cores**

**Noyaux en poudre magnétique – Lignes directrices concernant les dimensions et les limites des irrégularités de surface – Partie 4: Noyaux en blocs**

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**MAGNETIC POWDER CORES – GUIDELINES ON DIMENSIONS  
AND THE LIMITS OF SURFACE IRREGULARITIES –****Part 4: Block-cores**

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The text of this International Standard is based on the following documents:

Draft	Report on voting
51/1373/CDV	51/1391/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available

at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

A list of all parts in the IEC 63182 series, published under the general title *Magnetic powder cores – Guidelines on dimensions and the limits of surface irregularities* can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

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# MAGNETIC POWDER CORES – GUIDELINES ON DIMENSIONS AND THE LIMITS OF SURFACE IRREGULARITIES –

## Part 4: Block-cores

### 1 Scope

This part of IEC 63182 specifies the preferred range of the dimensions that are of importance for mechanical interchangeability and gives guidelines on allowable limits of surface irregularities for block-cores made of metallic magnetic powder.

This document is a specification about surface irregularities which is useful in the negotiations between suppliers and users of magnetic powder-cores.

The use of “derived” standards which give more detailed specifications of component parts while still permitting compliance with this document is discussed in Annex A.

### 2 Normative references

The following document is referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[IEC 63182-4:2021](#)

IEC 63182-1, *Magnetic powder cores – Guidelines on dimensions and the limits of surface irregularities – Part 1: General specification*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 63182-1 apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

### 4 Primary dimensions

The main dimensions of block-cores shall be those given in Table 1. The dimensions specified in Table 1 are illustrated in Figure 1.

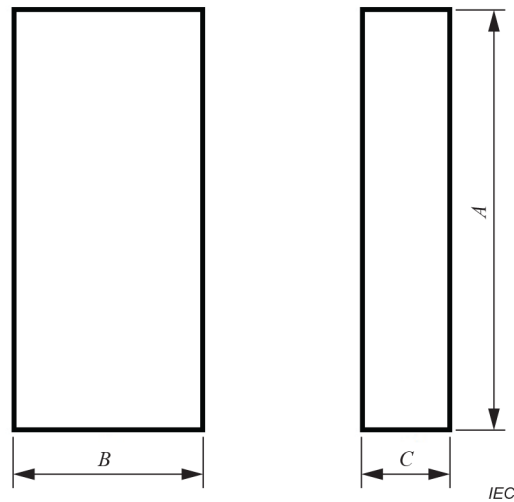


Figure 1 – Main dimensions of block-cores

Table 1 – Main dimensions of block-cores

Size <sup>a</sup>	A mm		B mm		C mm	
	Min.	Max.	Min.	Max.	Min.	Max.
B474128	47,0	48,0	40,5	41,5	27,0	28,0
B502015	49,5	50,5	19,5	20,5	14,5	15,5
B502020	49,5	50,5	19,5	20,5	19,5	20,5
B503015	49,5	50,5	29,5	30,5	14,5	15,5
B503020	49,5	50,5	29,5	30,5	19,5	20,5
B602015	59,5	60,5	19,5	20,5	14,5	15,5
B602020	59,5	60,5	19,5	20,5	19,5	20,5
B603015	59,5	60,5	29,5	30,5	14,5	15,5
B603020	59,5	60,5	29,5	30,5	19,5	20,5
B702015	69,5	70,5	19,5	20,5	14,5	15,5
B702020	69,5	70,5	19,5	20,5	19,5	20,5
B703015	69,5	70,5	29,5	30,5	14,5	15,5
B703020	69,5	70,5	29,5	30,5	19,5	20,5
B802015	79,5	80,5	19,5	20,5	14,5	15,5
B802020	79,5	80,5	19,5	20,5	19,5	20,5
B803015	79,5	80,5	29,5	30,5	14,5	15,5
B803020	79,5	80,5	29,5	30,5	19,5	20,5

NOTE For the 5030, 6030, 7030 and 8030 block-cores, 30,3 mm is also used as the nominal dimension *B* by many suppliers and users. For these cases, *B* can be specified as 29,8 mm min. / 30,8 mm max.

<sup>a</sup> The core size designation contains a combination of six numbers: the first and second indicate the length *A* of the core, the third and fourth its width *B*, and the fifth and sixth its height *C*.

## 5 Limits of surface irregularities

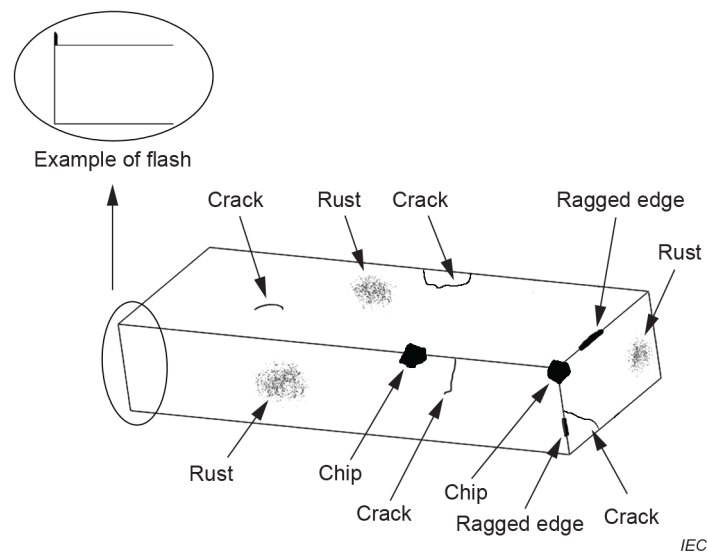
### 5.1 Definition of surface irregularities

Surface irregularities are defined in IEC 63182-1.



## 5.2 Examples of surface irregularities

Figure 2 shows different examples of surface irregularities of block-cores.



**Figure 2 – Examples of surface irregularities**

## 5.3 Chips and ragged edges

### 5.3.1 General

The minimum area for a chip is taken as  $10,5 \text{ mm}^2$ , so as to be distinguishable to the naked eye. The maximum cumulative area of chips on a surface, regardless of core size, is  $50 \text{ mm}^2$ . Area and length references for visual inspection are given in IEC 63182-1.

### 5.3.2 Chips

Figure 2 shows the chips at various locations for block-cores. The maximum cumulative area of chips on a surface is 3 % of the area of the surface or  $50 \text{ mm}^2$ , whichever is smaller.

### 5.3.3 Ragged edges

Figure 2 shows the ragged edges at various locations for block-cores. The total length of the ragged edges shall be less than 20 % of the length of the relevant edges.

## 5.4 Cracks

Figure 2 shows the cracks at various locations for block-cores. Up to three cracks per surface are allowed, as long as each crack is less than 25 % of the reference dimension and no crack is in contact with the edge at both ends. The reference dimension is the smallest dimension of a surface.

## 5.5 Flash

The maximum dimension of flashes on the surface shall not exceed 0,2 mm (see Figure 2).

## 5.6 Rust

Figure 2 shows rust at various locations for block-cores. The area of rust shall not exceed the following limits:

- the cumulative area of the rust located on the same surface shall not exceed 25 % of the surface area;
- rust should not influence the electromagnetic properties or the mechanical strength of the core. Otherwise, it is not acceptable.

## 5.7 Discoloration

Generally, no limit of the discoloration is defined. If necessary, a limit sample with this irregularity can be designated by the supplier and user.

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## Annex A (normative)

### Derived standards

The primary standard given in the main text establishes values for the main dimensions of block-cores and enables full interchangeability to be achieved for components complying with that document.

Parties interested in making or using block-cores can find it desirable to lay down local standards for everyday use, which show the dimensions and tolerances in greater detail than Clause 4, and which correspond to the state of the art in that area. These are known as “derived standards”. When doing so, any other type of block-cores meeting this primary standard should not be excluded, which would also satisfy the performance specification valid for a specific case.

It should be noted that a component complying with a derived standard will comply with the requirements of Clause 4 of the primary standard, and therefore permit any such core assemblies or coil formers to be used interchangeably where the primary standard is in force. However, it is not the case that any components that comply with the primary standard will necessarily comply with the derived standard, nor be interchangeable into applications where the derived standard is in force.

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When requirements would lead to the establishing of a national standard, the relevant national standardization body should insert a note in such a national standard that:

- a) the standard is in accordance with the dimensional requirements of this present primary standard, but that more details are given in order to promote the practical use of the standard;
- b) other solutions are possible within the framework of this primary standard and should not be excluded if the resulting cores are functionally interchangeable with those according to the national standard.