
**Magnesium and magnesium alloys —
Returns — Requirements, classification
and acceptance**

*Magnésium et alliages de magnésium — Retours — Exigences,
classification et acceptation*



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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
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Foreword

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ISO 23079 was prepared by Technical Committee ISO/TC 79, *Light metals and their alloys*, Subcommittee SC 5, *Magnesium and alloys of cast or wrought magnesium*.

Magnesium and magnesium alloys — Returns — Requirements, classification and acceptance

1 Scope

This International Standard specifies general requirements, classification and acceptance for the different classes of magnesium returns.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

coating

any surface layer except a natural oxide layer

EXAMPLES Oil, paint, metal coating.

2.2

contaminant

physical or chemical component of magnesium returns which, if not properly monitored and managed, negatively affects the quality of the returns as a raw material for certain applications or shows hazardous properties during certain operations

2.3

insert

component consisting of metal or other materials which may be moulded into position or put into a finished product or article

EXAMPLES Bearing, screw thread insert.

2.4

returns, pl

raw material, destined for trade and industry, mainly consisting of magnesium and/or magnesium alloys, resulting from the collection or recovery of

— metal that arises at various stages of fabrication, or

— products after use,

to be used for the production of wrought or cast alloys and for other production processes

2.5

turnings, pl

returns consisting of grains, chips, curls, flakes, etc. resulting from machining or other operations

3 Ordering information

The ordering information shall define the magnesium returns and should cover aspects such as the following, in order to achieve a transparent transaction:

- the number of this International Standard (ISO 23079);
- recycling classes, with reference to the relevant subclause of this International Standard (see Clause 5 and Annex A);
- condition of the returns, e.g. moisture and any contamination with other materials, size, physical characteristics of pieces or particles, whenever meaningful and if not covered by class definition (see Clause 7);
- gross mass;
- information about the origin of the returns;
- condition in which the returns shall be delivered (loose, baled, etc.);
- required chemical composition, if not otherwise specified;
- certification and control documents;
- shipment documents required by law;
- other requirement as agreed.

4 General requirements

4.1 General

Relevant characteristics of magnesium returns not specified in this International Standard shall be subject to agreement between the purchaser and the supplier. If returns might contain any hazardous contaminants, the purchaser shall be notified and his agreement to receive the returns shall be obtained before shipment.

4.2 Condition of returns

If not otherwise agreed or specified, the returns shall be supplied as bulk returns. The returns shall be correctly packed and labelled to ensure safe transportation.

4.3 Foreign materials

If not otherwise specified, the returns shall be free from foreign material, e.g. aluminium-based material.

4.4 Mass tolerances

If not otherwise agreed, the difference between the consigned quantity and the ordered quantity shall not exceed $\pm 5\%$.

4.5 Chemical composition

Returns classified by one alloy shall meet the requirements of chemical composition for that alloy. Returns classified by two or more alloys shall meet the chemical composition agreed between purchaser and the supplier.

5 Recycling classification (see also Annex A)

5.1 Solid returns with no inserts, no coating

5.1.1 Classified by one alloy

- a) Returns with low surface area and thickness ≥ 1 mm

EXAMPLES Rejected parts, biscuits and runners.

- b) Returns with high surface area and thickness < 1 mm

EXAMPLES Flashes, thin castings.

5.1.2 Classified by two or more alloys

- a) Returns with low surface area and thickness ≥ 1 mm

EXAMPLES Rejected parts, biscuits and runners.

- b) Returns with high surface area and thickness < 1 mm

EXAMPLES Flashes, thin castings.

5.2 Solid returns with inserts, no coating

5.2.1 Classified by one alloy (types of insert shall be specified if relevant)

- a) Returns with low surface area and thickness ≥ 1 mm

EXAMPLES Rejected parts, biscuits and runners.

- b) Returns with high surface area and thickness < 1 mm

EXAMPLES Flashes, thin castings.

5.2.2 Classified by two or more alloys (types of insert shall be specified if relevant)

- a) Returns with low surface area and thickness ≥ 1 mm

EXAMPLES Rejected parts, biscuits and runners.

- b) Returns with high surface area and thickness < 1 mm

EXAMPLES Flashes, thin castings.

5.3 Solid returns with coating

5.3.1 Classified by one alloy (types of coating and insert shall be specified if relevant)

- a) Without inserts
b) With insoluble inserts
c) With soluble inserts

5.3.2 Classified by two or more alloys (types of coating and insert shall be specified if relevant)

- a) Without inserts
- b) With insoluble inserts
- c) With soluble inserts

5.4 Post-consumer returns

5.4.1 Classified by one alloy

To be further specified if necessary with regard to inserts, coatings, surface contaminants, etc.

5.4.2 Classified by two or more alloys

To be further specified if necessary with regard to inserts, coatings, surface contaminants, etc.

5.5 Turnings

The following characteristics shall be specified:

- type of alloy;
- foreign material content (non-magnesium based alloys);
- wet, oily or dry;
- condition (compacted, non-compacted);
- maximum dust content.

5.6 Residues, dross, sludge, etc.

5.6.1 Without salt

5.6.2 With salt

6 Sampling and testing

Sampling and testing shall be agreed upon between purchaser and supplier.

7 Acceptance procedure

All magnesium returns delivered against a specific order shall be accepted with reservation until the classification at the purchaser's premises is accomplished. Any observation on the incoming shipment which indicates a non-compliance shall be notified by the purchaser as soon as possible.

The classification shall include:

- the control of the arrival date and times of the delivery;
- the control of mass;
- visual inspection during unloading.

The classification may include:

- the determination of moisture;
- the determination of total volatile substances;
- the determination of foreign material;
- the determination of the chemical composition.

8 Treatment of non-conformities

Deliveries of returns in dispute, for either quantity or quality, shall be kept at the disposal of the supplier for an agreed period, unless different agreements between supplier and purchaser are made.

Annex A
(informative)

Recycling classes for magnesium and magnesium alloys

Table A.1 — Recycling classes/subclause reference for magnesium and magnesium alloys

Description of returns		Solid returns with no inserts, no coating	Solid returns with inserts, no coating	Solid returns with coating	Post-consumer returns	Turnings	Residues, dross, sludge ,etc.
Classified by one alloy	Returns with low surface area and thicknesses ≥ 1 mm	5.1.1 a)	5.2.1 a)				
	Returns with high surface area and thicknesses < 1 mm	5.1.1 b)	5.2.1 b)				
	Without inserts			5.3.1 a)			
	With inserts			5.3.1 b), 5.3.1 c)			
	Shall be further specified if relevant				5.4.1		
Classified by two or more alloys	Returns with low surface area and thicknesses ≥ 1 mm	5.1.2 a)	5.2.2 a)				
	Returns with high surface area and thicknesses < 1 mm	5.1.2 b)	5.2.2 b)				
	Without inserts			5.3.2 a)			
	With inserts			5.3.2 b), 5.3.2 c)			
	Shall be further specified if relevant				5.4.2		
Shall be further specified					5.5		
Without salt						5.6.1	
With salt						5.6.2	

