
Stroji za predelavo gume in plastike - Drobilni stroji - 4. del: Varnostne zahteve za aglomeratorje

Plastics and rubber machines - Size reduction machines - Part 4: Safety requirements for agglomerators

Kunststoff- und Gummimaschinen - Zerkleinerungsmaschinen - Teil 4: Sicherheitsanforderungen für Agglomeratoren

Machines pour les matières plastiques et le caoutchouc - Machines à fragmenter - Partie 4 : Prescriptions de sécurité relatives aux agglomérateurs

[SIST EN 12012-4:2019/oprA1:2021](https://standards.iteh.ai/catalog/standards/sist/a80a8937-9bf9-4f4f-a094-42028764e776/sist-en-12012-4:2019/oprA1:2021)

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Oprema za gumarsko
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Equipment for the rubber and
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Zerkleinerungsmaschinen - Teil 4:
Sicherheitsanforderungen für Agglomeratoren

This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 145.

This draft amendment A1, if approved, will modify the European Standard EN 12012-4:2019. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

This draft amendment was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 12012-4:2019/prA1:2021) has been prepared by Technical Committee CEN/TC 145 “Plastics and rubber machines”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

This document is an Amendment to EN 12012-4:2019.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

In comparison with the previous edition, the following technical and editorial modifications have been made:

- European Foreword: dash added;
- Scope: editorial modification and dash added;
- Normative references: a reference date updated;
- 4.2.1: updated normative references;
- 4.2.3: updated normative reference;
<https://standards.iteh.ai/catalog/standards/sist/a80a8937-9bf9-4f4f-a094-42928764c776/sist-en-12012-4-2019-opra1-2021>
- 4.6.1.3: modified text;
- 4.6.1.4: modified text;
- 4.7.2: modified text;
- 4.7.3: updated normative reference;
- 6.2.1: modified text;
- 6.3.2: modified text;
- Table Annex ZA: modified text.

EN 12012-4:2019/prA1:2021 (E)

1 Modification to the European foreword

Add the first dash to the 7th paragraph: "

— the agglomerators with actuators moved by pneumatic and/or hydraulic energy have been excluded from the Scope;"

to read: "

The main changes compared to the EN 12012-4:2006+A1:2008 are:

- the agglomerators with actuators moved by pneumatic and/or hydraulic energy have been excluded from the Scope;
- the revision of type-A and type-B standards have been considered;
- the list of significant hazards has been moved to an informative annex;
- the performance levels/safety integrity levels of safety related parts of control systems have been specified in accordance with EN ISO 13849-1:2015 / EN 62061:2005, EN 62061:2005/A1:2013, EN 62061:2005/A2:2015;
- the hazards related to the ejection of parts or materials from the agglomerator chamber have been removed because reliable and well-designed chambers represent now the state of the art (no projections and no broken chamber have been reported for a long time);
- feed openings of big dimensions are considered;
- requirements for moving parts of discharge systems are added;
- the annex for noise measurement has been revised.

2 Modification to the Scope

In the third paragraph, third dash, make editorial modification and add an additional last dash: "

— agglomerators moved by pneumatic and/or hydraulic energy."

to read: "

This document deals with all significant hazards, hazardous situations and events relevant to agglomerators for the modification of plastic scraps in its form, size and flow characteristics, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Annex A). The hazards have been identified taking into account all phases of the machine life cycle according to EN ISO 12100:2010, 5.4.

Machines considered in this document begin at the outer edge of the feed opening and end at the outer edge of the discharge opening.

This document does not deal with:

- hazards due to emissions by processing materials that could be hazardous to health;
- hazards caused by ignition of flammable residues in material to be processed;
- requirements for exhaust ventilation systems;
- agglomerators moved by pneumatic and/or hydraulic energy.

This document is not applicable to agglomerators manufactured before the date of its publication."

3 Modification to Clause 2, Normative references

Replace "

EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

" with "

EN ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

".

4 Modification to 4.2.1, Access through openings in the agglomerator chamber

In the third and fourth paragraphs, replace "EN ISO 13857:2008" with "EN ISO 13857:2019" and in the seventh paragraph, second dash "EN 60204-1:2018, 9.2.3 and 9.2.4" with "EN 60204-1:2018, 9.2.3.5, 9.2.3.6 and 9.2.3.7" to read: "

In the agglomerator there are openings designed and constructed for feeding the material, discharging the material, inspecting the process inside the agglomerator chamber and changing or maintaining the agglomerating tools.

Access to agglomerating tools and their rotating support elements in the agglomerator chamber through openings shall be prevented by one or more of the following:

- fixed guards in accordance with EN ISO 14120:2015, that may be distance guards as defined in EN ISO 14120:2015, 3.2.2;
- interlocking guards with guard locking in accordance with EN ISO 14120:2015 and EN ISO 14119:2013, such that the guards remain closed and locked until all motions of the agglomerating tools have ceased; safety related parts of the control system shall be according to:
 - $PL_R = d$ or $SIL = 2$ for the interlocking function and
 - $PL_R = c$ or $SIL = 1$ for the locking function.

Safety distances preventing access to agglomerating tools and their rotating support element, if any, shall be in accordance with EN ISO 13857:2019, Table 2, Table 3, Table 4 and/or Table 6.

If the feeding equipment, or its part or the discharge system act as a guard and is capable of being moved out of position without the use of a tool and the resulting access to the agglomerator does not comply with the above safety distances of EN ISO 13857:2019, then it shall act as an interlocking guard with guard locking in accordance with EN ISO 14119:2013, such that it remains locked in position until all motions of the agglomerating tool have ceased; safety related parts of the control system shall be according to:

- $PL_R = d$ or $SIL = 2$ for the interlocking function and
- $PL_R = c$ or $SIL = 1$ for the locking function.

EN 12012-4:2019/prA1:2021 (E)

If the dimensions of the opening are greater than 500 mm × 400 mm, so that whole body access is possible, falling through the feed opening shall be prevented by positioning the lower edge of the opening at a minimum height of 1,20 m from the working level.

If, for operational reasons, it is necessary to move agglomerating tools and their support when interlocking guards are open, e.g. to change or to adjust the agglomerating tools, the rotating support shall be designed to allow its manual movement and preventing any contact with the agglomerating tools (e.g. fitting removable handles). See 6.2.3.

If the manual rotation is not possible (e.g. for large machines due to the mass of the rotating support) a specific operational mode shall be allowed which permits the powered rotation of the agglomerating tools and their support when the interlocking guards are open. This specific operational mode shall:

- be activated by a selector switch in accordance with EN ISO 12100:2010, 6.2.11.10, that can be locked in all positions by a removable or coded key or other means that prevent unauthorised selection and
- enable the rotation of the agglomerating tools and their support by a hold-to-run control device in combination with a maximum peripheral rotating speed of 2 m/min, in accordance with EN ISO 12100:2010, 6.2.11.9 and with EN 60204-1:2018, 9.2.3.5, 9.2.3.6 and 9.2.3.7.

The safety related parts of the control circuit shall be $PL_r = d$ or SIL 2.

To avoid any unexpected motion of rotating support of agglomerating tools during their changing or adjusting, appropriate devices, e.g. mechanical lock with pins, shall be provided.

See 6.2.2, 6.2.3 and 6.2.5.

The temperature of the material that is processed shall be automatically controlled, e.g. using a cooling system or reducing the speed of the rotating agglomerating tools, etc., in order to prevent the blocking of the rotating agglomerating tools.

The safety related parts of the control system shall be according to $PL_r = b$.

See 6.2.10."

5 Modification to 4.2.3, Moving parts of discharge systems

In the second paragraph, replace "EN ISO 13857:2008" with "EN ISO 13857:2019" to read: "

Access to powered moving parts of discharge systems shall be prevented by one or more of the following:

- fixed guards in accordance with EN ISO 14120:2015;
- interlocking guard in accordance with EN ISO 14120:2015 and EN ISO 14119:2013 and positioned in accordance with EN ISO 13855:2010.

Safety distances shall be in accordance with EN ISO 13857:2019, Table 2, Table 3, Table 4 and/or Table 6.

The safety related parts of the control system shall be according to $PL_r = c$ or SIL = 1.

If it is possible to have access to dangerous area of the agglomerator chamber from the discharge system, the requirements in 4.2.1 shall be fulfilled."

6 Modification to 4.6.1.3, Protection against direct contact

Replace the paragraph with:

"Basic protection shall be in accordance with EN 60204-1:2018, 6.2."

7 Modification to 4.6.1.4, Protection against indirect contact

Replace the paragraph with:

"Fault protection shall be in accordance with EN 60204-1:2018, 6.3."

8 Modification to 4.7.2, Stop function

Replace the text with:

"Each control station shall be fitted with a normal stop command to bring the machine to a complete stop.

The stop category shall be 0 or 1 in accordance with EN 60204-1:2018, 9.2.2. e.g. a stop category 1 can be used when the power is needed for the braking system. Stop functions shall override related start functions.

The safety related parts of the control system shall be in accordance with $PL_T = c$ or $SIL = 1$."

9 Modification to 4.7.3, Start function

Replace "EN 60204-1:2018, 9.2.5.2" with "EN 60204-1:2018, 9.2.3.2" to read:

"The start function shall be possible only when all safeguards are in place and functional in accordance with EN 60204-1:2018, 9.2.3.2. The machine shall only be started by actuation of the start device provided for that purpose."

10 Modification to subclause 6.2.1

Replace the paragraph with:

"The manufacturer shall indicate that the agglomerator is not designed to process materials that are flammable or toxic below the melting temperature."

11 Modification to 6.3.2, Warning signs

Replace the first dash: "

— warning sign that the machine is not designed to process flammable or toxic materials;

" with "

— warning sign that the machine is not designed to process materials that are flammable or toxic below the melting temperature;

" to read: "

The agglomerator shall be marked with:

- warning sign that the machine is not designed to process materials that are flammable or toxic below the melting temperature;
- warning signs indicating the presence of hot materials inside the chamber, that shall be positioned close to the openings;
- a warning sign where the temperature of surfaces and/or discharged materials exceeds the burn threshold value specified in EN ISO 13732-1:2008."

EN 12012-4:2019/prA1:2021 (E)

12 Modification to Annex ZA, Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered

Replace Table ZA.1 with the new Table ZA.1: "

Table ZA.1 — Correspondence between this European Standard and Annex I of Directive 2006/42/EC

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s)/subclause(s) of this EN	Remarks/Notes
1.1.2	4, 5, 6	
1.2.1	4.1, 4.2.1, 4.2.2, 4.2.3, 4.7.1, 4.7.2, 4.8	
1.2.2	4.2, 4.7	
1.2.3	4.2.2, 4.7.3, 4.8	
1.2.4.1	4.7.2	
1.2.4.3	4.7.1	
1.2.5	4.2	
1.2.6	4.8	
1.3.7	4.2	
1.3.8.2	4.2	
1.3.9	4.8	
1.4.2.1	4.2	
1.4.2.2	4.2	
1.4.3	4.2	
1.5.1	4.6.1	
1.5.2	4.6.2	
1.5.5	4.3	
1.5.8	4.4, Annex B	
1.5.13	4.5	
1.5.15	4.9	
1.6.1	4.2.1, 6.2.3	
1.6.3	4.8	
1.6.4	4.2.1	
1.7.1	6.1, 6.2.2	
1.7.1.1	6.1, 4.3	
1.7.2	6.2, 6.3	