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**The norm of energy consumption per unit production of
wrought aluminium and aluminium alloys**

变形铝及铝合金单位产品能源消耗限额

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The norm of energy consumption per unit production of wrought aluminium and aluminium alloys

1 Scope

This document specifies product classification of wrought aluminium and aluminium alloys, levels of norm of energy consumption per unit production, technical requirements, energy consumption statistical scope and calculation methods.

This document is applicable to the calculation and assessment of unit product energy consumption (hereinafter referred to as energy consumption) of manufacturers of wrought aluminium and aluminium alloys for general industrial use, as well as energy consumption control of new projects.

This document does not apply to the calculation and assessment of energy consumption of aluminum and aluminum alloy products produced in special fields such as aviation and aerospace, as well as powder metallurgy, injection molding and other special processes.

2 Normative references

The following referenced documents are indispensable for the application 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.

GB/T 2589, *General rules for calculation of the comprehensive energy consumption*

GB/T 8005.1, *Aluminium and aluminium alloy terms and definitions -- Part 1: Product and method of processing and treatment*

GB/T 12723, *General principles for establishing allowance of energy consumption per unit throughput*

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 2589, GB/T 8005.1 and GB/T 12723 apply.

provisions of Level 2 in Table 5.

6.2.1.2 Cold-rolled plates

6.2.1.2.1 The energy consumption limit value per unit product of cold-rolled plate products of existing enterprises shall comply with the provisions of Level 3 in Table 6.

6.2.1.2.2 The admission value of energy consumption per unit product of cold-rolled plates for newly built, renovated and expanded enterprises shall comply with the provisions of Level 2 in Table 6.

6.2.2 Strips

6.2.2.1 Hot-rolled strips

6.2.2.1.1 The energy consumption limit value per unit product of hot-rolled strips of existing enterprises shall comply with the provisions of Level 3 in Table 7.

6.2.2.1.2 The energy consumption per unit product value of hot-rolled strips for newly built, renovated and expanded enterprises shall comply with the requirements of Level 2 in Table 7.

6.2.2.2 Cold-rolled strips

6.2.2.2.1 The energy consumption limit value per unit product of cold-rolled strips of existing enterprises shall comply with the provisions of Level 3 in Table 8.

6.2.2.2.2 The energy consumption per unit product value of cold-rolled strips for newly built, renovated and expanded enterprises shall comply with the provisions of Level 2 in Table 8.

6.2.2.3 Cast-rolled strips

6.2.2.3.1 The energy consumption limit per unit product of cast-rolled strips of existing enterprises shall comply with the requirements of Level 3 in Table 9.

6.2.2.3.2 The admission value of energy consumption per unit product of cast-rolled strips for newly built and renovated and expanded enterprises shall comply with the provisions of Level 2 in Table 9.

6.2.3 Foils

6.2.3.1 The energy consumption limit value per unit product of foils of existing enterprises shall comply with the provisions of Level 3 in Table 10.

6.2.3.2 The admission value of energy consumption per unit product of foils for newly built, renovated and expanded enterprises shall comply with the provisions of Level 2 in Table 10.

6.3 Extruded materials

6.3.1 Extruded pipes

6.3.1.1 Extruded seamless pipes

6.3.1.1.1 The energy consumption limit per unit product of extruded seamless pipes of existing enterprises shall comply with the provisions of Level 3 in Table 11.

6.3.1.1.2 The energy consumption per unit product energy consumption value of extruded seamless pipes for newly built and renovated and expanded enterprises shall comply with the provisions of Level 2 in Table 11.

6.3.1.2 Extruded seam pipes

6.3.1.2.1 The energy consumption limit per unit product of extruded seam pipes of existing enterprises shall comply with the provisions of Level 3 in Table 13.

6.3.1.2.2 The admission value of energy consumption per unit product of extruded seam pipes for newly built and renovated and expanded enterprises shall comply with the provisions of Level 2 in Table 13.

6.3.2 Extruded bars, plates and wires

6.3.2.1 The energy consumption limit value per unit product of extruded bars, plates and wire rods of existing enterprises shall comply with the provisions of Level 3 in Table 12.

6.3.2.2 The energy consumption per unit product admission value for extruded bars, plates and wire rods of newly built, renovated and expanded enterprises shall comply with the provisions of Level 2 in Table 12.

6.3.3 Extruded profiles

6.3.3.1 The energy consumption limit value per unit product of extruded profiles of existing enterprises shall comply with the provisions of Level 3 in Table 13.

6.3.3.2 The energy consumption per unit product energy consumption value of extruded profiles for newly built, renovated and expanded enterprises shall comply with the provisions of Level 2 in Table 13.

6.4 Drawn (rolled) pipes, bars, and wire rods

6.4.1 Drawn (rolled) pipes

6.4.1.1 The energy consumption limit per unit product of drawn (rolled) pipes produced by existing enterprises shall comply with the requirements of Level 3 in Table 14.

6.4.1.2 The admission value of energy consumption per unit product for drawn (rolled)

pipes in newly built, renovated and expanded enterprises shall comply with the provisions of Level 2 in Table 14.

6.4.2 Drawn (rolled) bars and wires

6.4.2.1 The energy consumption limit per unit product of drawn (rolled) bars and wire rods produced by existing enterprises shall comply with the requirements of Level 3 in Table 15.

6.4.2.2 The admission value of energy consumption per unit product of drawn (rolled) bars and wire rods in newly built, renovated and expanded enterprises shall comply with the provisions of Level 2 in Table 15.

6.5 Surface-treated pipes, bars and profiles

6.5.1 The energy consumption limit per unit product of surface-treated pipes, bars, and profiles of existing enterprises shall comply with the provisions of Level 3 in Table 16.

6.5.2 The energy consumption per unit product admission value of surface-treated pipes, bars, and profiles of existing enterprises shall comply with the provisions of Level 2 in Table 16.

6.6 Composite profiles

6.6.1 The energy consumption limit value per unit product of composite profiles of existing enterprises shall comply with the provisions of Level 3 in Table 17.

6.6.2 The energy consumption per unit product admission value of composite profiles of existing enterprises shall comply with the provisions of Level 2 in Table 17.

6.7 Forgings

6.7.1 Free forgings

6.7.1.1 The energy consumption limit value per unit product of free forgings of existing enterprises shall comply with the provisions of Level 3 in Table 18.

6.7.1.2 The admission value of energy consumption per unit product of free forgings in newly built and renovated and expanded enterprises shall comply with the requirements of Level 2 in Table 18.

6.7.2 Die forgings

6.7.2.1 The energy consumption limit value per unit product of die forgings of existing enterprises shall comply with the provisions of Level 3 in Table 19.

6.7.2.2 The admission value of energy consumption per unit product of die forgings in newly built, renovated and expanded enterprises shall comply with the provisions of Level 2 in Table 19.

Annex A

(normative)

Statistical scope of energy consumption of each product

A.1 Production system

A.1.1 Ingot production system

The various amounts of energy consumed from raw materials to the production of ingots that meet the requirements. It includes raw material recovery aluminum pretreatment system (mechanical pretreatment, manual sorting), raw material smelting system (melting, refining), ingot casting system (online degassing, slag removal, casting), ingot homogenization heat treatment system (level 1 homogenization, multi-stage homogenization), various amounts of energy consumed by the ingot mechanical processing system (milling, lathe, sawing).

A.1.2 Plate, strip and foil production systems

A.1.2.1 Hot-rolled plate and strip production system

Various amounts of energy consumed from flat ingot to production of hot-rolled plates and strips that meet the requirements. It includes ingot heating system (conventional heating, homogenized heat treatment and heating integration), hot-rolled plate and strip rolling system (single stand, multi-stand), hot-rolled plate and strip heat treatment system (annealing, quenching, aging), various amounts of energy consumed by hot-rolled plate and strip finishing systems (stretch straightening, roller straightening), and hot-rolled plate and strip mechanical processing systems (sawing).

A.1.2.2 Cold-rolled plate and strip production system

Various amounts of energy consumed from hot-rolled strips, cast-rolled strips or hot-rolled plates to the production of cold-rolled plates and strips that meet the requirements. It includes hot-rolled strip, cast-rolled strip or hot-rolled plate heating system (conventional heating), cold-rolled plate and strip rolling system (single stand, multi-stand), cold-rolled plate and strip heat treatment system (annealing, quenching, aging), cold-rolled plate and strip finishing systems (bending straightening, roller straightening), cold-rolled plate and strip mechanical processing systems (trimming equipment, slitting equipment) consumption of various energy.

A.1.2.3 Cast-rolled strip production system

Various amounts of energy consumed from raw materials to the production of strips that meet the requirements. It includes various energy consumed by the raw material

smelting system (melting, refining), casting and rolling system (online refining, casting and rolling), cast and rolled strip heat treatment system (annealing), and mechanical processing system (shearing equipment).

A.1.2.4 Foil production system

Various amounts of energy consumed from cold rolling strip to producing foil of the required specifications. It includes cold-rolled strip heating system (conventional heating), foil coiling and unwinding system, foil rolling system (rough rolling, finishing rolling), annealing system (annealing), mechanical processing system (trimming equipment, splitting) Various amounts of energy consumed by equipment).

A.1.3 Extruded material production system

A.1.3.1 Extruded seamless pipe production system

Various amounts of energy consumed from solid round ingot or hollow round ingot to producing seamless pipes that meet the requirements. It includes solid round ingot or hollow round ingot and mold heating system (induction heating, box furnace heating), extrusion system (extrusion), heat treatment system (annealing, quenching, aging), finishing system (stretching and straightening), roller straightening), various amounts of energy consumed by the mechanical processing system (head and tail cutting).

A.1.3.2 Extruded bars, plates, profiles, seam pipes and wire production systems

Various amounts of energy consumed from casting a solid round ingot to producing conforming extruded rods, plates, profiles, seamed tubes and wires. It includes solid round ingot and mold heating system (induction heating, box furnace heating), extrusion system (extrusion, online quenching), heat treatment system (annealing, quenching, aging), finishing system (stretch straightening, roller type straightening), various amounts of energy consumed by the mechanical processing system (head and tail cutting).

A.1.3.3 Surface-treated pipe, bar and profile production systems

Various amounts of energy consumed from pipes, bars, and profiles to producing surface-treated pipes, rods, and profiles that meet the requirements. It includes various amounts of energy consumed by pretreatment systems and surface treatment systems (anodizing, electrophoretic painting, powder spraying, spray painting, thermal transfer printing).

A.1.3.4 Composite profile production system

Various amounts of energy consumed from surface-treated profiles to producing composite profiles that meet the requirements. It includes various amounts of energy consumed by the composite system.

A.1.4 Drawn (rolled) pipe, bar and line production system

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