

焊接和相关工艺方法—焊接方法名称和代号

1 范围

此国际标准规定了焊接及其相关工艺方法的名称和代号体系。每种焊接方法用数字代号体系的形式表示。

本标准包括焊接方法的大类组（一位数）、类组（二位数）和分类组（三位数），所有焊接方法代号最多使用三位数字。这套命名体系有助于计算机、图样、工作文件和焊接工艺规程等。

注：本标准使用了三种 ISO 官方语言中的两语种术语（英语和法语），同时，还给出了对应的德文术语，德文术语由德国工业标准协会（DIN）负责发布。然而，只有官方语种才可视为 ISO 条文。

2 标志

2.1 基本原理

需要对某种焊接方法做完整标志时，应采用如下方式：“ISO 4063”标准号，连字符后续焊接方法代号。

示例：

“摩擦焊方法”42 的标记如下：

ISO 4063 - 42

2.2 工艺参数

2.2.1 基本原理

工艺参数包括过渡形式和电极数。

2.2.2 过渡形式

不同的焊接方法有不同的过渡形式，过渡形式可以按照表 1 中的字母标记。

示例：

MIG 焊接方法短弧过渡，惰性气体保护电弧焊实芯焊丝短路过渡的标记如下：

ISO 4063 - 131 - D

表 1-过渡形式

形式	术语
D	短路过渡
G	粗滴过渡
S	喷射过渡
P	脉冲过渡

2.2.3 电极数

如果使用的电极数不少于一，标记中应该使用附加符号表示。

示例：

MIG 焊使用双焊丝，惰性气体保护电弧焊中使用实芯双焊丝的标记如下：

ISO 4063 - 131 - 2

2.2.4 附加标记

※本标准译文集仅供培训参考使用，请以标准原文为准，编译者对译文准确性不承担法律责任。

※本标准译文不得翻印，不准以任何方式传播。

如果使用填充材料, 如热丝/冷丝则按照表 2 中的规定如下标记:

示例:

单丝埋弧焊 (使用冷丝填充) 的标记如下:

ISO 4063 - 121 - C

表 2-附加标记

标记	术语
C	冷丝填充
H	热丝填充

2.3 复合焊接技术

使用多种焊接方法进行焊接时, 应标记出每种焊接方法并且中间用加号 (“+”) 连接。

示例: 激光焊和等离子焊一起使用, 其标记为 522+15。

3 焊接方法代号列表

下文的焊接方法当并列出现两个外文术语时, 推荐使用前一个, 但是它与后面的外文术语意义相同。

附录 B 为此标准中焊接方法取首字母缩写。

1 电弧焊	Arc welding
11 无气体保护电弧焊	Metal arc welding without gas protection
111 焊条电弧焊	Manual metal arc welding (metal arc welding with covered electrode) / Shielded metal arc welding, USA
112 重力焊	Gravity (arc) welding with covered electrode / Gravity feed welding, USA
114 自保护药芯焊丝电弧焊	Self-shielded tubular cored arc welding
12 埋弧焊	Submerged arc welding
121 实芯丝埋弧焊	Submerged arc welding with solid wire electrode
122 带极埋弧焊	Submerged arc welding with strip electrode
124 添加金属粉末的埋弧焊	Submerged arc welding with metallic powder addition
125 药芯丝极埋弧焊	Submerged arc welding with tubular cored electrode
126 药芯带极埋弧焊	Submerged arc welding with cored strip electrode
13 气体保护电弧焊	Gas-shielded metal arc welding / Gas metal arc welding, USA
131 熔化极惰性气体保护电弧焊 (MIG)	MIG welding with solid wire electrode / Gas metal arc welding using inert gas and solid wire electrode, USA
132 药芯焊丝 MIG 焊	MIG welding with flux cored electrode / Flux cored arc welding, USA
133 金属芯 MIG 焊	MIG welding with metal cored electrode / Gas metal arc welding using inert gas and metal cored wire, USA
135 熔化极非惰性气体保护电弧焊 (MAG)	MAG welding with solid wire electrode / Gas metal arc welding using active gas with solid wire electrode, USA
136 药芯焊丝 MAG 焊	MAG welding with flux cored electrode / Gas metal arc welding using active gas and flux cored electrode, USA
138 金属芯 MAG 焊	MAG welding with metal cored electrode / Gas metal arc welding using active gas and metal cored electrode
14 钨极气体保护电弧焊	Gas-shielded arc welding with non-consumable tungsten electrode / Gas tungsten arc welding, USA

141 钨极惰性气体保护电弧焊 (TIG)	TIG welding with solid filler material (wire/rod) / Gas tungsten arc welding using inert gas and solid filler material (wire/rod), USA
142 无填充金属的 TIG 焊	Autogenous TIG welding / Autogenous gas tungsten arc welding using inert gas, USA
143 使用药芯填充材料(丝材或棒材)的 TIG 焊	TIG welding with tubular cored filler material (wire/rod) / Gas tungsten arc welding using inert gas and tubular cored filler material (wire/rod), USA
145 使用还原气体和实芯填充材料 (丝材或棒材) 的 TIG 焊	TIG welding using reducing gas and solid filler material (wire/rod) / Gas tungsten arc welding using inert gas plus reducing gas additions and solid filler material (wire/rod), USA
146 使用还原气体和药芯填充材料 (丝材或棒材) 的 TIG 焊	TIG welding using reducing gas and tubular cored filler material (wire/rod) / Gas tungsten arc welding using inert gas plus reducing gas additions and tubular cored filler material (wire/rod), USA
147 钨极活性气体保护电弧焊 (TAG 焊)	Gas-shielded arc welding with non-consumable tungsten electrode using active gas (TAG welding) / Gas tungsten arc welding using active gas, USA
15 等离子弧焊	Plasma arc welding
151 等离子 MIG 焊	Plasma MIG welding
152 粉末等离子弧焊	Powder plasma arc welding
153 转移型等离子弧焊	Plasma welding with transferred arc
154 非转移型等离子弧焊	Plasma arc welding with non-transferred arc
155 半转移弧等离子弧焊	Plasma arc welding with semi-transferred arc
185 磁旋弧焊	Magnetically impelled arc welding
2 电阻焊	Resistance welding
21 电阻点焊	Resistance spot welding / Spot welding, USA
211 单面点焊	Indirect spot welding
212 双面点焊	Direct spot welding
22 电阻缝焊	Resistance seam welding / Seam welding, USA
221 搭接缝焊	Lap seam welding
222 压平缝焊	Mash seam welding
223 卷边搭接缝焊	Prep-lap seam welding
224 填丝缝焊	Wire seam welding
225 薄膜对接缝焊	Foil butt-seam welding
226 加带缝焊	Seam welding with strip
23 凸焊	Projection welding
231 单面凸焊	Indirect projection welding
232 双面凸焊	Direct projection welding
24 闪光焊	Flash welding
241 预热闪光焊	Flash welding with preheating
242 无预热闪光焊	Flash welding without preheating
25 电阻对焊	Resistance butt welding / Upset welding, USA

26 电阻螺柱焊	Resistance stud welding
27 高频电阻焊	HF resistance welding (high-frequency resistance welding) / High-frequency upset welding, USA
29 其它电阻焊方法	Other resistance welding processes
3 气焊	Gas welding / Oxyfuel gas welding, USA
31 氧燃气焊	Oxyfuel gas welding / Oxyfuel gas welding, USA
311 氧乙炔焊	Oxyacetylene welding / Oxyacetylene welding, USA
312 氧丙烷焊	Oxypropane welding
313 氢氧焊	Oxyhydrogen welding / Oxyhydrogen welding, USA
4 压力焊	Welding with pressure
41 超声波焊	Ultrasonic welding
42 摩擦焊	Friction welding
421 径向摩擦焊	Direct drive friction welding
422 惯性摩擦焊	Inertia friction welding
423 摩擦螺柱焊	Friction stud welding
43 搅拌摩擦焊	Friction stir welding
44 高机械能焊	Welding by high mechanical energy
441 爆炸焊	Explosion welding
442 磁脉冲焊接	Magnetic pulse welding
45 扩散焊	Diffusion welding
47 气压焊	Oxyfuel gas pressure welding / Pressure gas welding, USA
48 冷压焊	Cold pressure welding / Cold welding, USA
49 热压焊	Hot pressure welding
5 高能束焊	Beam welding
51 电子束焊	Electron beam welding
511 真空电子束焊	Electron beam welding in vacuum
512 非真空电子束焊	Electron beam welding in atmosphere
513 保护气电子束焊	Electron beam welding with addition of shielding gases
52 激光焊	Laser welding / Laser beam welding, USA
521 固体激光焊	Solid state laser welding
522 气体激光焊	Gas laser welding
523 二极管激光焊	Diode laser welding / Semi-conductor laser welding, USA
7 其它焊接方法	Other welding processes
71 铝热焊	Aluminothermic welding / Thermite welding, USA
72 电渣焊	Electroslag welding
721 带极电渣焊	Electroslag welding with strip electrode
722 丝极电渣焊	Electroslag welding with wire electrode
73 气电立焊	Electrogas welding

74 感应焊	Induction welding
741 感应对焊	Induction butt welding / Induction upset welding, USA
742 感应缝焊	Induction seam welding
743 感应高频焊	Induction HF welding
75 光辐射焊	Light radiation welding
753 红外线焊	Infrared welding
78 螺柱焊	Arc stud welding
783 带磁箍或保护气体的电弧螺柱焊	Drawn arc stud welding with ceramic ferrule or shielding gas / Arc stud welding, USA
784 短路提升引弧螺柱焊	Short-cycle drawn arc stud welding / Arc stud welding, USA
785 电容放电螺柱焊	Capacitor discharge drawn arc stud welding / Arc stud welding, USA
786 带点火嘴的电容放电螺柱焊	Capacitor discharge stud welding with tip ignition / Arc stud welding, USA
787 带易熔颈箍的电弧螺柱焊	Drawn arc stud welding with fusible collar
8 切割和气刨	Cutting and gouging
81 火焰切割	Flame cutting / Oxygen cutting, oxyfuel cutting, USA
82 电弧切割	Arc cutting
821 空气电弧切割	Air arc cutting / Air carbon arc cutting, USA
822 氧电弧切割	Oxygen arc cutting
83 等离子切割	Plasma cutting / Plasma arc cutting, USA
831 使用氧化气体的等离子切割	Plasma cutting with oxidising gas
832 无氧化气体的等离子切割	Plasma cutting without oxidising gas
833 空气等离子切割	Air plasma cutting
834 高精度等离子切割	High-tolerance plasma cutting
84 激光切割	Laser cutting / Laser beam cutting, USA
86 火焰气刨	Flame gouging / Thermal gouging, USA
87 电弧气刨	Arc gouging
871 空气电弧气刨	Air arc gouging / Air carbon arc cutting, USA
872 氧电弧气刨	Oxygen arc gouging / Oxygen gouging, USA
88 等离子气刨	Plasma gouging
9 硬钎焊、软钎焊及钎接焊	Brazing, soldering and braze welding
91 局部加热硬钎焊	Brazing with local heating
911 红外线硬钎焊	Infrared brazing
912 火焰硬钎焊	Flame brazing / Torch brazing, USA
913 激光硬钎焊	Laser beam brazing
914 电子束硬钎焊	Electron beam brazing
916 感应硬钎焊	Induction brazing
918 电阻硬钎焊	Resistance brazing
919 扩散硬钎焊	Diffusion brazing
92 整体加热硬钎焊	Brazing with global heating

921 炉中硬钎焊	Furnace brazing
922 真空硬钎焊	Vacuum brazing
923 钎料浴硬钎焊	Dip-bath brazing
924 盐浴硬钎焊	Salt-bath brazing
925 钎剂浴硬钎焊	Flux-bath brazing
926 浸沾硬钎焊	Immersion brazing
93 其它硬钎焊	Other brazing processes
94 局部加热软钎焊	Soldering with local heating
941 红外线软钎焊	Infrared soldering
942 火焰软钎焊	Flame soldering / Torch soldering, USA
943 烙铁软钎焊	Soldering with soldering iron
944 拖焊	Drag soldering
945 激光软钎焊	Laser soldering
946 感应软钎焊	Induction soldering
947 超声波软钎焊	Ultrasonic soldering
948 电阻软钎焊	Resistance soldering
949 扩散软钎焊	Diffusion soldering
95 整体加热软钎焊	Soldering with global heating
951 波峰软钎焊	Wave soldering
953 炉中软钎焊	Furnace soldering
954 真空软钎焊	Vacuum soldering
955 浸沾软钎焊	Dip soldering
957 盐浴软钎焊	Salt-bath soldering
96 其它软钎焊	Other soldering processes
97 钎接焊	Weld brazing / Braze welding, USA
971 气体钎接焊	Gas weld brazing / Gas braze welding, USA
972 电弧钎接焊	Arc weld brazing / Arc braze welding, USA
983 熔化极气体保护电弧钎接焊	Gas metal arc weld brazing / Gas metal arc braze welding, USA
984 钨极气体保护电弧钎接焊	Gas tungsten arc weld brazing / Gas tungsten arc braze welding, USA
985 等离子弧钎接焊	Plasma arc weld brazing / Plasma arc braze welding, USA
986 激光钎接焊	Laser weld brazing / Laser braze welding, USA
987 电阻钎接焊	Resistance brazing

附录 A

(资料性附录)

更换和淘汰的焊接方法

附录 A 包含了部分 ISO 4063 上一个版本中更换和淘汰的焊接方法。这些焊接方法虽然在更新标准版本时被删除了，但可能仍被用于某些特殊场合，或者出现在以前各种文件中。

113 光焊丝电弧焊	Bare wire metal arc welding / Bare metal arc welding, USA
115 涂层焊丝电弧焊	Coated wire metal arc welding
118 躺焊	Firecracker welding

137 惰性气体保护药芯焊丝电弧焊	Tubular cored metal arc welding with inert gas shield / Flux cored arc welding, USA
149 原子氢焊	Atomic-hydrogen welding
181 碳弧焊	Carbon-arc welding
32 空气燃气焊	Air-fuel gas welding
321 空气乙炔焊	Air-acetylene welding / Air acetylene welding, USA
322 空气丙烷焊	Air-propane welding
43 锻焊	Forge welding
752 弧光光束焊	Arc image welding
77 冲击电阻焊	Percussion welding
781 电弧螺柱焊	Arc stud welding
917 超声波硬钎焊	Ultrasonic brazing
923 摩擦硬钎焊	Friction brazing
953 摩擦软钎焊	Abrasion soldering

附录 B

(资料性附录)

焊接及相关工艺通常使用的首字母缩写

表 B.1 到表 B.4 收录了美国通常使用的关于焊接及其相关工艺的首字母缩写[引自美国焊接学会(AWS)],同时给出了其所对应的 ISO 4063 焊接方法代号。若焊接方法代号后出现插入语的表示与此焊接方法某特定类别最相近或者相似于此焊接方法的大类组。短横线表示无对应焊接方法代号。

表 B.1 -US 通常使用的电弧焊首字母缩写

US 首字母缩写	对应的 ISO 4063 焊接方法代号
AAW	-
ABW	98
AHW	-
AW	1
BMAW	-
BW	98
CAW-G	1
CAW-S	1
CAW-T	1
CEW	-
CW	48
DFW	45
EBBW	9
EBW	51
EBW-HV	511
EBW-MV	511
EBW-NV	512
EGW	73
ESW	72

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ESW-CG	72
EXBW	9
EXW	441
FCAW	133
FCAW-G	-
FCAW-S	133
FLOW	9
FOW	43
FRW	42
FRW-DD	421
FRW-I	422
FSW	43
FW	24
GMAW	13
GMAW-P	13-P
GMAW-S	13-D
GTAW	14
GTAW-P	14-P
HIPW	49
HPW	49
IW	74
LBBW	913
LBW	52
MAW	185
OAW	311
OFW	31
OHW	313
PAW	15
PEW	-
PGW	47
PW	23
ROW	43
RS	948
RSEW	22
RSEW-HF	22
RSEW-I	742
RSEW-MS	222
RSW	21
RW	2
RW-PC	2
SAW	12

SAW-S	12
SMAW	111
SSW	4
SW	784/785/786
TW	71
USW	41
UW	25
UW-HF	291
UW-I	741

表 B.2-US 通常使用硬钎焊首字母缩写

US 首字母缩写	对应的 ISO 4063 焊接方法代号
B	9
BB	9
DFB	919
DB	924
EXB	9
FLB	9
FB	921
IB	916
IRB	911
RB	918
TB	912
TCAB	9

表 B.3-US 通常使用软钎焊首字母缩写

US 首字母缩写	对应的 ISO 4063 焊接方法代号
DS	944
FS	943
IRS	941
IS	946
RS	948
TS	942
USS	947
WS	951

表 B.4-US 通常使用切割首字母缩写

US 首字母缩写	对应的 ISO 4063 焊接方法代号
AC	82
CAC	82
CAC-A	821

EBC	8
GMAC	82
GTAC	82
HEBC	84
LBC	84
LBC-A	84
LBC-EV	84
LBC-IG	84
LBC-O	84
OAC	822
OC	81
OC-P	81
OFC	81
OFC-A	81
OFC-F	81
OFC-H	81
OFC-N	81
OFC-P	81
OG	872
OLC	822
PAC	83
SMAC	82
TC	8