

AWS A5.30/A5.30M:2007
An American National Standard



Specification for Consumable Inserts



American Welding Society



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An American National Standard**

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Specification for Consumable Inserts

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Prepared by the
American Welding Society (AWS) A5 Committee on Filler Metals and Allied Materials

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

Five classes (cross-sectional design) of consumable inserts of various chemical compositions are described. Each class is subdivided into two or three styles (based on the shape of the insert).

Topics include the chemical composition, general dimensional requirements, packaging, and application guidelines.



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Specification for Consumable Inserts

1. Scope

1.1 This specification prescribes requirements for the classification of plain carbon steel, chromium-molybdenum low alloy steel, stainless steel, nickel alloy, and copper-nickel alloy consumable inserts¹ for use in conjunction with the gas tungsten arc welding process. These inserts also may be used with any other welding process for which they are found suitable. Included are packaging and testing requirements.

1.2 Safety and health issues and concerns are beyond the scope of this standard and, therefore, are not fully addressed herein. Some safety and health information can be found in the Informative annex Clauses A5 and A10. Safety and health information is available from other sources, including, but not limited to ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, and applicable federal and state regulations.

1.3 This specification makes use of both U.S. Customary Units and the International System of Units (SI). The measurements are not exact equivalents, therefore, each system must be used independently of the other without combining in any way when referring to material properties. The specification with the designation A5.30 uses U.S. Customary Units. The specification A5.30M uses SI Units. The latter are shown within brackets [] or in appropriate columns in tables. Standard dimensions based on either system may be used for sizing of consumable inserts under A5.30 and A5.30M.

2. Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of

¹“Consumable insert,” is defined in AWS A3.0, *Standard Welding Terms and Definitions*, as: “Filler metal that is placed at the joint root before welding, and is intended to be completely fused in the joint root to become part of the weld.”

this AWS standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However parties to agreement based on this AWS standard are encouraged to investigate the possibility of applying the most recent editions of the documents shown below. For undated references, the latest edition of the standard referred to applies.

2.1 The following ANSI and AWS standards² are referenced in the normative clauses of this document:

1. AWS A5.01, *Filler Metal Procurement Guidelines*
2. ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*

2.2 The following ASTM standards³ are referenced in the normative clauses of this document:

1. ASTM DS-56 (or SAE HS-1086), *Metals & Alloys in the Unified Numbering System*
2. ASTM E 29, *Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications*
3. ASTM A 751, *Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products*
4. ASTM E 75, *Test Methods for Chemical Analysis of Copper-Nickel and Copper-Nickel-Zinc Alloys*
5. ASTM E 76, *Test Methods for Chemical Analysis of Nickel-Copper Alloys*
6. ASTM E 1473 *Test Methods for Chemical Analysis of Nickel, Cobalt, and High Temperature Alloys*

² AWS standards and ANSI Z49.1 are published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

³ ASTM standards are published by the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

3. Classification⁴

3.1 The consumable inserts covered by this A5.30/A5.30M specification are classified using a system that is independent of U.S. Customary Units and the International System of Units (SI). Classification is according to chemical composition of the insert material as specified in Tables 1, 2, 3, and 4. Inserts are also classified by their shape as specified in 11.1 to 11.6, and in Figure 1.

3.2 Consumable inserts classified under one classification shall not be classified under any other classification of this specification.

4. Acceptance

Acceptance⁵ of the consumable inserts shall be in accordance with the provisions of AWS A5.01.

⁴ See Table A.1 for comparable classifications of bare wire filler metal in AWS specifications and for consumable inserts in the Military Specification.

⁵ See A3 (in Annex A) for further information concerning acceptance and testing of material shipped, and AWS A5.01.

5. Certification

By affixing the AWS specification and classification designations to the packaging, or the classification to the product, the manufacturer certifies that the product meets the requirements of this specification.⁶

6. Rounding-Off Procedure

For the purpose of determining conformance with this specification, an observed or calculated value shall be rounded to the “nearest unit” in the last right-hand place of figures used in expressing the limiting value in accordance with the rounding-off method given in ASTM E 29.

7. Summary of Tests

Chemical analysis of the consumable insert material, or the stock from which it is made, is the only test required for classification of a product under this specification.

⁶ See A4 (in Annex A) for further information concerning certification and the testing called for to meet this requirement.

Table 1
Carbon Steel Compositions

Group	AWS Classification	UNS Number ^c	Weight Percent ^{a, b}							
			C	Mn	P	S	Si	Al	Zr	Ti
A	INMs1	K10726	0.07	0.90 to 1.40	0.025	0.035	0.40 to 0.70	0.05 ^d to 0.15	0.02 ^d to 0.12	0.05 ^d to 0.15
			0.06 to 0.15	0.90 to 1.40			0.45 to 0.70	—	—	—
	INMs3	K11140	0.07 to 0.15	1.40 to 1.60	0.025	0.035	0.80 to 1.00	—	—	—

^a The consumable insert shall be analyzed for the specific elements for which values are shown in the table.

^b Single values shown are maximum.

^c SAE HS-1086/ASTM DS-561, *Metals & Alloys in the Unified Numbering System*.

^d Al + Zr + Ti = 0.15 minimum.