



NOTE

This leaflet is part of a set which also includes :

- Leaflets in sub-section 89 (897) : Welding.

SUMMARY

1 - PURPOSE

2 - DESCRIPTION

2.1 - Symbols for wire electrodes

2.1.1 - Solid wires

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3 - APPLICATION OF SYMBOLS

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1 - PURPOSE

This technical specification governs the identification of solid or cored wire electrodes, gases, and wire-electrode and gas combinations for automatic and semi-automatic gas-shielded welding of the plain-carbon or low-alloy steels used for the construction and repair of rolling stock.

2 - DESCRIPTION

The abbreviated description is formed of symbols : digits, letters and numbers, placed in a well-defined order.

2.1 - Symbols for wire electrodes

The symbol for solid wires is used in isolation.

The symbol for cored wires is used in combination with CO<sub>2</sub> gas unless otherwise stated.

2.1.1 - Solid wires

The general symbols for solid-wire electrodes for gas-shielded welding is "SG". This symbol is supplemented by a digit as shown in the table below :

Sym- bol	Chemical composition of the wire in percent by weight.						
	Cmax	Si	Mn	Pmax	Smax	Cu max	Others
SG 1	0.12	0.5-0.7	1.0-1.3	0.025	0.025	0.30(1)	
SG 2	0.12	0.7-1.0	1.3-1.6	"	"	"	
SG 3	0.14	0.8-1.2	1.6-1.9	"	"	"	
SG 4	Other compositions (2)						

(1) Copper content includes copper-plating layer; wires with nominal diameter ≤ 1.2 mm, Cu ≤ 0.35

(2) As agreed with the purchasing railway.

2.1.2 - Cored wires

The general symbol for cored wire electrodes for gas-shielded welding is "E".

This symbol is supplemented by a letter indicating the type of flux :

- B = basic
- R = rutile
- S = other types

2.2 - Symbols for gases

The shielding gases are indicated by a letter :

- C : carbon dioxide (CO<sub>2</sub>)
- I : inert gas
- M : gas mixture
- O : no gas

The nature of the gas mixture should be defined clearly in terms of its composition.

2.3 - Symbols for wire and gas combinations

2.3.1 - Symbols relating to wires

These symbols are defined in § 2.1.

2.3.2 - Symbols relating to gases

These symbols are defined in § 2.2.

2.3.3 - Symbols relating to the tensile strength of the deposited metal

For a tensile strength of 470 N/mm<sup>2</sup> to 610 N/mm<sup>2</sup> :  
symbol 47.

For a tensile strength of 520 N/mm<sup>2</sup> to 660 N/mm<sup>2</sup> :  
symbol 52.

For a tensile strength of 570 N/mm<sup>2</sup> to 710 N/mm<sup>2</sup> :  
symbol 57.

2.3.4 - Symbols relating to the resilience of the deposited metal

The first digit specifies the group on the basis of a minimum 28 J resilience, V-notched, according to ISO/R 148 as follows :

Symbol	Test temperature (°C)
0	-
1	+ 20
2	0
3	- 20
4	- 30
5	- 40

The second digit specifies the group on the basis of a minimum 47 J resilience, V-notched, according to ISO/R 148 as follows :

Symbol	Test temperature (°C)
0	-
1	+ 20
2	0
3	- 20
4	- 30
5	- 40

2.3.5 - Symbols relating to output

A symbol representing the output is added in the case of cored wire electrodes.

It is expressed as a number equivalent to the nominal output rounded off as defined in UIC Leaflet 897-8. No symbol is used if the nominal output is less than 70%.

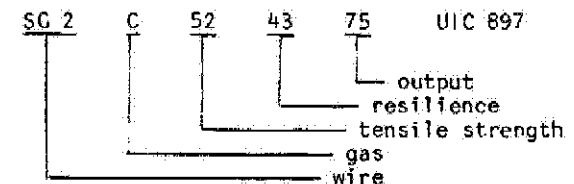
3 - APPLICATION OF SYMBOLS

The complete symbol for wire and gas combinations includes the symbols, in order, relating to :

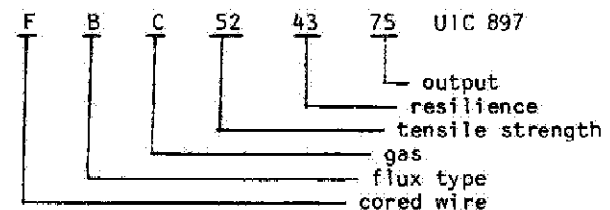
- wire electrodes
- gas
- tensile strength
- resilience
- UIC No.897

Examples : - solid wire  
SG 2

- solid wire in combination with a gas



- cored wire



4 - MARKING

Symbols relating to wire electrodes should be marked on each coil and each wrapper.

The type of gas should be marked on the container.

The order or appended documents should indicate the marking relating to the wire and gas combination to be envisaged.

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APPLICATION

As from 1 January 1986.

All Railways in the Union.

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RECORD REFERENCES

Headings under which the question has been dealt with :

- Standardisation of welding materials (electrodes, etc.)  
(Sub-Committee for Specifications, Paris, January 1973).

- Question 5/Sa/FIC - Approval of revised leaflet 897-7  
"Technical Specification for a system of symbols for solid or cored wire electrodes, gases and wire-electrode and gas combinations for automatic and semi-automatic gas-shielded welding of plain-carbon or low-alloy steels".  
(Traction and Rolling Stock Committee : Dublin, June 1985).