FILLER METAL SELECTION

Match the Classification to the Process

Compare the two classifications on one product. AWS and ISO designations do not convert one for one.

Process / Parent Metal	Product and ISO Classification	AWS and Order Detail
MAG solid · C-Mn	WeldIber SG2 WBR-1508: ISO 14341-A G 42 4 M21 3Si1 or G 42 3 C1 3Si1.	AWS A5.18 ER70S-6. This listing is 0.8mm on a 15kg spool.
TIG · C-Mn	Parweld XP A18 XP10324: ISO 636-A W 42 4 3Si1.	AWS A5.18 ER70S-6. This listing is 1.0mm × 1000mm rods, 5kg.
MMA · C-Mn basic	Example: ISO 2560-A E 42 5 B 42 H5.	AWS A5.1 E7018 H4 R. The listed 2.5 × 350mm variant is one example.
MMA · C-Mn rutile	Example: ISO 2560-A E 38 0 RC 12.	AWS A5.1 E6013. The 2.5 × 350mm example is rated 60–100A.
Flux-core · C-Mn	Example classification: EN ISO 17632-A T 46 3 P M 1 H5.	AWS A5.36 E71T1-M21A2-CS1-H4 is one listed designation.

Read the Gas in the Classification

The SG2 example has two ISO classifications. The same wire is classified with M21 and C1, and the impact classification differs. Use the combination called for by the procedure.

Classification Editions

ISO catalogue editions: 14341:2020 (solid MAG), 636:2024 (steel TIG), 2560:2020 (MMA), 17632:2015 (tubular), 14343:2025 (stainless) and 18273:2015 (aluminium). The examples use the manufacturers' stated classifications. Check the edition on the actual certificate.

Parweld · SG2 WBR-1508

Parweld · XP10324

© R H Davey Welding Supplies Ltd · Design and editorial content

FILLER METAL SELECTION

Stainless, Dissimilar and Dilution

Identify the parent grades and service. Read the bare wire or rod classification separately from the covered-electrode classification.

Parent / Service	Common AWS Bare Filler	Why / What to Check
304L	ER308L or ER308LSi	Low-carbon 19Cr–9Ni family. Si variants generally improve wetting. Check the exact product and code.
316L	ER316L or ER316LSi	Mo-bearing deposit for grades needing that corrosion performance.
304L to carbon steel	ER309L or ER309LSi where qualified	Higher alloy content accommodates carbon-steel dilution. Review service and any heat treatment.
Stabilised stainless	ER347 for suitable stabilised grades	Nb-stabilised filler. Check temperature duty and parent combination.
Duplex 2205	ER2209 for suitable 2205 procedures	Nickel-enriched duplex filler. Control heat input and interpass to protect phase balance.

Worked Dilution Example

In a simple mass-balance example, 70% filler at 24% Cr and 30% parent metal at 10% Cr gives 19.8% Cr in the deposit. These are teaching inputs. Actual dilution comes from the weld and the diagram requires the full chemistry.

What the Calculation Can Tell You

Dilution can move the deposit away from the intended composition. Chromium alone cannot predict ferrite. Use a suitable constitution diagram and measured chemistry for the assessment.

TWI · Duplex to carbon steel

© R H Davey Welding Supplies Ltd · Design and editorial content

FILLER METAL SELECTION

Aluminium Filler Choices

Select by the exact alloy pair. Strength, cracking, anodising and service temperature can point to different fillers.

Parent Example	Common Selection	Trade-Off
1100 or 3003 to itself	1100 is a matching example.	For a mixed alloy pair use the filler chart for that pair.
6061 to itself	4043 or 5356, depending on duty.	4043 wets readily and helps resist cracking on many 6xxx joints. 5356 feeds better and usually gives a closer anodised match.
6061 to suitable 5xxx	5356 often selected.	Check the specific 5xxx grade. The Mg content matters.
5083 to itself	5183 or 5556 for applications needing higher weld strength.	Check the required strength, joint geometry and sustained service temperature.

Temperature Filter

Use caution with Al-Mg alloys above 3% Mg for sustained service above about 65°C. Recheck 5356 or 5183 before specifying them for hot service.

Feed Problems

Soft aluminium wire can buckle before it reaches the tip. Check the correct drive rolls, liner, contact tip and feed path. Use a spool gun or push-pull arrangement if the feeder and procedure support it.

Order as Wire or Rod

Specify spool or straight rod as well as the grade. Example sizes include 1.2 and 1.6mm wire and 1.6, 2.4 and 3.2mm rods. A shared alloy number does not mean a shared pack form.

Ask R H Davey for advice on aluminium filler selection · 023 8033 9443

© R H Davey Welding Supplies Ltd · Design and editorial content

FILLER METAL SELECTION

Hydrogen, Traceability and Buying

Read the electrode label at issue, keep the batch traceable and separate consumable properties from actual joint properties.

Check	Decision
H5 and H10	ISO hydrogen designators refer to maxima of 5 and 10mL diffusible hydrogen per 100g of deposited weld metal under the classification test.
Sealed and opened packs	Keep sealed stock dry. Use the product's opened-pack, re-drying and holding instructions. One basic electrode specifies re-drying at 350°C. This is product-specific.
Matching strength	Use the required deposited strength and toughness for the job. A stronger filler can increase weld-metal strength but does not restore parent-metal HAZ properties or automatically improve the joint.
EN 10204:2004 type 3.1	Check that the certificate identifies the product and lot, carries the relevant inspection results and can be traced to the pack. Record the lot when the contract requires it.
Common errors	Treat unexplained cracked welds as an assessment issue. Check storage and exposure on low-hydrogen electrodes. On solid wire, check rust, oil and condensation before blaming gas or feed.

Worked Ordering Example

WBR-1508 identifies 0.8mm SG2 solid wire on a 15kg spool. Ask for the full wire-and-gas classification and the lot certificate if the contract calls for it. XP10324 is 1.0mm TIG rod in a 5kg pack, despite both products carrying ER70S-6.

For a filler check, give both parent grades, the joint, process, service and the required certificate. Call 023 8033 9443 or email sales@rhdaveywelding.co.uk.

Parweld Filler Wires
IABCO Filler Wires
Safra Aluminium Fillers
Weld Star TIG
Kjellberg MMA Electrodes
Safra Copper Alloy Fillers

TWI · ISO hydrogen designations
Parweld · XP10324
Parweld · WBR-1508

© R H Davey Welding Supplies Ltd · Design and editorial content