

QARC™ is a range of high chromium, high carbon flux-cored hardfacing wires for surfacing new components, rebuilding worn parts and repairing weld overlay plate. Open-arc operation requires no shielding gas, and no preheat is needed for general hardfacing.

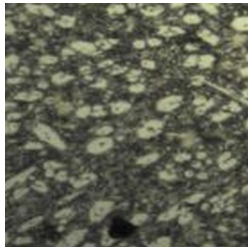
Specification

QARC™ deposits are manufactured to comply with AS/NZS 2576:2005 — Grade 2355 (QARC 60), Grade 2455 (QARC 80) and Grade 2560 (QARC 90).

Deposit Microstructure: Each QARC™ wire deposits a distinct microstructure:

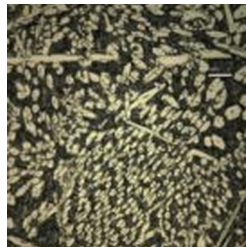
QARC 60

Primary M_7C_3 carbides in a eutectic matrix of austenite and eutectic M_7C_3 carbide.



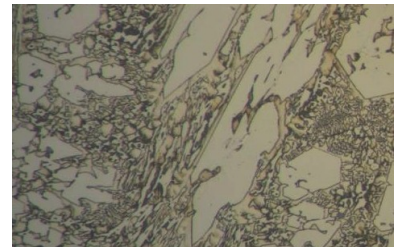
QARC 80 / 90

Complex M_7C_3 + MC carbides (80); martensitic matrix with boron (90).



QARC 6000

Primary M_7C_3 plus fused tungsten carbide for fine-particle abrasion.



Chemical Composition: A typical deposit consists of the chemistry limits (%) shown below.

Wire	C	Cr	W	B	Ni+Nb+Ti+V+W	Standard	Bal.
QARC 60	3.5–7.5%	21–35%	—	—	—	2355	Fe
QARC 80	4.0–6.5%	21–35%	—	—	2.5–14%	2455	Fe
QARC 90	4.0–6.5%	21–35%	—	≤2%	—	2560	Fe
QARC 6000	4.4–7.5%	23–35%	2–7%	—	—	—	Fe

Welding Parameters — Open Arc (1.6 mm shown)

Welding Parameters	Range	Optimum
Diameter	1.6 / 2.0 / 2.4 / 2.8 / 3.2 mm	—
Current	150–350 A	270 A
Voltage	24–28 V	24 V
Wire feed speed	4–8 m/min	—
Stick-out	25–50 mm	25 mm
Shielding gas	None required (open arc)	—
Preheat / interpass	Not required for general hardfacing	—

Deposit Characteristics: Deposits exhibit fine relief check cracks — a normal, beneficial feature of chromium carbide hardfacing that relieves stress and does not propagate into the base material.

Deposit Layers: A maximum of 2–3 layers is recommended. For heavy rebuilds, butter with a tough buffer layer (e.g. austenitic) before hardfacing.

Typical Hardness: QARC 60/80 >630 HV30 (~57 HRC); QARC 90 700–780 HV30; QARC 6000 >700 HV30. Primary M_7C_3 carbides ~1500 HV0.5.

Packaging: 15 kg spools; bulk drums available for automated cladding lines. Store dry in original packaging.

Base Materials: Suitable for deposition onto mild and low-alloy steels. Base material can be welded with standard low-hydrogen consumables — avoid structural welds contacting existing overlay.

Applications

High sliding abrasion and medium impact duties: wear plate repairs, fan blades, excavator bucket protection, stackers, mobile plant, TLO systems, hoppers, screen decks, spill plates and ground-engaging tool rebuilds.

Procedure Notes

Grind the area to bright metal before welding. Deposit in stringer or slightly weaved beads; keep interpass temperature moderate to control distortion. Peening between layers is not required.

Positional Welding

The mild steel base and stable open-arc transfer make positional welding straightforward. For vertical work, reduce current to the lower end of the range and use short stringer beads.

When repairing existing overlay plate, remove fatigued or spalled overlay back to sound material before re-surfacing with QARC™.

Base Material Welding

Joining base steel — Use standard low-hydrogen consumables (E7018/E8018 or equivalent). Avoid structural welds contacting the hardfaced surface; where unavoidable, use an ER307-type consumable.

Capping — Cap plug welds, joints and fixings with the matching QARC™ grade so repairs wear with the parent surface.

Wire Selection

Match the wire to the duty:

- QARC 60 — general sliding abrasion with impact (matches QCLAD 60 / FLOW60)
- QARC 80 — complex carbide for medium-high abrasion and impact
- QARC 90 — martensitic, fine-particle abrasion (not continuous impact)
- QARC 6000 — tungsten carbide for extreme fine-particle duties