



## Meet the challenges of a tough environment

Oil and gas extraction is a tough environment, often at remote locations. Reliable equipment prepared for the unexpected is a key requirement.

Couplings, polished rods, pup joints, rod guides, and stabiliser bars are applications where part life is extended with thermal surfacing solutions.

Oil bearing limestone and other formations are often “acidized” to increase production. This combined with water, salt, sand and oil at temperatures in the order of 200°C is a challenging environment.

### Choose

Nickel based self fluxing powders for surfaces that comply with application demands in oil and gas extraction.

This ensures excellent functionality at an affordable price.

### Benefits

- Cost effective thermal spray surfacing
- Bond strength to substrate >80MPa after fusing
- Precision parts surface finish  $\pm 3,2\mu\text{m}$
- Reliable abrasive wear resists sand particles
- Maintains wear resistance at elevated temperature
- Resists corrosion from acidic and saline liquids
- Withstands well hole environment

Powder 36 – 106 µm	Powder 45 – 125 µm	Hardness* HRC	Alloy base	Solidus °C	Liquidus °C
72 W 40	72 M 40	37	NiCr	968	1149
76 W 50	76 M 50	50	NiCr	968	1121
74 W 60	74 M 60	58	NiCr	968	1038
75 W 62	75 M 62	63	NiCr	968	1027
80 W 60	80 M 60	58	NiCrMoCu	968	1043

\*Indicative alloy hardness/ typical when flame sprayed and fused

## Applications

Flame spraying is a flexible technique ideally suited for many oil and gas applications. Polished rod lengths of up to 10 m. and couplings achieve the required criteria to extend operating life. Both the outer surface of the rod and coupling are successfully protected from wear and corrosion with Ni based alloys.

Choose powder series 7 for a good balance of abrasion and impact resistance combined with good heat resistance. Choose powder series 8 when impact resistance is more demanding. Good corrosion resistance is achieved with Ni and Cr. This is further improved with Mo and Cu.

Equipment and application demands dictate the particle size range. Sieve fractions shown conform to common industry equipment. As an independent powder manufacturer we aim to meet your demands.

Powder Temperature °C	72	76	74	75	80
	Hot hardness* HRC				
315	35	48	57	60	57
425	33	45	54	57	54
540	29	40	49	51	49
650	25	35	44	45	45

Pre-heating is recommended, prior to flame spraying

Recommended for deposition on cast iron, carbon steels, stainless steel, "Monel", copper, nickel and cobalt based alloy substrate parts.

