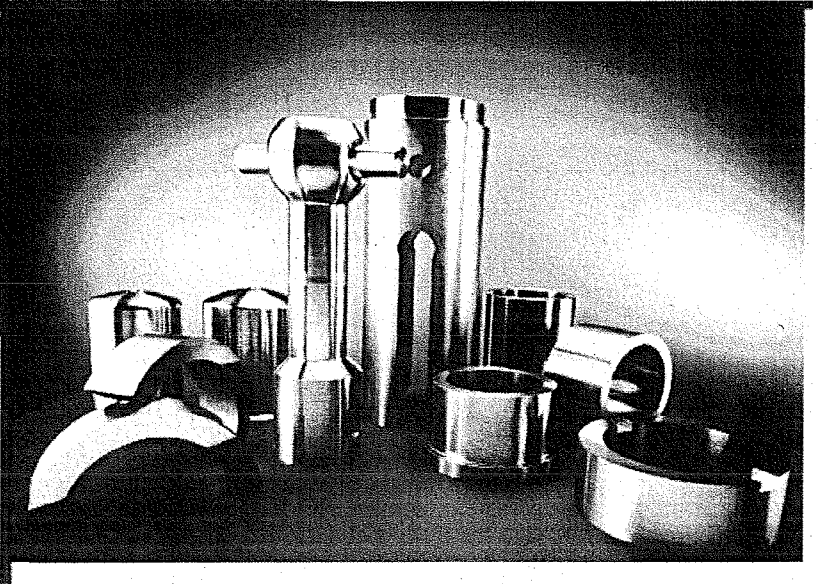
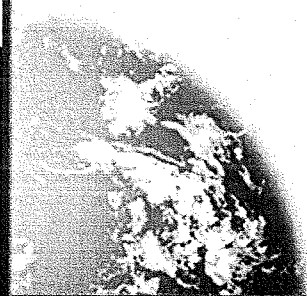


Stellite



Ultimate Problem
Wear & Corrosion

Ultimate Solution
ULTIMET[®] ALLOY

ULTIMET[®] is a registered trademark of Haynes International

ULTIMET Castings, Powders & Wires

ULTIMET® Alloy

Ultimet is a cobalt-base alloy with a unique combination of wear and corrosion resistance. It is available from Deloro Stellite in the forms of Cast Components, Plasma Transferred Arc (PTA) Powder, Jet Kote (HVOF) Powder and Welding Wires.

The versatility of the alloy is enhanced by its superior weldability and the fact that multiple layered, crack free deposits are possible with this alloy. Larger components can have their critical surfaces overlaid with Ultimet to improve their resistance to wear and corrosion. These parts can either be welded in your shop, or at one of our Stellite facilities at very competitive prices. For more complex parts we can cast custom components either as Investment, Sand or Centrifugal castings. All overlaid parts and cast components are offered finish machined to meet the most exacting tolerances.

Specifications

ASME Section VIII, Division 1, Code Case 2121

ASTM Specifications B-815 and B-818 (plate, sheet, strip and rod)

DIN Specification 2.4681 CoCr26Ni9Mo5W

UNS Number R31233

NACE MR0175

Nominal Chemical Composition

Co	Cr	Ni	Mo	Fe	W	C
Balance	26	9	5	3	2	0.06

Hardness

Ultimet has a hardness of 30-32 HRC in the mill annealed condition at room temperature, but it can work harden rapidly to hardnesses of between 40 and 59 HRC.

Casting Investment, Sand, and Centrifugal Castings

Powder Particle Size

Grade: W	150/45 microns
Grade: WM	180/53 microns

Tensile Properties at Room Temperature

	Yield Stress (0.2% offset)	UTS	Elongation%
As Cast (6.4mm or 1/4" dia. bar)	56.9 ksi 392 MPa	112 ksi 773 MPa	16 - 35%
Solution Annealed at 2150°F (1177°C)	57.9 ksi 399 MPa	117 ksi 808 MPa	33%

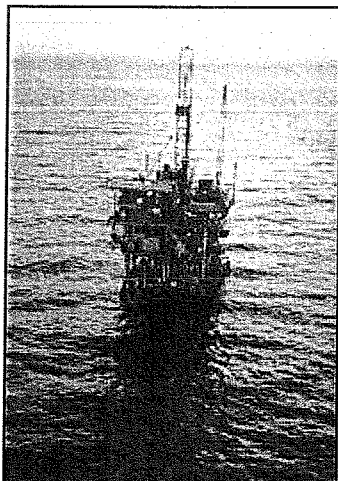
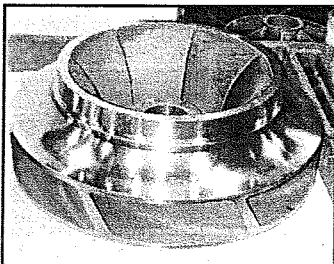
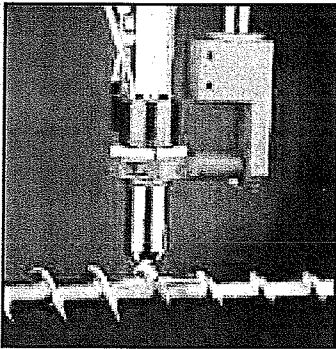
Galling Test Data at Room Temperature

Self-mated, damage measured in microns

	1361 Kg Load	2722 Kg load	4082 Kg load
Ultimet (Cast)	1.5	1.3	1.9
Ultimet (Undiluted Weld)	2.4	3.6	3.1
Stellite 1 (2-layer GTA)	0.1	0.1	0.6
Stellite 6 (2-layer GTA)	1.3	2.5	1.9
Tribaloy T-800 (2-layer PTA)	0.3	0.9	0.3
Deloro 60 (2-layer GTA)	20.6	11.2	13.7

Cavitation Erosion - ASTM G32

Alloy	Depth of Erosion in microns
Ultimet (Cast)	7.5
Ultimet (Undiluted Weld)	6.2
Stellite 6 (2-layer GTA)	9.9



Technical Data

Corrosion Resistance (in mm per year, multiply by 39 for approx. mpy)

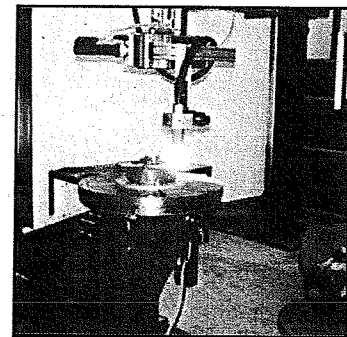
Medium	As Investment Cast	Solution Annealed	Wrought
1% HCl boiling	Not measured	0.05	0.01
65% HNO ₃ boiling	.020	.020	.015
10% H ₂ SO ₄ boiling	2.13	2.98	2.51
54% P ₂ O ₅ at 116°C	0.20	Not measured	0.20
10% FeCl ₃ boiling	<0.03	Not measured	Not Measured
ASTM G28A boiling	0.25	0.25	0.20
ASTM G28B boiling	1.04	14	0.05

G28A - 50% H₂SO₄ + 42 g/l Fe₂(SO₄)₃

G28B - 23% H₂SO₄ + 1.2% HCl + 1% FeCl₃ + CuCl₂

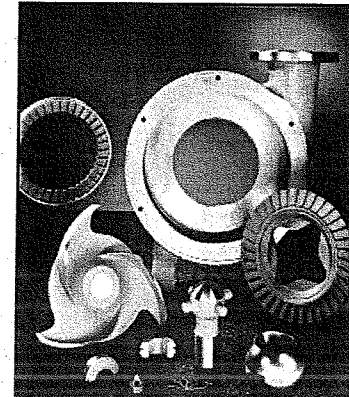
Typical Parameters for Plasma Transfer Arc Welding

Current	120 - 180 Amps
Voltage	24 - 26 Volts
Shielding Gas	Argon
Powder Feed Rate	15 - 30 grams/minute
Type of Bead	Oscillated
Bead Width	12 - 20 mm
Travel Speed	90 - 140 mm/minute
Deposit Thickness	1.5 - 3.0 mm per pass. Multiple passes
Pre-heat Temperature	Not necessary



Comparison with Stellite® 21

Property	Ultimet	Stellite 21 (as cast)
Hardness at Room Temp	HRC 30 - 32	HRC 33
Work Hardened To:	HRC 45	HRC 45
UTS in MPa	773 (as cast)	710
Elongation %	16 - 35	8
Impact - Un-notched Charpy	176 (wrought)	36
Abrasion G65 Volume Loss	83.4 (as cast)	76
Pitting Temperature in "Green Death" solution	120 C	<45 C



Applications

As noted earlier Ultimet® alloy shows excellent performance characteristics, in applications that involve wear and fairly severe corrosion conditions. The noted wear properties of Ultimet® are its ability to withstand galling and cavitation erosion in corrosive environments. The toughness, ductility and excellent weldability, make Ultimet® a great choice for most applications that involve these wear mechanisms.

Typical areas of applications are:

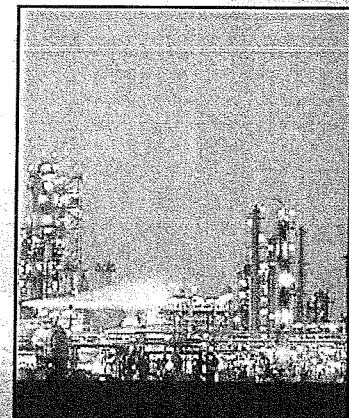
Chemical Processing - Blower shafts, burner tips, nozzles, pump bushings, valve parts, wiper blades, screw conveyors, fan shafts and blades, pump parts and nozzles.

Glass Processing - Scraper blades and molds.

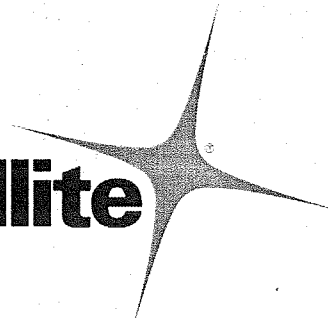
Oil and Gas - Offshore drilling platform parts and valve parts.

Waste Treatment - Filter screens, grinder wear inserts, incinerator nozzles, pump parts.

Metalworking - Forging dies.



Stellite



DELORO STELLITE INC.
P.O. Box 5300
(471 Dundas Street E.)
Belleville, Ontario
K8N 5C4 (K8N 1G2)
Canada
Tel: (1) 613-968-3481
800-267-2886
Fax: (1) 613-966-8269
800-565-4407

STELLITE COATINGS
1201 Eisenhower Drive N.
Goshen, Indiana
46526 USA
Tel: (1) 574-534-2585
800-235-9353
Fax: (1) 574-534-3417

DELORO STELLITE AB
Hörngatan 19
SE-461 50 Trollhättan
Sweden
Tel: (46) 520-81250
Fax: (46) 520-37035

MICROFUSIONE STELLITE
Via 1° Maggio, 1/4
40044 Pontecchio Marconi
Bologna, Italy
Tel: (39) 051-846-049
Fax: (39) 051-846-839

MICROFUSIONE STELLITE
Via G. Di Vittorio, 24
20090 Pieve Emanuele
Milan, Italy
Tel: (39) 02-907-871
Fax: (39) 02-907-23220

DELORO STELLITE GmbH
Zur Bergpflege 53
D-56070 Koblenz
Germany
Tel: (49) 261-80880
Fax: (49) 261-808823

DELORO STELLITE
Cheney Manor Industrial Estate
Unit 103
Swindon, Wiltshire
SN2 2PW England
Tel: (44) 1793-498500
Fax: (44) 1793-498501

SHANGHAI STELLITE CO. LTD.
P.O. Box 800-233
No. 1799, Jia-luo Highway
Jia-Ding County, 201800 Shanghai
People's Republic of China
Tel: (86) 21-59553188
Fax: (86) 21-59553961

HETTIGER STELLITE GmbH
Am Biotop 3
97259 Greußenheim
Germany
Tel: (49) 9369-9073-30
Fax: (49) 9369-9073-40

ATS STELLITE S.A.
Z.I. de Brueges - Avenue Monge
F-30106 Ales Cedex - B.P. 286
France
Tel: (33) 4-66309840
Fax: (33) 4-66309846

DELORO STELLITE
Executive Office
555 N. New Ballas, Suite 305
St. Louis, Missouri
63141 USA
Tel: (1) 314-983-0266
Fax: (1) 314-983-0570

Stellite, Tribaloy, T-800, Stelcar, Starweld, Jet-Kote, JK, Delcrome, Nistelle, Deloro
are registered trademarks of Deloro Stellite Company Inc.

www.stellite.com

Distributed by Astro Alloys Inc. Houston, Texas 1-877-937-3838