MULTI-ALLOYS cc
SPECIALIST METAL SUPPLIERS

MetalTalk
TEKNITALK

Adding Value Through Experience

May 2009

ALLOYS FOR HIGH TEMPERATURE APPLICATIONS - continued

In the first in this series of notes on Alloys for High Temperature Applications (See TEKNITALK February 2009 - www.multialloys.co.za/newsletters.asp) the phenomena of corrosion and creep were mentioned. Before progressing to discuss these and the make up of the alloys in more detail, some definition needs to be set for "high temperature".

In aqueous corrosion, processes temperatures close to the boiling point of the solution, or above it in the case of processes carried our under pressure, are considered high (100 to 200 deg C, say). However, the upper limit when considering metals and alloys specifically intended for high temperature service is about 1200 deg C. At temperatures exceeding this, the metals of interest are close to their melting range, typically 1300 to 1400 deg C, thus making it impossible to use them as engineering materials.

Refractory metals eg. molybdenum, tungsten are so named because of their high melting points and thus on the face of it may seem an option for use above 1200 deg C. However, these metals are also very reactive in the presence of air, oxygen, carbon etc. and thus can only be used in an inert atmosphere or in a vacuum. Refractories / ceramics are of course the other practical alternative for temperatures in excess of 1200 deg C

TYPICAL TEMPERATURES (deg C) FOR
SOME INDUSTRIAL PROCESSES

Steel Heat treatment	-	500 to 1150
Waste incineration	-	700 to 1200
Gas turbine components	-	750 to 1100
Calcining	-	750 to 1100
Steam in coal fired boilers	-	upto 580
Oil refinery processes	-	500 to 1000

(To be continued...)

**We will be exhibiting at Petro.t.ex Africa 2009,
Gallagher Convention Centre, Midrand from the 9th to 11th June.
Should you require Complimentary Tickets
please contact Jeni 011 466 2480.**

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