CTC6000
CHROMIUM CARBIDE OVERLAY TECHNICAL DATA SHEET

CTC6000

Is manufactured with high quality materials as a bulk overlay of high chromium, high carbon, tungsten alloy onto a base plate utilising submerged arc welding to achieve a wear resistant plate for use in a variety of material handling applications, where fine particle abrasion is present.

SPECIFICATION

CTC6000 overlay has been manufactured to ensure compliance with the microstructure, chemistry, hardness and dry abrasion test values for specific customer requirements.

MICROSTRUCTURE

The **CTC6000** overlay consists of primary M_7C_3 carbides and fused WC in a eutectic matrix of austenite and eutectic M_7C_3 carbide.

CHEMICAL COMPOSITION

A typical deposit consists of the following chemistry limits (%).

Cr = 23-35 **C** = 4.4-7.5 **W** = 2-7 Fe and **Others** = Balance

TYPICAL PROPERTIES

Bulk Hardness:	>700 HV30
Primary M_7C_3 carbide:	~1500 $HV_{0.5}$
Volume fraction Primary Carbides:	20% to 40%
Total Carbide Volume Fraction:	>37%
Temperature range:	up to 595°C
Abrasion resistance ASTM G65-04 Procedure A:	<0.15G

IMPACT RESISTANCE

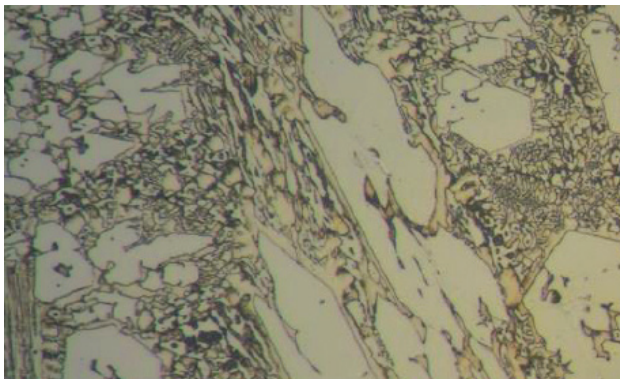
CTC6000 can withstand continuous impact

PLATE CHARACTERISTICS

The overlay surface consists of welded beads (of varying widths) with relief check cracks evenly dispersed that protrude to the backing plate only. These check cracks assist in thermal expansion and contraction of the plate in service.

FLATNESS (PLATES)

Within 1mm over 300mm and within 5mm over 1000mm



SURFACE ROUGHNESS

If requested, standard smooth Finish Ra <7µm, Ultra Polish Ra <0.5 µm

DENSITY (PLATE)

* Average is 7440 Kg / m^3
* This changes depending on proportion of overlay to backing plate.

BASE PLATE

The standard base material is mild steel plate of varying thickness, ensuring the finished parts are readily weldable. Alternative base plate grades can be incorporated with the **CTC6000** overlay to meet specific customer requirements

CUTTING

Plate is preferably cut with plasma arc. A 200amp is sufficient to cut most thickness's available. All cutting should be from the mild steel side to eliminate carbon contamination of the backing plate. Other methods used to cut the plate are Arc Air or Carbon Arc, Abrasive Disc, water Jet and abrasive saw.

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MACHINING

Plate can be surface ground using abrasive grinding disc only.

COLD FORMING

When cold forming it is recommended that pressing be perpendicular to the weld bead direction. Rolling can be done in any direction. A wide set bottom die with rounded corners should always be used and rounded press tool.

Minimum bending radii for thin overlays is 75mm and thicker overlays is 1000mm. Please consult your **DGC AFRICA** Technical expert for details as specific methods can be adopted during manufacture to ensure quality formed product can be produced.

Forming plate with the overlay on the outside will place the hardface layer in tension and surface cracks will open up requiring repair.

WELDING

BACKING PLATE SIDE

Use low hydrogen electrode or mig wire. This must not exceed the thickness of the backing plate. Where the weld would exceed the thickness of the backing plate use a ER307 consumable with Argoshield 69 shielding gas.

HARDFACE SIDE

Use CTC6000 wire.

ATTACHMENT METHODS

- CTC6000 can be attached using the following methods.
- Plug weld holes.
- Countersink, Counter bore holes , Taper Holes and Tapped holes. Threaded Studs.
- Perimeter fillet weld.

For more detail please ask us for our Fabrication Guidelines

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