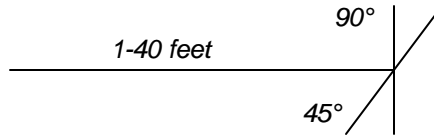


2" diameter ☆ 1.2 #
4" diameter ☆ 9.4 #



CRODON PLUS Wear Plate vs. Chromium Carbide Weld Overlay in Medium Impact Situations

Exposing The Achilles Heel of the Competition

Elk Technology Center, Ennis, TX

The CRODON wear surface is incredibly hard (equivalent to approximately 900 Brinell). High hardness normally correlates with brittleness. However, CRODON Wear Plate creates a molecular bond that makes it highly resistant to impact. In fact, the properties of the backing material become the limiting factor.

Chromium carbide is hard and brittle. Because the welding process leaves inherent stress in the material from the different coefficients of thermal expansion of overlay and substrate, simple cutting can often lead to cracks at any position on a plate. These cracks often propagate across the entire sheet.

CRODON PLUS Wear Plate and chromium carbide weld overlay plates were tested at 90° drop angles. A four-inch diameter, 9.36lb steel ball was used to determine the maximum height prior to chip-out for CRODON PLUS Wear Plate and before catastrophic cracking across the entire plate on chromium carbide weld overlay.



Contact Information on Reverse

OBSERVATION	Maximum Drop Height in Feet for Steel Ball of Given Weight at 90° Angle	
	CrC Weld Overlay	CRODON PLUS Wear Plate
	CATASTROPHIC CRACK	PINPOINT CHIP
1 oz	757.1	1060.0
8 oz	94.6	132.5
1 lb	47.3	66.3
5 lb	9.5	13.3
10 lb	4.7	6.6
15 lb	3.2	4.4
20 lb	2.4	3.3
25 lb	1.9	2.7
50 lb	0.9	1.3
75 lb	0.6	0.9
100 lb	0.5	0.7
500 lb	0.1	0.1

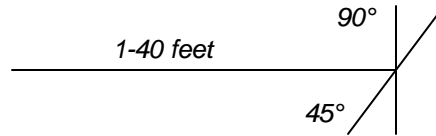
More information concerning the construction of this table can be found to the left.

Review of Findings

? CRODON PLUS Wear Plate can handle 40% more energy than CrC overlay prior to chip-out of a small portion of chrome and can sustain repeated hits. The bulk of the surface is unaffected.

? CrC weld overlay shows failure at lower energy than CRODON PLUS Wear plate. Cracks spread across the entire plate and CrC is less suited to multiple strikes. Cracks can be created, before first use, by assembly alone.

2" diameter ✱ 1.2 #
4" diameter ✱ 9.4 #



CRODON Standard vs. CRODON PLUS Wear Plate in Medium Impact Situations

Seeking the Best of the Best

Elk Technology Center, Ennis, TX

The CRODON wear surface is incredibly hard (equivalent to approximately 900 Brinell). High hardness normally correlates with brittleness. However, the CRODON Wear Plate creates a bond strength that makes it highly resistant to impact. In fact, the properties of the backing material become the limiting factor.

CRODON Wear Plate was tested at 90° and 45° drop angles. A two-inch diameter, 1.17lb steel ball was used to determine the maximum drop height prior to chip formation at the point of impact where both surface finish and a small amount of base material were removed. Using the speed of the ball, as calculated by $1/2mgh$ (m = mass, g = gravitational acceleration constant, and h = height), one can determine the weight of particle to cause chip out at any height. The equation held true for various size steel balls and heights and results are shown in the following table.

Review of Findings

- (1) CRODON PLUS Wear Plate showed the highest resistance to impact.
- (2) An impact angle of 45° is preferable to a vertical drop or normal impact with the plate.
- (3) CRODON PLUS Wear Plate can handle severe impacts -- a quarter ton dropped from one inch is likely to only cause a dent without chip-out of material.

Maximum Drop Height in Feet for Steel Ball to Cause Pinpoint Chip

	CRODON Standard Plate, 90°	CRODON Standard Plate, 45°	CRODON PLUS Plate, 90°
1 oz	94.4	227.0	1060.0
8 oz	11.8	28.4	132.5
1 lb	5.9	14.2	66.3
5 lb	1.2	2.8	13.3
10 lb	0.6	1.4	6.6
15 lb	0.4	0.9	4.4
20 lb	0.3	0.7	3.3
25 lb	0.2	0.6	2.7
50 lb	0.1	0.3	1.3
75 lb	0.1	0.2	0.9
100 lb	0.1	0.1	0.7
500 lb	0.0	0.0	0.1



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