



# DURHAM - DUPLEX

SHEFFIELD - ENGLAND

Industrial Blade, Machine Knife and Hand Knife Manufacturers

Razor Sharp since 1910

## LONG LIFE Razor Blades

Long life, low friction slitting solutions for short and long runs, single or multiple blade heads in all the popular razor designs to cover all your film and foil manufacturing requirements.

**1 CARBON STEEL TiN COATED** industrial blades offering a low cost improvement to the original steel blade with small improvement to life and friction.

**2 CARBON STEEL CERAMIC COATED** industrial blades offering a reasonable improvement in both cut quality, blade life and friction at a modest price and retaining the flexibility of an original carbon steel blade.

**3 ENDURIUM™ COATED** industrial blades, produced from CrW (chromium tungsten) alloy, seriously out-perform any other 'steel' blade on the market.

This translates to a 25% cost advantage, but more importantly, the frequency of blade replacement drops by a factor of four.

Less money spent on blades, less machine down-time and less scrap produced gives a supreme saving.

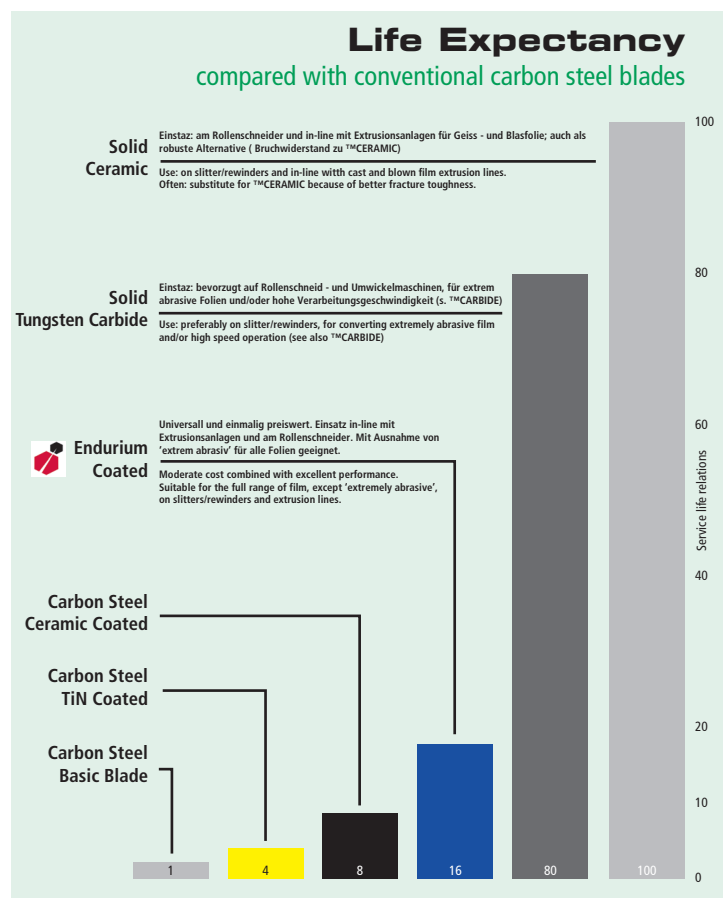
Furthermore, the flexibility of the alloy substrate, with its fine ceramic coating, gives maximum fracture resistance even at 62 Rc hardness.

**4 SOLID TUNGSTEN CARBIDE** has only marginally lower life expectancy and cost than ceramic blades (approx, 15 to 20% on both points). However, the fracture resistance is much improved and is often used to replace ceramic in more demanding situations - short run, stop start operations or on older machines where uniformity of roll is not guaranteed.

#### Carbide highlights:

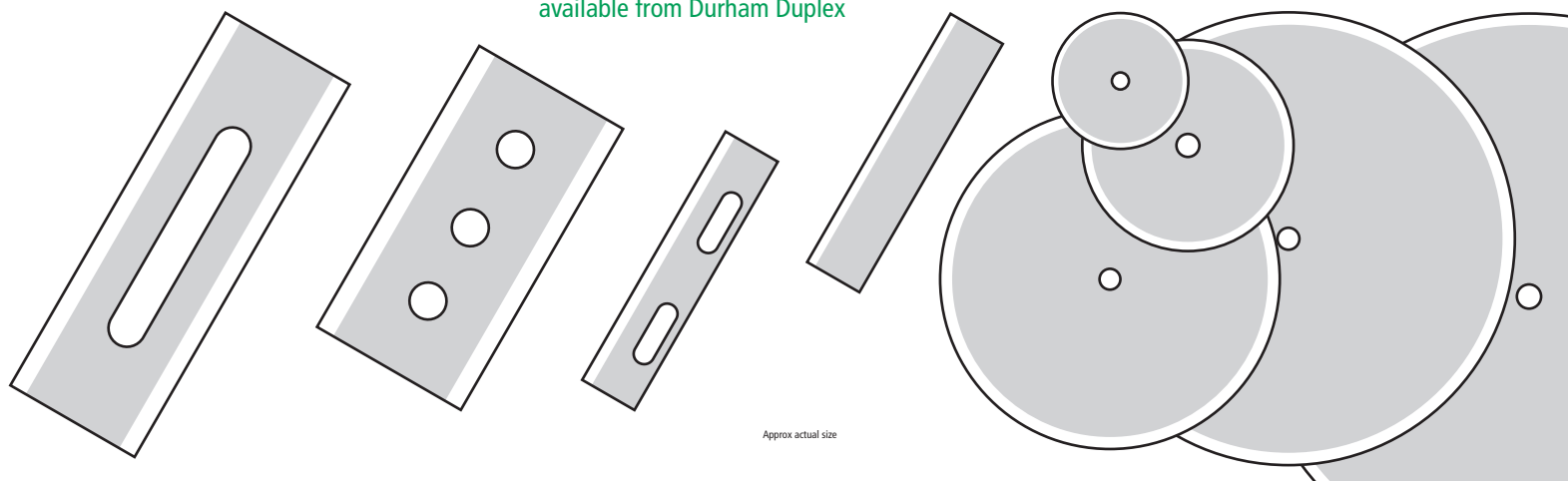
COF only moderately higher than that of ceramic, good corrosion resistance, less likely to break in demanding situations.

Carbide is a tungsten carbide/cobalt powder material (WC/Co) Rockwell hardness HRC 80, fracture resistance good.


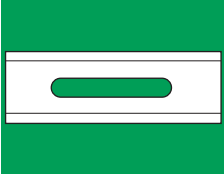
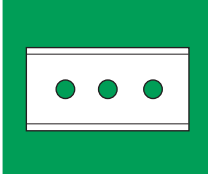
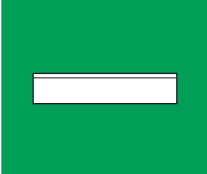

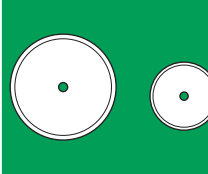


### Razor Blade Range

available from Durham Duplex



Approx actual size

<b>SOLID CERAMIC</b> Voll-Zirkonkermatic (ZrO <sub>2</sub> ) Solid Zirconia Ceramic (ZrO <sub>2</sub> )	0.38mm/0.015" 0.63mm/0.025"	0.3mm/0.012"	0.25mm/0.010" 0.63mm/0.025"		ø18mm, ø28mm, ø45mm, ø60mm, ø75mm
<b>SOLID CARBIDE</b> Voll-Wolframcarbid (WC) Solid Fine Grain Tungsten Carbide	0.38mm/0.015"	0.3mm/0.012"	0.25mm/0.010"		
<b>ENDURIUM™ COATED</b> HSS Werkzeugstahl, keramikbeschichtet HSS Tool Steel, Ceramic Coated	0.25mm/0.010" 0.35mm/0.014"	0.15mm/0.006" 0.2mm/0.008"		0.25mm/0.010"	
<b>CARBON STEEL CERAMIC COATED</b> 1% Carbon Razor Steel Ceramic Coated	0.28mm/0.015"	0.1mm/0.004" 0.15mm/0.006" 0.2mm/0.008" 0.3mm/0.012"		0.25mm/0.010"	
<b>CARBON STEEL TIN COATED</b> 1% Carbon Razor Steel Titanium Nitride Coated	0.28mm/0.015"	0.1mm/0.004" 0.15mm/0.006" 0.2mm/0.008" 0.3mm/0.012" 0.4mm/0.016"		0.25mm/0.010"	
					
	Slotted - Schlitzloch 57mm x 19mm	3-hole - 3-Loch 44mm x 22mm	Injector - Injektor 38mm x 8mm	Injector - Injektor 38mm x 8mm	Circular - Rundklinge ø18, 28, 45, 60, 75mm

**5 SOLID CERAMIC** - By far the best performance of any slitting blade with excellent life expectancy, insignificant coefficient of friction and therefore superior slit quality. Furthermore we only use HIP-treated ceramic (hot isostatic pressed) so our blades offer much improved hardness and fracture resistance when compared to cheaper ceramic blades.

**Key ratios compared to TIN-coated carbon steel blades:**  
Life expectancy 25 to 1 - price/blade also approx 25 to 1.

**Ceramic highlights:**  
Frequency of blade replacement drops by a factor of 25, resulting in reduced handling, down-time and scrap production.

- Chemically inert, ie. does not corrode, which makes it ideal for clean room use.
- Has the lowest coefficient of friction (COF) of all industrial blades giving a cleaner slit edge and minimal heat generation.

Ceramic essentially consists of zirconia (ZrO<sub>2</sub>) - Rockwell hardness HRC 75, fracture resistance low.

#### 1 TiN-BESCHICHTUNG KOHLENSTOFFSTAHL

Eine kostengünstige verbesserung der original stahl klinger.

#### 2 KERAMIKBESCHICHTUNG KOHLENSTOFFSTAHL

Eine lange anhaltende stahl klinger für alle nicht-abrasiv-folien.

**3 INDUSTRIEKLINGEN ENDURIUM™ COATED** aus CrW-le-giertem (Chrom Wolfram) Stahl, mit keramikbeschichteten Schneiden, sind weltweit die weitaus besten Klingen aus 'Stahl'.

Nebst einem Kostenvoreil von 25% verringert sich die Zahl der Eingriffe in die laufende Produktion für Klingenwechsel um den Faktor 4.

Diese Verbindung von positiven Eigenschaften - geringere Kosten für die Klingen, weniger Verlust an Produktionszeit und weniger Ausschuss - bildet eine wesentliche Kostenersparnis.

Aus der Materialwahl resultiert, bei einem Härtewert von Hrc 62, ein sehr hoher Bruchwiderstand.

**4 VOLL CARBID** ist nach Standzeit und Preis dicht hinter Ceramic angesiedelt (Richtwert 80-85%). Carbide hat deutlich bessere bruchfestigkeit und wird deswegen auch anstelle von CERAMIC™ eingesetzt.

**Weitere Unterschiede zu Ceramic:**

- Gleitreibungskoeffizient etwas höher
- Korrosionsbeständigkeit weniger ausgeprägt

**Werkstoff:**

Legierung aus Wolframcarbid und Kobalt (WC/Co) Rockwell-Härte HRC 80, Bruchwiderstand: gut.

**5 VOLL CERAMIC** ist nach Kriterien von Standzeit, Schärfe und damit Güte der Schnittkanten, die beste aller handelsüblichen Klingen.

Zur Optimierung der physikalischen Eigenschaften sind alle Klingen HIP-veredelt (heiss isostatisch pressbehandelt). Gegenüber Billigvarianten von Keramiklingen sind damit Bruchwiderstand und Härte wesentlich besser.

**Typische Werte gegenüber Klingen aus Kohlenstoffstahl mit TiN-Beschichtung:**  
Standzeit 25-fach, Preis/Klinge ca. 25 fach.

**Die wesentlich Vorteile von Ceramic sind**

- um den Faktor 25 weniger Klingenwechsel
- chemisch inert, d.h. rostet nich (erfüllt clean room Bedingungen)
- niedrigster Gleitreibungswert aller Industrieklingen

**Werkstoff:**

Zirkonoxid (ZrO<sub>2</sub>) - Rockwell-Härte HRC 75, Bruchwiderstand: niedrig



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