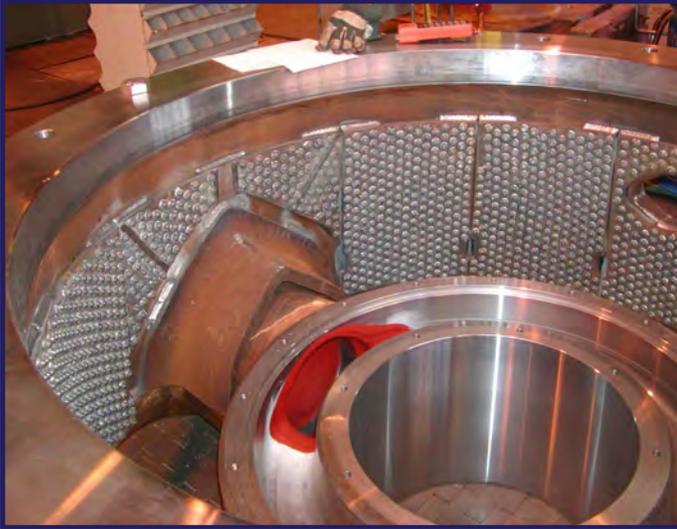


**TUFFSTUDDS** ©

**WEAR PROTECTION SYSTEM**

Powered by **CRD**  
**CREIGHTON**

**Increasing Wear Life and Reducing Downtime with TUFFSTUDDS®**

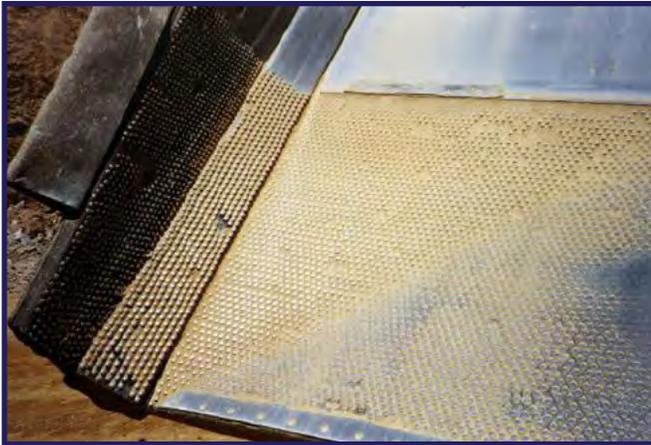


**Superb Wear and  
Abrasion Protection for  
Mining and Earth Moving  
Equipment**



# Proven Technology with Excellent Performance

**E**quipment for mining, earth-moving and related industries are subject to severe wear and abrasion. TUFFSTUDDS® Wear Protection System protects this equipment cost effectively, increasing efficiency and service life. An excellent performer in the roughest of environments.



## What are TUFFSTUDDS®?

TUFFSTUDDS® are chromium carbide-laden, wear-resistant alloy studs that are readily applied onto alloy castings or plate. In most applications, the applied pattern becomes embedded with mineral debris, causing a dead bed effect over 70% of the area, allowing material to wear on itself. The TUFFSTUDDS® Wear Protection System has proven to be an outstanding performer in the roughest environments.

The applications for TUFFSTUDDS® is as extensive as your imagination. Use TUFFSTUDDS® to provide wear protection and reap the benefits of longer service life for your valuable ground-engaging and process equipment.

TUFFSTUDDS® are normally applied in a close, dense, ferrule-to-ferrule pattern. They are placed in offsetting rows to optimize dead-bedding, which prevents washing out of the base material.

## Application Rate Comparison

Manual  
Standard Rod

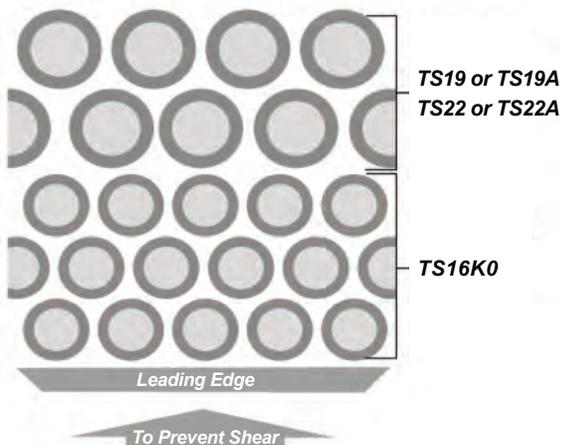
2 lb  
0.9 kg

Wire

8 lb  
3.6 kg

TUFFSTUDDS

18 lb  
8.1 kg



Size	m <sup>2</sup>	ft <sup>2</sup>
TS16	1500	140
TS19	1075	100
TS22	750	75



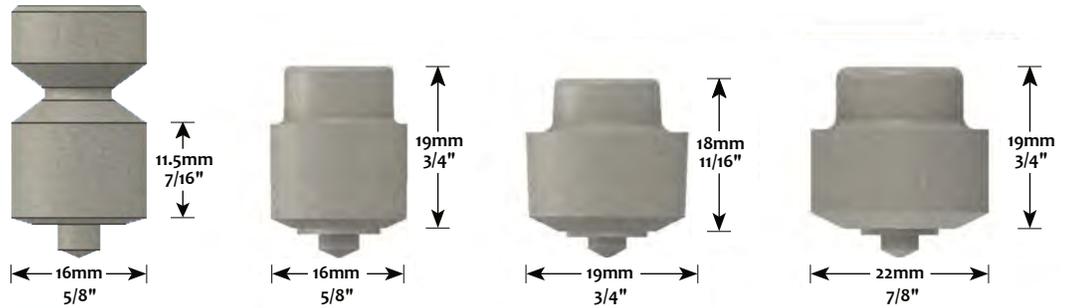
# Designed to Suit a Variety of Applications

TUFFSTUDDS Wear Protection System combines abrasion and impact resistance. TUFFSTUDDS are easily and economically applied to mining and construction equipment using a light weight stud welding gun. TUFFSTUDDS should always be applied in a closely packed (ferrule to ferrule), staggered pattern to minimize “washing out” between the rows.

TUFFSTUDDS are available in two alloys to suit different wear environments:

Standard Alloy TUFFSTUDDS are designed for use in high impact conditions.

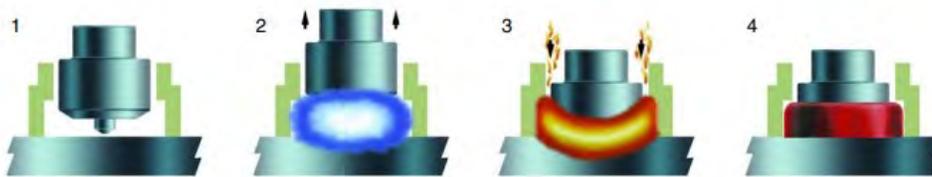
Abrasion Alloy TUFFSTUDDS are designed for low impact, severe sliding abrasion conditions.



	SERIES 16	SERIES 19	SERIES 22
<b>Standard Alloy</b>	Medium-high carbon chromium carbide in an iron-molybdenum alloy matrix		
<b>Series Number</b>	TS16KO TS16	TS19	TS22
<b>Hardness (HRC)</b>		48-52	
<b>Ductility (in compression)</b>		13-15%	
<b>Recommended Use</b>	Very good abrasion and excellent impact resistance		
<b>Abrasion Alloy</b>	High carbon chromium carbide in an iron alloy matrix		
<b>Series Number</b>	TS16A	TS19A	TS22A
<b>Hardness (HRC)</b>		55-60	
<b>Ductility (in compression)</b>		1-3%	
<b>Recommended Use</b>	Excellent abrasion resistance and good impact resistance; recommended for applications with moderate impact and heavy sliding, abrasion wear		
<b>Quantity per carton</b>	500 Studs	250 Studs	250 Studs
<b>After Weld Height</b>	10-12mm 16-17mm	14-15mm	17-18mm

TS16KO = Low Profile Knock-Off design

## A Reliable Process, Simple to Apply:



- 1) A TUFFSTUDD® is positioned in contact with the work surface.
- 2) The operator pulls the trigger on the stud welding gun, initiating the weld arc and automatically lifting the stud.
- 3) The weld current melts a portion of the stud and the work surface. After the preset arc duration, the TUFFSTUDD® is plunged into the molten pool.
- 4) The ceramic arc shield (ferrule) retains the molten metal in the weld area for the maximum strength and safety, and the TUFFSTUDD® is metallurgically bonded to the work surface at the weld interface.



# The Many Benefits of TUFFSTUDDS Wear Protection

Convenience, speed of application and longer life are synonymous with TUFFSTUDDS Wear Protection and the applications for TUFFSTUDDS are as extensive as your imagination. Try TUFFSTUDDS and discover the benefits of reduced operating costs, lower maintenance costs and increased service life for your valuable ground-engaging and process equipment.



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*With over 30 years  
of wear protection*

[www.tuffstudds.com](http://www.tuffstudds.com)