

Wearshield® 15CrMn

Hardfacing electrode

Classification

DIN 8555-83 : E7-UM-250-KP

General Description

A rutilic hardfacing electrode that exhibits excellent arc characteristics
Easy slag detachability, good arc restriking and low spatter
The electrode coating permits out of position welding

Application

Application Wearshield 15CrMn produces a premium austenitic chromium-manganese deposit. The term premium is used because the weld metal has sufficient alloy content to produce a single pass austenitic deposit on ordinary carbon steel. The deposit rapidly work hardens under impact making it particularly suitable for applications of high impact and gouging, coupled with moderate abrasion. In addition to surfacing, the high crack resistance of this alloy design makes Wearshield 15CrMn an ideal electrode for joining manganese steel to itself or carbon steels with minimal risk of centreline cracking.

Typical applications include:

Railroad frogs
Track ends
Crusher hammers and screens
Earth moving equipment
Rebuilding of austenitic manganese plates and components
Construction equipment



Mechanical properties, all weld metal

Typical hardness values

As deposited	18 - 24 HRc (210-250 HB)
Work hardened	40 - 50 HRc (375-490 HB)

Packaging, available sizes and identification

	Diameter (mm)	3.2	4.0	4.8
	Length (mm)	355	355	455
Unit: Box	Pieces / unit (nominal)	49	33	24
	Net weight (kg)	2.5	2.5	2.5

Identification Imprint: Wearshield 15CrMn Tip colour: none

Wearshield® 15CrMn: rev. EN 15

Wearshield® 15CrMn

Additional information

When welding with Wearshield 15CrMn a short arc or contact drag technique is preferred. The weld width should be limited to 12-20mm for all electrode diameters. Narrow stringer beads are preferred for edge and corner build up.

All work-hardened base material and previously deposited material should be removed prior to applying a new deposit, since such areas are prone to embrittlement and possible cracking.

No preheat is required on austenitic manganese steels although a preheat of between 150-200°C maybe necessary on carbon and low alloy steels to prevent heat affected zone cracking.

It is important to avoid excessive heat build up in the base material. High heat input welds and interpass temperatures above 260°C should be avoided as this can cause embrittlement.

There is no definite limitation to the number of passes that may be deposited, however, it is good practise to peen each pass immediately after welding to minimise internal stresses and possible distortion and cracking.

Wearshield 15CrMn deposits workharden rapidly making them difficult to machine. For best results carbide or ceramic cutting tools and rigid tooling should be used. Grinding can also be successfully employed.

For applications involving severe impact and abrasion, a buildup of Wearshield 15CrMn coupled with a single pass of Wearshield 60 or Lincore 60-O should be employed.

The Wearshield 15CrMn deposit can not be cut using the Oxy-fuel process due to the high chromium content, however, plasma arc and air carbon arc processes are appropriate.

Welding positions



ISO/ASME PA/1G PB/2F PC/2G PF/3G up PE/4G

Current type

AC / DC electr. +

Chemical composition (w%), typical, all weld metal

C	Mn	Si	Cr
0.35	14.0	0.6	15.0

Structure

In the as deposited condition, the microstructure consists of a soft chromium manganese alloy austenite which rapidly work hardens under impact loading

Calculation data

Sizes Diam. x length (mm)	Current range (A)
3.2 x 355	140 - 160
4.0 x 355	190 - 210
4.8 x 355	220 - 250

Complementary products

Complimentary products include flux cored wire Lincore® 15CrMn