Wearshield® 60

Severe Abrasion

Key Features

- Designed to resist severe abrasion
- It exhibits higher alloy and higher abrasion resistance than Wearshield® ABR, Wearshield® 44 or Wearshield® ME
- Can be used on carbon, low alloy, stainless, and manganese steels
- Deposits consist of primary carbides in a matrix of austenite-carbide eutectic
- Deposits should be limited to two layers

Typical Applications

- Conveyor screws
- Grader blades
- Crusher rolls, plates and jaws
- Sleeves
- Brick and coke machinery

Welding Positions

Flat & Horizontal

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	10 lb (4.5 kg) Carton 40 lb (18.1 kg) Master CartonCarton
1/8 (3.2)	14 (350)	ED022010
5/32 (4.0)	14 (350)	ED022011
3/16 (4.8)	14 (350)	ED022012

MECHANICAL PROPERTIES[1]

Rockwell Hardness (R_c)	
1 Layer	2 Layers
57 - 60	60 - 62

DEPOSIT COMPOSITION[1]

On Carbon Steel	%C	%Mn	%Si	%Cr	%Mo	%V
2 Layers	5.0	0.80	1.0	23.0	2.3	0.6

TYPICAL OPERATING PROCEDURES

	Current (Amps)		
Polarity[2]	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)
DC+	100 - 140	130 - 180	210 - 250
AC	110 - 150	140 - 200	230 - 270

NOTE: The deposit is not machinable or forgeable. Cooling rate does not significantly influence abrasion resistance. Deposit will usually cross check.

If more than two-layer build-up is required, use Wearshield® 15CrMn (preferred), Wearshield® BU or Wearshield® BU30 for the preliminary layer or layers under Wearshield® 60. On manganese steel, use Wearshield® Mangjet® or Wearshield® 15CrMn as build-up. Preheat is not generally necessary except to be sure that work is in room temperature range 25° - 45ºC (75° - 100ºF). However, preheat of 120° - 200ºC (250° - 400ºF) may be necessary to prevent heat affected zone cracking on high carbon steel or low alloy steel base metals. If more than two layers must be used, or if cross checks must be eliminated, preheat to 650ºC (1200ºF).

Prolonged or repeated heating of manganese steel base metal over 260ºC (500ºF) can cause embrittlement and spalling. Avoid base metal embrittlement by:

- Limiting the temperature 260ºC (500ºF) at distances of 13 mm (1/2 in) away from the weld.
- Minimizing the time at elevated temperatures.

The correct welding technique is a vertical electrode with a 3.2 - 4.8 mm (1/8 - 3/16 in) arc length. The large ball on the end of the electrode should never touch the puddle. This technique will give a smooth transfer, low spatter and smooth bead.

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume. BEFORE USE, READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

[1]Composition and properties depend upon dilution. Single layer deposit properties depend upon base metal and/or build-up material. [2]Preferred polarity is listed first.

Material Safety Data Sheets (MSDS) and Certificates of Conformance are available on our website at www.lincolnelectric.com

TEST RESULTS

Test results for mechanical properties, deposit or electrode composition and diffusible hydrogen levels were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, plate chemistry and temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended application.

CUSTOMER ASSISTANCE POLICY

The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.

THE LINCOLN ELECTRIC COMPANY
22801 St. Clair Avenue • Cleveland, OH • 44117-1199 • U.S.A.
Phone: +1.216.481.8100 • www.lincolnelectric.com

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THE WELDING EXPERTS®

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