Lincore® 33

**GENERAL DESCRIPTION**

Delivers tough machinable deposits for build-up or final overlay intended for metal-to-metal wear
Use for build-up of steel mill parts such as rougher couplings
Build-up deposit on carbon steel and low alloy steel base metals
It is ideal for rebuilding worn parts to near final dimensions before applying final hardfacing layers which are more wear resistant
Unlimited layer

**CHEMICAL COMPOSITION (W%), TYPICAL, ALL WELD METAL**

<table>
<thead>
<tr>
<th>C</th>
<th>Mn</th>
<th>Si</th>
<th>Cr</th>
<th>Al</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.15</td>
<td>2.0</td>
<td>0.7</td>
<td>2.0</td>
<td>1.6</td>
</tr>
</tbody>
</table>

**MECHANICAL PROPERTIES, TYPICAL, ALL WELD METAL**

Typical hardness values
Layer 1 21-30 HRc (230-290HB)
Layer 2 26-32 HRc (260-300HB)
Layer 3 28-34 HRc (250-330HB)
Welded on Mild Steel Plate (12mm)

**STRUCTURE**

In the as welded condition the microstructure consists mainly of a mixture of ferrite and bainite

**PACKAGING AND AVAILABLE SIZES**

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>1.1</th>
<th>1.6</th>
<th>2.0</th>
<th>2.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.35 kg coil 14C</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.34 kg coil 22RR</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.68 kg coil 50C</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
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APPLICATION

Lincore 33 produces a crack-free wear resistant deposit with a hardness range of 25-35 HRc depending on material dilution and number of layers. Designed primarily as a final overlay on steel parts which need to be machined or as a build-up layer of other hardfacing materials. It is particularly suitable of conditions of moderate abrasion and friction, coupled with resistance to impact such as applications involving rolling, sliding and metal to metal wear.

Typical applications include:

Buildup:
- Shovel and bucket lips
- Pump impellers and housings
- Dredge and shovel bucket teeth
- Mill and crushing hammers

Hardfacing:
- Crane and mine car wheels
- Tractor rolls, idlers, links and sprockets
- Cable drums
- Roller guides
- Shafts

ADDITIONAL INFORMATION

All work-hardened base material should be removed prior to applying Lincore 33 to prevent embrittlement and cracking.

Preheat and postweld heat treatment is not generally necessary on C/Mn steels, however, preheat up to 260°C may be necessary on high carbon steels or large complex or restrained components.

The deposited weld metal can be machined to exact dimensions using high speed or carbide cutting tools.

There is no limit to the deposit build-up with this electrode.

CALCULATION DATA

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>Wire Feed Speed (cm/min)</th>
<th>Current (A)</th>
<th>Arc Voltage (V)</th>
<th>Deposition rate (kg/h)</th>
<th>Efficiency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>5.1-12.7</td>
<td>80-150</td>
<td>25-31</td>
<td>1.5-3.9</td>
<td>80-85</td>
</tr>
<tr>
<td>1.6</td>
<td>3.8-8.9</td>
<td>125-225</td>
<td>26-32</td>
<td>21-5.0</td>
<td>79-84</td>
</tr>
<tr>
<td>2.0</td>
<td>3.2-6.4</td>
<td>200-325</td>
<td>23-29</td>
<td>31-6.1</td>
<td>87-86</td>
</tr>
<tr>
<td>2.8</td>
<td>3.4-6.0</td>
<td>360-470</td>
<td>26-30</td>
<td>5.7-9.6</td>
<td></td>
</tr>
</tbody>
</table>

COMPLEMENTARY PRODUCTS

Wearshield® BU30