

1. Scope

Covered arc welding electrodes, manufactured by Lincoln Electric Europe, delivered in their original packaging.

The packaging consists of either:

- A** cardboard boxes in outer carton;
- B** foil protected cardboard boxes in outer carton;
- C** plastic (PE) boxes with sealed cap, suitable for reclosing;
- D** hermetically sealed metal tin (LINC CAN™) in outer carton;
- E** hermetically vacuum sealed foil packs (MINI-PACK) in outer carton;
- F** hermetically vacuum sealed foil packs (Sahara ReadyPack®) in outer carton.

Electrode grades	Packaging type					
	A	B	C	D	E	F
Mild steel	X	X	X	X		X
Low alloy high strength steel		X		X		X
Low temperature fine grain steel		X		X	X	X
Creep resistant steel		X				X
Stainless steel		X	X	X	X	X
Duplex and Superduplex stainless steel		X				X
Nickel base electrodes			X			X
Hardfacing-; maintenance and repair electrodes			X			

2. Storage

2a. Storage of electrodes in cardboard boxes requires humidity and temperature controlled storage areas.

General recommended storage conditions include:

- temperature 17-27°C, relative humidity ≤60%
- temperature 27-37°C, relative humidity ≤50%.
- electrode boxes may be stored in layers to a maximum of 7.

2b. Plastic boxes require storage conditions suitable to cardboard boxes

2c. No temperature and humidity requirements are applicable for electrodes in Linc-Can Mini-Pack and Sahara ReadyPacks, providing that (vacuum) seal is present in undamaged packs.

General recommended storage conditions include:

- Sahara ReadyPacks & Mini-Pack in outer cartons may be stored in layers to a maximum of 7;
- Linc Can in outerboxes may be stored in layers to a maximum of 5;
- Prevent damage and heating above 60°C for Linc-Can and Sahara ReadyPacks;
- Prevent damage and heating above 40°C for Mini-Pack.

3. Handling

3a. Re-drying and subsequential holding, as recommended in table 1, is required for products in the following conditions

- rutile electrodes, being humidified for any reason;
- basic low hydrogen electrodes in cardboard boxes;
- basic low hydrogen electrodes, returned from shop floor or damaged Sahara ReadyPacks, Mini-Pack or Linc Can;
- stainless steel and Ni-base electrodes after long and unknown storage conditions (deviating from recommendations);
- Wearshield electrodes in plastic (PE) boxes, stored for more than 1 year under conditions as described under section 2a. or earlier when the condition deviates from those recommended.

3b. Electrodes in Sahara ReadyPack and Linc-Can can be used without re-drying, providing that vacuum or seal is present in the undamaged packaging. The electrodes can be consumed in the as received condition, direct from the packaging within a period of 8 hours after opening under the conditions of ≤35°C and ≤90% RH, with the electrodes remaining in the opened packaging and protected against excessive conditions as condensation, rain, etc. This time can be extended to 12 hours under the conditions of ≤27°C and ≤70% RH. Once opened Linc-Cans should be closed during welding operations using the plastic lid that is supplied with the tin. If vacuum or seal is not present, the electrodes shall follow the re-dry and holding procedure as recommended in table 1 for the EMR-Sahara® Range. Electrodes in Mini-Pack can be used without re-drying, provided that the vacuum is present in the undamaged packaging. The electrodes can be consumed in the as received condition, direct from the packaging within a period of 4 hours after opening under the conditions of ≤35°C and ≤90% RH, with the electrodes remaining in the opened packaging and protected against excessive conditions as condensation, rain, etc

REDRYING AND HOLDING RECOMMENDATIONS

Covered electrodes that have suffered from serious water and moisture contamination, or have been exposed to the atmosphere over long periods of time cannot be restored in their original condition and should be discarded.

Electrode product groups	Re-drying Time (h)*	Temp [°C]	Holding
Mild steel: - rutile E6013 - rutile E6012, E7024	0.5-1h 1-2h	70-80 100-120	Cabinet 10-20°C above ambient temperature
- basic low hydrogen (HDM <8 ml/100g) - basic very low hydrogen*	2-6h 2-6h	250-375 325-375	a. Holding oven max. one year at 120-180°C b. Quiver max. 10h at RT-125°C (see illustration fig. 1) c. Plastic (PE) box max. 2 weeks workshop conditions
Low alloy: - basic very low hydrogen**	2-6h	325-375	
Hardfacing-; maintenance & repair electrodes			
Stainless steel: - non EMR-SAHARA electrodes - EMR-SAHARA range	1-6h 1-6h	200-300 125-300	Holding oven unlimited time at 75-125°C quiver max. 10h at RT-125°C
Ni-base	1-6h	200-300	

* Re-drying can be repeated twice within the indicated max. time of 6h. Re-drying of electrodes should be carried out by taking them out of the packaging and place the electrodes in approx. 3 cm thick layers in a temperature controlled air-circulation oven.

** If these EMR-SAHARA electrodes are redried a maximum content HDM of ≤5ml/100g is valid.

Figure 1:

Recommended handling procedure of EMR-SAHARA® electrodes after removal either from a regular cardboard box or vacuum sealed Sahara ReadyPack®

