

## SAUDI ARABIAN OIL COMPANY

TABLE FOR FIELD DETERMINATION OF HEAT INPUT VALUE, H,  
FOR WELDING DONE WITH MANUAL ELECTRODES

| WELD BEAD LENGTH IN MILLIMETERS<br>PER MILLIMETER OF ELECTRODE BURNED OFF | ELECTRODE<br>DIAMETER,<br>mm | HEAT INPUT, KJ/m |                |                |                |                |                |                |                |
|---------------------------------------------------------------------------|------------------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                                                                           |                              | 600              | 800            | 1000           | 1200           | 1400           | 1600           | 1800           | 2000           |
|                                                                           | 2.4                          | 0.53<br>(0.62)   | 0.40<br>(0.46) | 0.32<br>(0.37) | 0.27<br>(0.31) | 0.23<br>(0.26) | -<br>(0.23)    | -<br>( - )     | -<br>( - )     |
|                                                                           | 3.2                          | 0.87<br>(1.01)   | 0.65<br>(0.76) | 0.52<br>(0.60) | 0.44<br>(0.50) | 0.37<br>(0.43) | 0.33<br>(0.38) | 0.29<br>(0.34) | 0.26<br>(0.30) |
|                                                                           | 4.0                          | 1.35<br>(1.57)   | 1.01<br>(1.18) | 0.81<br>(0.94) | 0.67<br>(0.79) | 0.58<br>(0.67) | 0.50<br>(0.59) | 0.45<br>(0.52) | 0.40<br>(0.47) |
|                                                                           | 4.8                          | 2.12<br>(2.46)   | 1.59<br>(1.84) | 1.27<br>(1.48) | 1.06<br>(1.23) | 0.91<br>(1.05) | 0.79<br>(0.92) | 0.71<br>(0.82) | 0.64<br>(0.74) |
|                                                                           | 6.4                          | -<br>( - )       | 2.53<br>(2.99) | 2.02<br>(2.40) | 1.68<br>(2.00) | 1.44<br>(1.71) | 1.26<br>(1.50) | 1.12<br>(1.33) | 1.01<br>(1.20) |

**NOTE:** RATIOS IN PARENTHESES ARE FOR TYPE E-XX18 LOW HYDROGEN ELECTRODES ONLY. THE OPEN RATIOS ARE FOR CELLULOSIC ELECTRODES AND FOR LOW HYDROGEN ELECTRODES OF THE TYPES E-XX15 AND E-XX16.

**EXAMPLE:** A WELDER USING A 3.2mm DIAMETER CELLULOSIC ELECTRODE LAYS DOWN A WELD BEAD 65mm LONG FOR EVERY 100mm OF ELECTRODE BURNED OFF. THE RATIO OF WELD BEAD LENGTH PER mm OF ELECTRODE BURNED IS  $65/100=0.65$ . FROM THE TABLE IT IS SEEN THAT THE HEAT INPUT, H, IS 800 KJ/m. IF THE ELECTRODE HAD BEEN A TYPE E-7018, THE HEAT INPUT WOULD HAVE BEEN APPROXIMATELY 900 KJ/m (BY INTERPOLATION).

**NOTE:**

I. GENERAL REVISION OF AD-036451 & AD-036452 THAT COMBINES THESE TWO, FORMERLY SEPARATE DRAWINGS INTO ONE DRAWING.  
CHANGED DRAWING SIZE FROM "D" TO "E".

|                                                                                                                    |                                                      |       |     |
|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------|-----|
| APPD.                                                                                                              |                                                      |       |     |
| CERT.                                                                                                              |                                                      |       |     |
| CHKD.                                                                                                              |                                                      |       |     |
| DESCRIPTION                                                                                                        | DRAWING DIGITIZED INTO CADD DATABASE WITHOUT CHANGES |       |     |
| JO/EWO                                                                                                             |                                                      |       |     |
| BY                                                                                                                 |                                                      | ESSD  | JVV |
| DATE                                                                                                               |                                                      | JUN92 |     |
| NO.                                                                                                                |                                                      | 02    |     |
| REVISIONS                                                                                                          |                                                      |       |     |
| DRAWN<br>BY _____<br>DATE _____<br>CHKD.<br>BY _____                                                               |                                                      |       |     |
| OPRG. DEPT.<br><br>BY _____<br>DATE _____                                                                          |                                                      |       |     |
| ENG. DEPT.<br><br>BY _____<br>DATE _____                                                                           |                                                      |       |     |
| APP'D. FOR<br>CONSTR.<br><br>BY _____<br>DATE _____                                                                |                                                      |       |     |
| CERTIFIED<br><br>BY _____<br>DATE _____                                                                            |                                                      |       |     |
| THIS DRAWING IS NOT<br>TO BE USED FOR<br>CONSTRUCTION OR FOR<br>ORDERING MATERIAL<br>UNTIL CERTIFIED AND<br>DATED. |                                                      |       |     |

| DRAWING TITLE                                                                              | PLANT NO. | INDEX | DRAWING NO. | SHT. NO. | REV. NO. |
|--------------------------------------------------------------------------------------------|-----------|-------|-------------|----------|----------|
| PREHEAT LEVELS FOR WELDING CARBON STEELS<br>(INCLUDES LOW HYDROGEN PROCESSES)<br>STD. DWG. | 990       | W     | AE-036451   | 008      | 02       |
| METRIC                                                                                     | JO/EWO-   |       |             |          |          |