

# Amera-Braze<sup>®</sup> 420/520

## WELDING INSTRUCTIONS



Amera-Braze 420 and 520 Plate may be welded by any of the conventional processes, such as SMAW, GMAW and SAW, provided proper precautions and good shop practices are employed. The following procedures are recommended.

### Thermal Cutting

Amera-Braze 420 and 520 plates can be thermally cut with conventional oxy-fuel and plasma cutting techniques. The minimum plate temperature prior to thermal cutting should be +60 degrees for both grades. It is further recommended the Amera-Braze 520 plates greater than 1" (25.4 mm) thick be pre-heated to +300° F to prevent edge cracking.

### Weldability

**Welding guidelines** for Amera-Braze 420 and 520 are summarized on the following page. These guidelines were developed using the "Y" groove weld ability test specimen. For joints under less restrained conditions, some fabricators have found that lower preheat temperatures may be used.

- All tables must be consulted and the higher pre-heat value used.
- Pre-heat temperature based on AMAW process E7018 electrode.
- E7018 electrodes must be stored in an oven at 250° F +/- 25° F. Maximum exposure: 4 hours out of the can or out of the oven.
- Pre-heat minimum temperatures may be reduced by 50° F (but no less than 50° F) using GMAW process, ER70S-3 electrode and Ar-Co<sub>2</sub> gas.
- Maximum pre-heat should be 400° F to retain hardness properties.
- 35 KJ/inch represents approximately a ¼" fillet weld (SMAW).

### Preparation

- Joints should be prepared by machining and grinding with good fit-up.

### Pre-heating

- A minimum pre-heat of 60° F should be used. A maximum inter-pass temperature of +350° F should be observed to avoid softening of the base plate metal.

### Welding Practices

- Welding at ambient temperatures of 0° F or below is not recommended.
- To maintain original hardness, post weld heat treatment should not be applied to Amera-Braze Plate.

### Equipment

- Low hydrogen welding practices should be employed. Use only low-hydrogen consumables that have been properly stored and dried. Due to the nature of abrasion-resistant steels, welds and heat-affected zones may not match the hardness of the base metal.



## Amera-Braze® 420/520 Welding Pre-Heat Guide



### Amera-Braze® 420 ULTRA HIGH IMPACT ALLOY

Table 1 **Amera-Braze 420 Plate**  
Recommended Minimum Pre-heat (° F)

Combined Plate Thickness T1+T2+T3	Heat Input (KJ/inch)				
	30	35	40	45	> 45
1/2"	60	60	60	60	60
5/8"	60	60	60	60	60
3/4"	60	60	60	60	60
1"	60	60	60	60	60
1-1/4"	60	60	60	60	60
1-1/2"	60	60	60	60	60
2"	60	60	60	60	60
2-1/2"	60	60	60	60	60
3"	200	200	200	60	60
4"	250	250	250	200	200

### Amera-Braze® 520 ABRASION RESISTANT ALLOY

Table 2 **Amera-Braze 520 Plate**  
Recommended Minimum Pre-heat (° F)

Combined Plate Thickness T1+T2+T3	Heat Input (KJ/inch)			
	30	35	40	45
1/2"	200	200	200	60
5/8"	250	200	200	200
3/4"	200	200	200	200
1"	250	200	200	200
1-1/4"	300	250	200	200
1-1/2"	350	300	250	200
2"	400	350	300	200
2-1/2"	400	350	300	300
3"	400	400	350	350
4"	400	400	400	400

! Post-weld heat treatment should not be applied to Amera-Braze if the original hardness levels are to be maintained.