

# Aluminum 2319

## ◆ INTRODUCTION

Aufhauser Aluminum 2319 was developed as a filler metal for alloy 2219. It is widely used in high strength structural, aircraft and truck body applications where superior resistance, formability and/or electrical conductivity are required. Especially where superior resistance to stress corrosion cracking and excellent elevated temperature properties are desired. The alloy is heat treatable and provides higher strength and better ductility than the 4XXX filler alloys when welding 2XXX alloys.

## ◆ APPLICATIONS

- Welding filler wire for high strength structural, aircraft and truck body applications.

## ◆ GENERAL INFORMATION

- Heat treatable
- Principle alloying elements: Copper, Manganese, Vanadium, Zirconium, Titanium

## ◆ CHEMICAL COMPOSITION

| <u>Silicon</u>  | <u>Iron</u> | <u>Copper</u>    | <u>Manganese</u> | <u>Magnesium</u> | <u>Zinc</u> | <u>Titanium</u> | <u>Others</u> |              | <u>Aluminum</u>  |
|-----------------|-------------|------------------|------------------|------------------|-------------|-----------------|---------------|--------------|------------------|
|                 |             |                  |                  |                  |             |                 | <u>Each</u>   | <u>Total</u> | <u>Remainder</u> |
| 0.20            | 0.30        | 5.8-6.8          | 0.20-0.40        | 0.02             | 0.10        | 0.10-0.20       | 0.05          | 0.15         |                  |
| <u>Vanadium</u> |             | <u>Zirconium</u> |                  |                  |             |                 |               |              |                  |
| 0.05-0.15       |             | 0.10-0.25        |                  |                  |             |                 |               |              |                  |

Note: All values are maximum percentage, unless shown in range.

## ◆ PHYSICAL PROPERTIES

|                          |                          |
|--------------------------|--------------------------|
| Melting Range:           | 1010-1190°F              |
| Density, at 68°F:        | 0.100 lb/in <sup>3</sup> |
| Resistance to Corrosion: | D (Gen) C (SCC)          |
| Anodize Color:           | Golden                   |



## ◆ SPECIFICATIONS MEET or EXCEED

- AWS A5.10 (ER & R 2319)
- AMS 4191

## ◆ STANDARD SIZES AND DIAMETERS

| <u>Diameters</u>                  | <u>Package Form</u> |
|-----------------------------------|---------------------|
| .030, .035, 3/64, 1/16, 3/32, 1/8 | 4 & 12 in. Spools   |
| 1/16, 3/32, 1/8, 5/32, 3/16, 1/4  | Straight lengths    |

## ◆ TYPICAL MECHANICAL PROPERTIES OF GMAW GROOVE JOINT WELDS

| <u>BASE ALLOY</u> | <u>BASE ALLOY</u> |                  |                  | <u>AS WELDED</u> |                  |                  | <u>POST WELD HEAT TREAT AND AGE</u> |                  |                  |
|-------------------|-------------------|------------------|------------------|------------------|------------------|------------------|-------------------------------------|------------------|------------------|
|                   | <u>UTS (KSI)</u>  | <u>UYS (KSI)</u> | <u>ELONG (%)</u> | <u>UTS (KSI)</u> | <u>UYS (KSI)</u> | <u>ELONG (%)</u> | <u>UTS (KSI)</u>                    | <u>UYS (KSI)</u> | <u>ELONG (%)</u> |
| 2014-T6           | 70                | 60               | 13               | 43               | 28               | 5                | 60                                  | 46               | 5                |
| 2219-T81          | 66                | 51               | 10               | 35               | 26               | 3                | 55                                  | 38               | 7                |
| 2219-T87          | 72                | 64               | 10               | 37               | 33               | 4                | 56                                  | --               | 5.5              |

## ◆ TYPICAL ULTIMATE TENSILE STRENGTHS AT, SELECTED TEMPERATURES OF GMAW GROOVE JOINT WELDS

| <u>BASE</u>           | <u>FILLER</u> | <u>-100°F</u> | <u>100°F</u> | <u>300°F</u> | <u>500°F</u> |
|-----------------------|---------------|---------------|--------------|--------------|--------------|
| 2219-T37 <sup>1</sup> | 2319          | 36.0 KSI      | 35.0 KSI     | 31.0 KSI     | 19.0 KSI     |
| 2219 <sup>2</sup>     | 2319          | 55.0 KSI      | 50.0 KSI     | 38.0 KSI     | 22.0 KSI     |

NOTE: 1) As welded 2) Post weld heat treat and artificial age.



Aufhauser  
Corporation  
39 West Mall  
Plainview, NY 11803  
Telephone:  
516-694-8696  
800-645-9486  
Fax:  
516-694-8690

## Aluminum 2319

### ◆ TYPICAL GMAW PARAMETERS

| <u>WIRE<br/>DIAMETER<br/>(IN)</u> | <u>RANGE</u> |              | <u>BASE<br/>MATERIAL</u>      | <u>SUGGESTED</u> |              | <u>CONSUMPTION</u>     |                           |                                 |
|-----------------------------------|--------------|--------------|-------------------------------|------------------|--------------|------------------------|---------------------------|---------------------------------|
|                                   | <u>AMPS</u>  | <u>VOLTS</u> | <u>THICKNESS<br/>(INCHES)</u> | <u>AMPS</u>      | <u>VOLTS</u> | <u>WIRE FEED (IPM)</u> | <u>GAS FLOW<br/>(CFH)</u> | <u>100 FT OF<br/>WELD (LBS)</u> |
| 0.030                             | 60-170       | 13-24        | 0.062                         | 90               | 22           | 260                    | 25                        | 1.5                             |
|                                   |              |              | 0.094                         | 110              | 23           | 320                    |                           |                                 |
|                                   |              |              | 0.125                         | 130              | 24           | 380                    |                           |                                 |
|                                   |              |              | 0.187                         | 150              | 24           | 430                    |                           |                                 |
|                                   |              |              | 0.250                         | 175              | 25           | 510                    |                           |                                 |
| 0.035                             | 70-180       | 15-26        | 0.062                         | 90               | 23           | 250                    | 35                        | 1.5                             |
|                                   |              |              | 0.125                         | 130              | 24           | 360                    |                           |                                 |
|                                   |              |              | 0.250                         | 170              | 25           | 470                    |                           |                                 |
| 0.047                             | 140-260      | 20-29        | 0.094                         | 110              | 23           | 215                    | 45                        | 1.8                             |
|                                   |              |              | 0.125                         | 150              | 24           | 290                    |                           |                                 |
|                                   |              |              | 0.250                         | 190              | 25           | 370                    |                           |                                 |
|                                   |              |              | 0.375                         | 220              | 25           | 430                    |                           |                                 |
| 0.062                             | 190-350      | 25-30        | 0.250                         | 200              | 25           | 190                    | 55                        | 6                               |
|                                   |              |              | 0.375                         | 230              | 25           | 215                    |                           |                                 |
|                                   |              |              | 0.500                         | 260              | 27           | 240                    |                           |                                 |
|                                   |              |              | 0.750                         | 280              | 28           | 261                    |                           |                                 |
|                                   |              |              | 1.000                         | 300              | 29           | 280                    |                           |                                 |
| 0.094                             | 280-400      | 26-31        | 0.500                         | 280              | 28           | 170                    | 65                        | 30                              |
|                                   |              |              | 0.750                         | 290              | 29           | 175                    |                           |                                 |

NOTE: Parameters based on flat position, groove joint, backing strip, and 100% argon gas.