

MAGNA 55

FEATURES

A Universal aluminum alloy specially formulated for maintenance applications having the following characteristics.

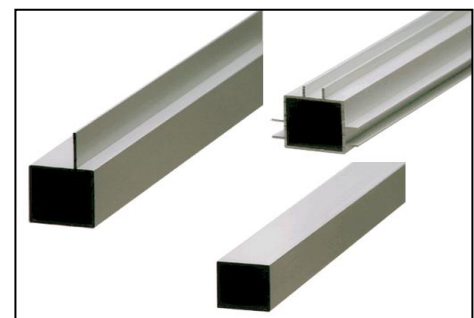
1. Ease of Application

Mechanics who usually experience difficulty repairing damaged aluminum equipment find it is easy to make the same repairs using Magna 55. This highly alloyed material can easily be applied without the base metal sagging, collapsing or even wrinkling. Magna 55, while being a perfect colour match, actually flows on aluminum much as a brazing rod does without damage to the base metal. Any mechanic, who can braze, can easily use Magna 55.



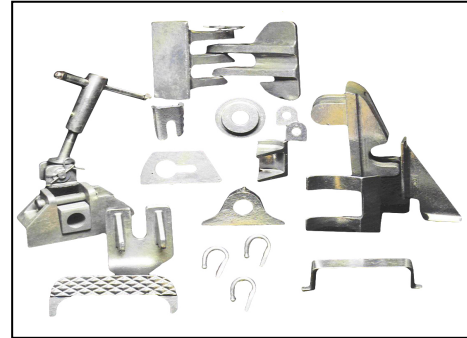
2. Unique Two Stage Melting Range

Magna 55, at a low base metal temperature, can be applied to aluminum using a brazing technique. In this way the alloy is 'mushy' and viscous and will build up easily. It can then be used to fill gaps, weld beveled parts and build up missing sections. At a higher temperature this unique alloy will flow thinly, much as silver solder does, by capillary action. It is used this way on thin parts, such as around tubing, spouts and other small parts of profile construction. The finished weld is smooth and requires little or no finishing.



3. Versatility

Most shops stock two to five different aluminum welding rods in order to cover a variety of types of aluminum welding. Magna 55 welds most types of aluminum, including sheet, cast, extruded and other wrought forms. The fact that one alloy covers most types of aluminum welding is an advantage in maintenance since it not only prevents guesswork but reduces inventory.



4. High Physical Properties

Magna 55 has a higher tensile strength than pure aluminum. Further, it does not have porosity or voids and feathers into the base metal at a low contact angle so that there are no inherent weaknesses or stress concentration points in the deposit as often happens with some ordinary aluminum welding rods.

Pure Aluminum Grade	Tensile Strength (Typical value)
1100-O	13,000 psi
1100-H12	16,000 psi
1100-H14	18,000 psi
1100-H16	21,000 psi
1100-H18	24,000 psi
Magna 55	26,000 psi

5. Magna 55 Flux

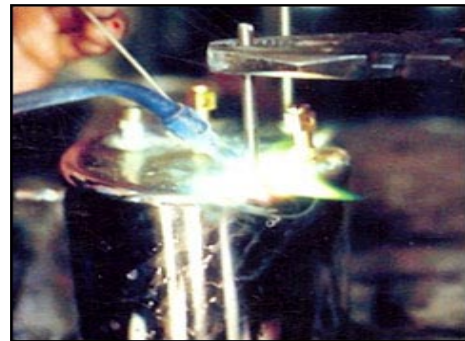
One of the reasons aluminum is considered difficult to weld is because of its high rate of oxidation when heated. Magna 55 flux is calibrated to work with Magna 55 alloy. It makes difficult to weld aluminum easy to weld. Magna 55 flux wets easily and contributes to the perfect results.



APPLICATION

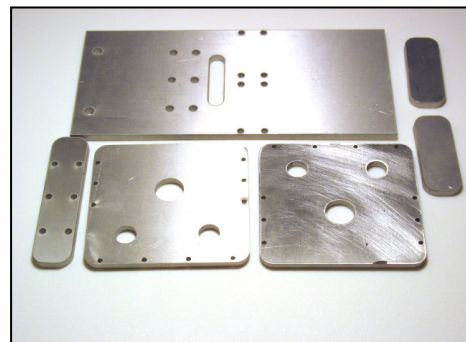
When welding aluminum previously the danger was always present of the base metal collapsing due to excessive preheating. However, Magna 55's unique two stage melting range reduces this danger and now provides perfect results when welding sections together or building up missing parts.

By fitting a large sized tip, at least one size bigger than you would normally use when welding steel, set the torch to burn pure acetylene and blacken surface of aluminum. Then adjust torch to a more neutral flame but still slightly excess acetylene and preheat over a wide area until blackness is burnt off. When this stage is reached remove torch from surface and scatter a small amount of Magna 55 Flux over heated metal. If the flux melts from the heat generated by the metal this is a good indication that there is sufficient preheating to commence the welding operation. This is a general rule of thumb that can be employed to judge the correct temperature for preheating. Once the desired preheat is reached, ensure the torch is focused onto alloy during welding operation to prevent further heat build up.



By using a larger sized rod this will protect base metal from additional heating.

When welding thin sheets use a smaller tip and reduced heat intensity. Shield work from extra heat when welding by holding torch at a low angle and protecting with welding alloy and apply heat only to alloy. Hold torch at a low angle in direction of work so heat is not being concentrated on one spot and is preparing metal ahead to receive welding alloy.



Welding Sections Together Using Oxyacetylene Torch

Preheat base metal as described above and dip heated tip of welding alloy into Magna 55 Flux and then place into flame. When flux becomes fluid apply filler alloy by melting off a 12 mm. (1/2") section at a time and distribute over base metal using the torch. As each 12 mm. (1/2") section is applied, lift torch from work and re-dip heated end of alloy into flux.

By removing torch from base metal between each application you reduce the risk of the base metal overheating and subsiding. After re-dipping alloy, melt another 12 mm. (1/2") section and flow through weld with torch. Repeat process until sufficient Magna 55 has been transferred.



Welding Using Magna 55 to Rebuild a Missing Part

Preheat and apply first coating as described previously. Then, holding torch at a low angle to base metal and directing heat to filler metal, lay welding alloy over area to be built up and melt off a section at a time. Repeat process and apply a light pressure to bond each layer together. Continue in this way until reaching desired height or shape.

Magna 55 rod can also be used as a TIG filler metal for joining Aluminum and Aluminum Alloys.

For TIG welding AC (preferably welding machine should be attached to high frequency unit) is normally recommended though DC electrode positive polarity can also be used for thin jobs upto 2.5mm, Argon or Argon - Helium gas mixtures is recommended depending on service condition.

Typical usability parameters (with Argon) :

Metric	Inches	Gauge	Current Range (ACHF)	Gas Flow Rate (Litre/min)
2.4mm	3/32	12	125-160 amps	7-10

(The current can vary based on application condition and size of tungsten electrode)