

**NEW**  
**Sun Arc®**  
Inert Blend Media

# NANOCHEM® WeldAssure™ Gas Purifiers

## Features and Benefits

- Low cost of ownership
- Wall mount frame – easy to install and operate
- Removes impurities to < 10 ppb (Dew Point = -150°F)
- **Enhances weld quality, strength and appearance**
- **Reduces weld porosity and oxidation**
- **Visual endpoint detection\***
  - No guessing when to replace purifier canister
  - Color change in viewing window indicates 80% of purifier is spent
- **Increases weld electrode lifetime**
  - No need to stop welding to grind/replace electrode
- **Reduces weld rejects**
- **Built-in Bypass around purifier canister**
  - Enables purging of gas lines without purifier deactivation during cylinder changeout
- **Check valve at purifier outlet**
  - Prevents purifier deactivation from back diffusion of atmospheric air when gas flow is stopped
- Filters at canister inlet and outlet
- Operates at room temperature
- No power requirements
- **NANOCHEM® In2Go™ Inorganic Media**
  - Prevents contamination from system upsets, such as air intrusion or connection of wrong gas cylinder
- **NEW NANOCHEM® Sun Arc® Purifier**
  - Designed for customers with gas blend welding needs
- **Field Replaceable Canister**
- **New Stainless Canisters can be refilled**
  - Savings over cost of replacement canister
  - Reduction in generation of solid waste

\*NOTE: Endpoint detection not available for Ar/O<sub>2</sub> or Ar/CO<sub>2</sub> gas blends.

## Specifications

- Flow rates up to **100 cfh** (47 slpm / 2.8 NM<sup>3</sup>/hr)
- Gases Purified (with **OMX™** or **In2Go™**):
  - Argon, helium, nitrogen, hydrogen, inert gases and gas blends of these constituents (4N purity or better)
- Impurities removed (with **OMX™** or **In2Go™**):
  - Moisture, oxygen, carbon monoxide, carbon dioxide, nitrogen oxides, sulfur oxides, hydrogen sulfide, others

NOTE: OMX™-Plus also removes hydrocarbons. CO is more efficiently removed by In2Go™

- Gases Purified (with **Sun Arc®** Media):
  - Argon / CO<sub>2</sub>, Argon / O<sub>2</sub>, Inerts / CO<sub>2</sub> blends
- Impurities removed (with **Sun Arc®** media):
  - Moisture, hydrocarbons
- Maximum operating temperature – 65°C (170°F)
- Maximum operating pressure – 200 psig (1.48 MPa)
- Materials of Construction:
  - Canister (150 ml & 500 ml) – Aluminum 6061-T6
  - Canister (300 ml) – Stainless Steel, Type 304
  - Valves & Fittings – Naval Brass\*

\*Also available in Stainless Steel, Type 316

## Connections

- Purifier: Swagelok 1/4" female NPT fittings
- Canister: Swagelok 1/4" male Compression fittings

## Overview

NANOCHEM® WeldAssure™ purifiers provide purge and shield gas purification for welding applications. Weld gas impurities, such as moisture and oxygen, adversely affect weld quality. These impurities are present in gas cylinders, and can also be introduced through leaks in the line or during cylinder changes.

NANOCHEM® OMX™ and In2Go™ media react *chemically and irreversibly* with these impurities to deliver *consistently* pure gas to the weld site, improving weld quality. NANOCHEM® OMX™ resin also offers efficient

removal of hydrocarbons, such as compressor oils, in the gas. A new *inorganic* media, NANOCHEM® In2Go™ prevents piping system contamination in the event of a major system upset, such as significant air intrusion or from the accidental connection of an improper cylinder to the purifier.

NANOCHEM® Sun Arc® media is *specifically* designed to purify Ar/O<sub>2</sub>, Ar/CO<sub>2</sub> and other O<sub>2</sub>, or CO<sub>2</sub> blends. NANOCHEM® Sun Arc® provides customers with the ability to use blended gas without the worry of reducing their tolerances or dilution ratios. Sun Arc® is also better than any media for the removal of Moisture impurities. Endpoint detection is not currently available with Sun Arc® media.

NANOCHEM® WeldAssure™ purifiers are an economical solution for GMAW (TIG) welding and other critical welding applications.

- Flow Rates up to 100 cfh (47 slpm)
- Available in 150 mL, 300 mL, and 500 mL sizes
- Easy to use canister *bypass* mode for canister changes and extended shutdowns
- Reliable endpoint detection to indicate when canister is spent
- Field replaceable canisters available
- 300 mL stainless canister can be refilled, enabling savings over purchase of spare canisters

## Applications

**GTAW** (TIG), **GMAW** (MIG), **PAW** (Plasma) and **LBW** (Laser Beam) welding applications and welding overlays with GMAW and **PTAW** (Plasma Transferred Arc). Aerospace, nuclear, petrochemical, pharmaceutical, petroleum drilling, ship-building, and other manufacturing industries.

NOTE: NANOCHEM® L-Series™ and MegaShield™ Purifiers with all stainless construction recommended for higher flow rates and for very clean welding in semiconductor and pharmaceutical applications. Maximum flow rates: 150 slpm (~ 300 cfh) for L-Series and 1000 slpm (~ 2000 cfh) for MegaShield™ Purifiers.



**Model WA-300** Stainless Steel canister  
**Model WA-500** Aluminum canister



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## Performance Benefits with NANOCEM® Purifiers

### Welding of Aluminum 6061 T3, GTAW Process

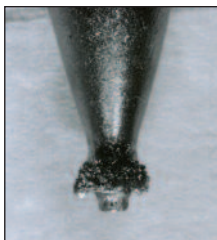


**Without Purification**  
(Impurity Content = 40 ppm)  
Surface Oxides, Porosity,  
Poor Cleaning Action,  
Poor Wetting  
Rough Weld Surface

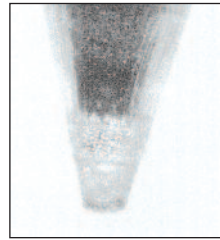


**With Purification**  
No Porosity, Clean X-Rays  
Good Cleaning Action,  
Excellent Wetting,  
Excellent Ductility  
Very Smooth Surface

### Welding of Titanium, PAW Process

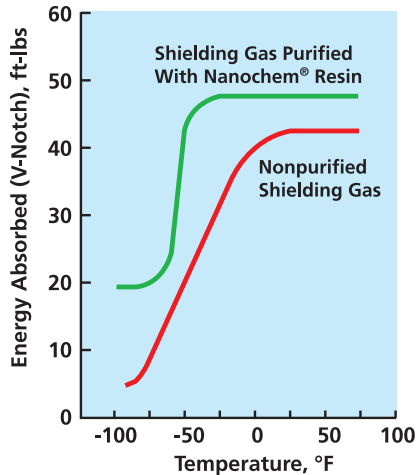


**Without Purification**  
Tungsten Deposits on  
electrode (5/32", EWTH-2) after  
30 minutes.



**With Purification**  
Tungsten erosion at electrode  
tip greatly reduced

### Welding of Ferralium 255, GTAW Process



#### With Purification

Welds bright and shiny without oxidation or heat tints. Clean Radiographs – welds free of defects. Significant improvement in weld strength (Charpy V Notch impact energy) at lower temperatures. Improvements in Mils lateral expansion and percent ductile shear fracture.

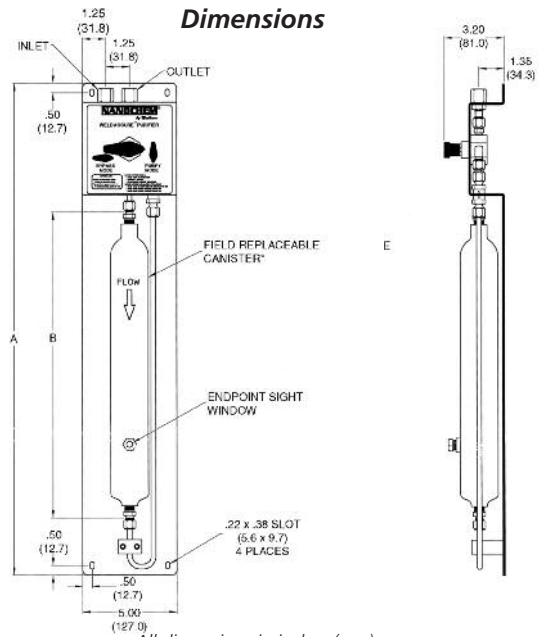
Specifications are subject to change. Please check [www.mathesongas.com](http://www.mathesongas.com) for most current information.

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### Dimensions



All dimensions in inches (mm)

NOTE: Endpoint Sight Window not available for Ar/O<sub>2</sub> and Ar/CO<sub>2</sub> purifiers

Purifier Data	Purifier Model		
	WA-150	WA-300	WA-500
Media bed volume (mL)	150	300	500
NANOCEM® Media	OMX	In2Go	OMX
NANOCEM® Media for Ar / CO <sub>2</sub> or Ar / O <sub>2</sub> blends	Sun Arc®	Sun Arc®	Sun Arc®
Canister	Aluminum Al6061-T6	Stainless SS 304	Aluminum Al6061-T6
Valves & Fittings	Brass	Brass*	Brass
Maximum Flow (cfh argon)	30	60	100
(slpm argon)	14	28	47
(NM <sub>3</sub> argon)	0.85	1.7	2.8
Dimension A / B (inches)	17 / 7	21 / 11.1	26 / 16.2
(mm)	432 / 178	533 / 282	660 / 411
Lifetime (approximate) <sup>#</sup>			
Number of cylinders purified	31	63	105

\*Also available in Stainless Steel, Type 316

<sup>#</sup>Based upon argon of 99.998% purity ("Pre-purified" grade) containing 3 ppm O<sub>2</sub> and 10 ppm H<sub>2</sub>O.

Cylinder size – ~ 280 ft<sup>3</sup> (7.9 NM<sup>3</sup>) – Matheson 1A, BOC 200, Air Products B, Air Liquide 44, Praxair K.

NOTE: Additional impurities contributed by the gas delivery system can significantly reduce predicted lifetime.

**CAUTION! Only NANOCEM® WeldAssure™ purifiers specifically labeled for CO<sub>2</sub> or O<sub>2</sub> applications can be used for purifying Ar/CO<sub>2</sub> and Ar/O<sub>2</sub> blends.**

**DO NOT use NANOCEM® WeldAssure™ purifiers containing NANOCEM® OMX™ or In2Go™ media with Ar/CO<sub>2</sub> or Ar/O<sub>2</sub> blends. The Media will get very hot. OMX™ media will break down causing hydrocarbon contamination.**

Ar/CO<sub>2</sub> and Ar/O<sub>2</sub> blends are often used for GMAW (MIG) welding. Benefits include a stable arc, easier arc initiation, reduced arc wandering, and reduced arc spatter. For such applications, MATHESON offers WeldAssure™ purifiers containing NANOCEM® Sun Arc® media, specifically designed for CO<sub>2</sub> and O<sub>2</sub> blends.

Ar/CO<sub>2</sub> and Ar/O<sub>2</sub> blends, however, can result in deposition of oxides and carbides in the weld. Hence, for very clean GMAW welding, Matheson Tri-Gas recommends use of argon / helium blends. Use of a 75% Ar / 25% He blend and NANOCEM® OMX™ purification has been demonstrated to provide a very stable arc with greatly reduced weld spatter, fumes, and pyrotechnics. Weld quality of GMAW (MIG) welds with aluminum and Ferralium 255 (a duplex stainless steel) is excellent; porosity is eliminated and weld strength is as good as welds made with the GTAW (TIG) process.



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