



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**
 - Do not need to stop welding to grind or 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 deactivation of purifier from back diffusion of atmospheric air when gas flow (and welding) is stopped
- Filters at canister inlet and outlet
- Operates at room temperature
- No power requirements
- **New NANOCHEM® In2Go™ Inorganic Media**
 - Prevents contamination from system upsets, such as air intrusion or connection of wrong gas cylinder
- **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/O₂ or Ar/CO₂ gas blends.

Specifications

- o Flow Rates up to **100 cfh** (47 slpm / 2.8 NM³/hr)
- o Gases Purified (with **OMX™** or **In2Go™**): Argon, helium, nitrogen, hydrogen, inerts and gas blends of these constituents (4N purity or better)
- o 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™
- o Gases Purified (with **MSA™** Media): Argon / CO₂, Argon / O₂, Inerts / CO₂ blends
- o Impurities removed with (**MSA™** media): Moisture, hydrocarbons
- o Maximum operating temperature – 65°C (170°F)
- o Maximum operating pressure – 200 psig (1.48 MPa)
- o Materials of Construction:
 - Canister (150 ml & 500 ml) – Aluminum 6061-T6
 - Canister (300 ml) – Stainless Steel, Type 304
 - Valves & Fittings – Naval Brass

Connections

Purifier: Swagelok ¼" brass female NPT fittings
Canister: Swagelok ¼" brass male Compression fittings



Model WA-300
Stainless Steel canister



Model WA-500
Aluminum canister

Overview

The 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® MSA™ media is designed to purify Ar/O₂, Ar/CO₂ and other O₂, CO₂ blends. Only WeldAssure purifiers *specifically* labeled for oxygen or carbon dioxide applications can be used for purifying O₂ and CO₂ blends.

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 and 500-ml sizes – Aluminum canister
300 ml size – Stainless steel canister
- 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.



**MATHESON
TRI-GAS**

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Performance Benefits with NANO-CHEM® Purifiers

Overall Dimensions*

Welding of Aluminum 6061 T3, GTAW Process



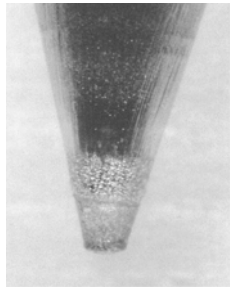
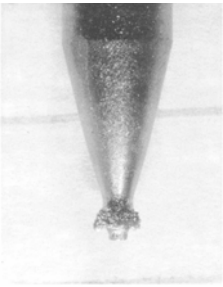
Without Purification

(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



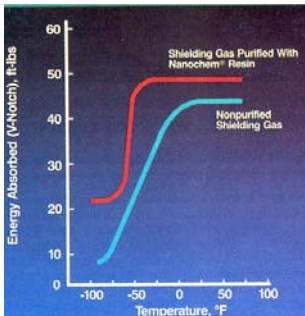
Without Purification

Tungsten Deposits on electrode
($\frac{3}{32}$ " EWT-2) after 30 minutes.

With Purification

Tungsten erosion at electrode tip
greatly reduced

Welding of Ferralium 255, GTAW Process



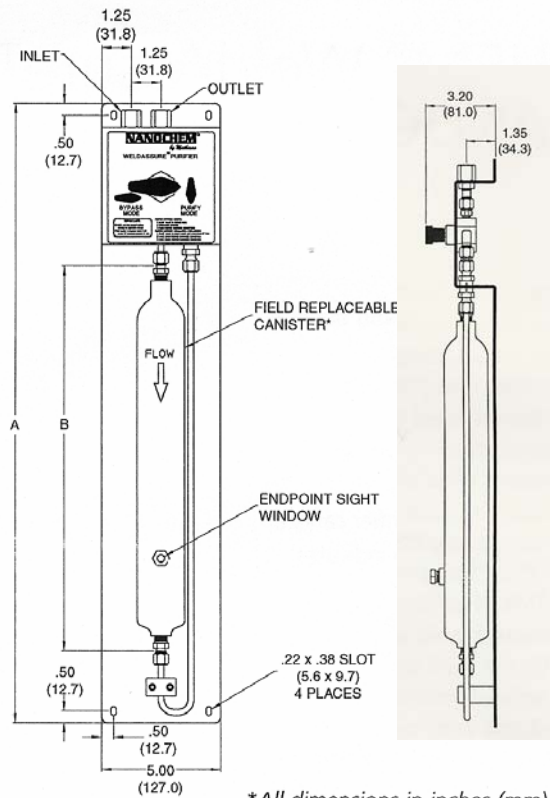
With Purification:

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.

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*All dimensions in inches (mm)

NOTE: Endpoint Sight Window not available for Ar/O₂ and Ar/CO₂ purifiers

| Purifier Data | Purifier Model | | |
|--|--------------------|------------------|--------------------|
| | WA-150 | WA-300 | WA-500 |
| Media bed volume (mL) | 150 | 300 | 500 |
| NANO-CHEM Media | OMX | In2Go | OMX |
| NANO-CHEM Media for Ar/CO ₂ or Ar/O ₂ blends | MSA | MSA | MSA |
| Canister Material | Aluminum Al6061-T6 | Stainless SS 304 | Aluminum Al6061-T6 |
| Maximum Flow (cfh argon) | 30 | 60 | 100 |
| (slpm argon) | 14 | 28 | 47 |
| (NM ³ 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)* | | | |
| Number of cylinders purified | 31 | 63 | 105 |

* Based upon argon of 99.998% purity ("Pre-purified" grade) containing 3 ppm O₂ and 10 ppm H₂O. Cylinder size – 280 ft³ (7.9 NM³) – Matheson 1A, BOC 200, Air Products B, Air Liquide 44, Praxair K. NOTE: Additional impurities contributed by gas delivery system can significantly reduce predicted lifetime.

CAUTION! Only NANO-CHEM WeldAssure purifiers specifically labeled for CO₂ or O₂ applications can be used for purifying Ar/CO₂ and Ar/O₂ blends.

DO NOT use NANO-CHEM WeldAssure purifiers containing NANO-CHEM OMX or In2Go media with Ar/CO₂ or Ar/O₂ blends. The Media will get very hot. OMX media will breakdown causing hydrocarbon contamination.

Ar/CO₂ and Ar/O₂ 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 Tri-Gas offers WeldAssure purifiers containing NANO-CHEM® MSA™ media, specifically designed for CO₂ and O₂ blends.

Ar/CO₂ and Ar/O₂ 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 NANO-CHEM 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.