

# Turn to the Pros



A LINCOLN ELECTRIC COMPANY

# Pros

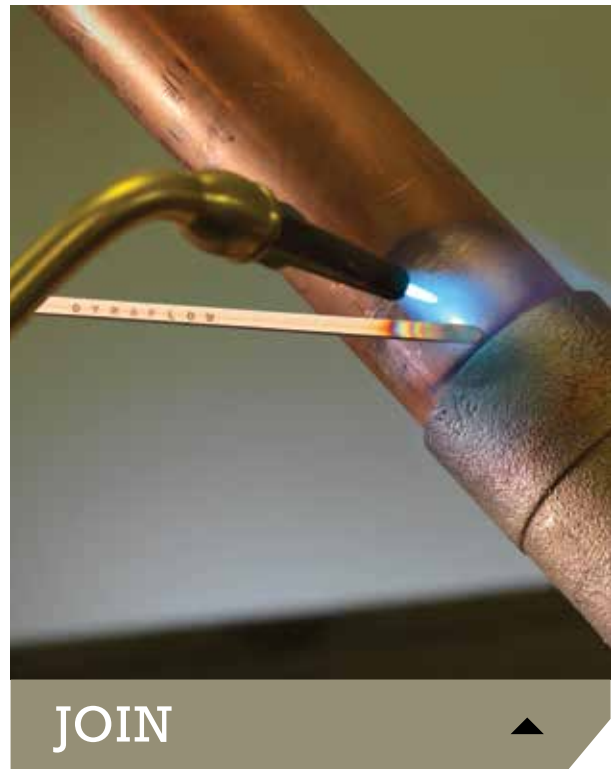
HVAC/PLUMBING  
CONDENSED CATALOG



# THE HARRIS PRODUCTS GROUP HAS BEEN MANUFACTURING QUALITY BRAZING PRODUCTS FOR OVER 110 YEARS.

EACH DAY, HARRIS SETS OUT TO MAKE THE BEST AND MOST COMPLETE LINE OF INDUSTRIAL GRADE TOOLS IN THE WORLD. WHY? BECAUSE SUPERIOR RESULTS COUNT TO PROFESSIONALS. HAVING THE RIGHT TOOLS FROM HARRIS WILL DELIVER A JOB WELL DONE, EVERY TIME. WE ARE GOING TO KEEP DOING WHAT WE DO BEST, SO YOU CAN DO WHAT YOU DO BEST. FOR THE BEST AND MOST COMPLETE LINE OF INDUSTRIAL GRADE PRODUCTS.

**TURN TO THE PROS – TURN TO HARRIS**



**TURN TO THE PROS**

Orders: 1.800.733.4533

**THE HARRIS PRODUCTS GROUP**  
[www.harrisproductsgroup.com](http://www.harrisproductsgroup.com)



# ABOUT THE HARRIS PRODUCTS GROUP

WE ARE LEADERS IN DEVELOPING BRAZING AND SOLDERING PRODUCTS TO MEET THE INDUSTRY NEEDS FOR NEW METAL JOINING METHODS. WE ARE CERTIFIED TO ISO 9001 AND ISO 14000 STANDARDS. WE HAVE DEVELOPED PROPRIETARY MANUFACTURING TECHNOLOGY TO ENSURE THE HIGHEST STANDARDS OF QUALITY AND TRACEABILITY.

OUR EXPERIENCED SALES AND TECHNICAL PERSONNEL ARE TRAINED TO ASSIST OUR CUSTOMERS IN PRODUCING SOUND, COST EFFECTIVE, BRAZED ASSEMBLIES. OUR INTERNATIONAL PRESENCE MEANS WE CAN ASSIST OUR CUSTOMER'S OPERATIONS ANYWHERE IN THE WORLD. HARRIS IS BACKED BY THE FINANCIAL STRENGTH AND TECHNICAL RESOURCES OF THE LINCOLN ELECTRIC COMPANY.

**THE GLOBAL LEADER IN WELDING SYSTEMS AND FILLER METALS**



HVAC ▲



BRAZE/SOLDER ▲

TURN TO HARRIS

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HAVING THE RIGHT TOOLS  
FROM HARRIS WILL RESULT IN  
**A JOB WELL  
DONE, EVERY  
TIME**

# PHOS COPPER ALLOYS

THE BRAZING INDUSTRY'S FRONT RUNNER IN DEVELOPING THE TECHNOLOGY TO CONTROL PHOSPHOROUS CONTENT.

THE MELTING RANGE IS SO PRECISE THAT BRAZING OPERATORS NO LONGER NEED TO MAKE TEMPERATURE ADJUSTMENTS FROM ONE BATCH OF FILLER METALS TO THE NEXT. OPERATORS KNOW THAT WITH HARRIS ALLOYS, THE RESULT WILL BE THE SAME WITH EVERY BATCH, EVERY TIME. ITS TECHNOLOGY IS SO ACCURATE THAT THE HARRIS PRODUCTS GROUP GUARANTEES USERS A LIQUIDUS TEMPERATURE VARIATION OF NO MORE THAN  $\pm 6^{\circ}\text{F}$  /  $\pm 3.3^{\circ}\text{C}$  – A MUCH TIGHTER STANDARD THAN THE INDUSTRY REQUIRES.



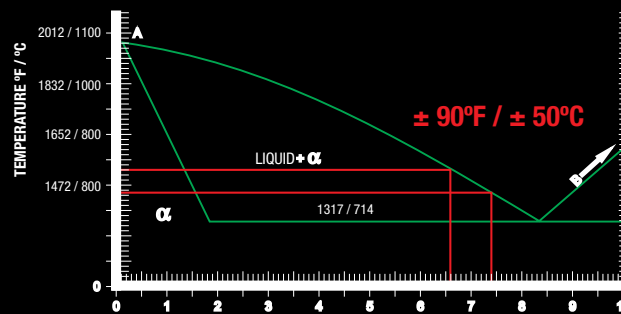
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## OVER THE DECADES MANY THINGS HAVE CHANGED IN OUR INDUSTRY.

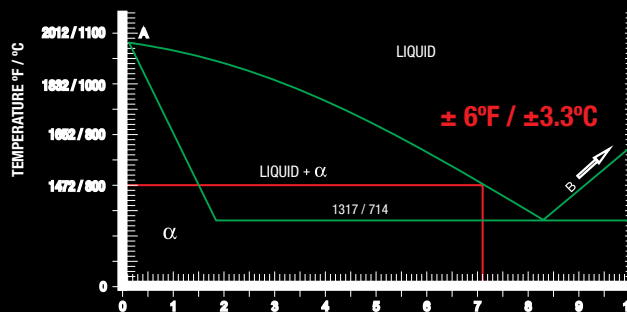
The one thing that has not changed is our dedication to making the world's purest and most consistent brazing alloys. Harris is committed to providing the best tools to do your job.

All alloys are available in rods, solid wires and rings in both metric and imperial sizes, according to European and American standards.

Standard B-CuP-2 Quality



Harris Quality



Save money using Harris phosphorous controlled products.  
 $\pm 38^{\circ}\text{F}$  /  $\pm 3.3^{\circ}\text{C}$  liquidus point fluctuation from batch to batch.

# DYNAFLOW



## PHOS COPPER ALLOYS

MODEL SHOWN:  
**D620F15P**

### DESCRIPTION

Dynaflow® is an exceptionally pure phosphorus/copper/silver brazing alloy recommended for all copper-to-copper and copper-to-brass applications. Dynaflow® is a premium, medium range, silver alloy. It has excellent strength and ductility. It can be used as a replacement for 15% silver. Perfect for brazing both tight and loose fitted applications. It is a great choice for HVAC/R technicians.

### DETAILS:

**Solidus:** 1190°F / 643°C

**Liquidus:** 1465°F / 796°C

**Fluidity Rating:** 3

**Classification:** N/A

### Typical Applications:

Premium alloy for copper or brass.

### Recommended Joint Clearance:

.003 - .006" (.076 - .152 mm).



PART NO.	DESCRIPTION	DIA	LENGTH	PRESENTATION	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
D620F15P	.050 x 1/8" x 28 STICK TUBE - 5 LB	0.50 X 1/8"	28"	28 STICKS	TUBE	5 TUBES	6.1% PHOSPHORUS 87.9% COPPER
D620F1	.050 x 1/8" x 28 STICK TUBE - 25 LB	0.50 X 1/8"	28"	28 STICKS	TUBE	25 TUBES	
D620FMPOP	.050 x 1/8" x 7 STICK MINI-PACK POP	0.50 X 1/8"	18"	7 STICKS	PACK	4 TUBES	

# HARRIS 0



## PHOS COPPER ALLOYS

MODEL SHOWN:  
**0620F15P**

### DESCRIPTION

Harris® 0 is recognized and trusted all over the world. It is Harris' most popular copper-to-copper brazing alloy that is used for aftermarket HVAC installation and repair. Harris® 0 has extremely consistent flow characteristics because it is manufactured from the purest raw materials. The bright and shiny appearance of the finished material reflects Harris' advanced manufacturing process capabilities and dedication to quality.

### DETAILS:

**Solidus:** 1310°F / 710°C

**Liquidus:** 1475°F / 802°C

**Fluidity Rating:** 5

**Classification:**

AWS A5.8 BCuP-2

DIN8513 L-CuP7

### Typical Applications:

Alloy for copper or brass. Ideal where moderate fit-up can be maintained and brazing temperature is not critical.

### Recommended Joint Clearance:

.002 - .007" (0.051 - 0.178 mm)



PART NO.	DESCRIPTION	DIA	LENGTH	PRESENTATION	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
0620F15P	.050 x 1/8" x 28 STICK TUBE - 5 LB	0.50 X 1/8"	18"	28 STICKS	TUBE	5 TUBES	92.9% COPPER 7.1% PHOSPHORUS
0620F1	.050 x 1/8" x 28 STICK TUBE - 25 LB	0.50 X 1/8"	18"	28 STICKS	TUBE	25 TUBES	
0620FMPOP	.050 x 1/8" x 7 STICK MINI-PACK POP	0.50 X 1/8"	18"	7 STICKS	PACK	4 TUBES	



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PHOS COPPER

# STAY-SILV 2

RoHS COMPLIANT  
MADE IN THE USA

## PHOS COPPER ALLOYS

### DESCRIPTION

Stay-Silv 2® is an economical, low silver alloy, designed to broaden the melting range of Harris 0, and has proven useful in some specific applications where mechanical properties are less critical.

#### DETAILS:

**Solidus:** 1190°F / 643°C

**Liquidus:** 1450°F / 788°C

**Fluidity Rating:** 4

**Classification:**

AWS A5.8 BCuP-6 BS1845 CP2

#### Typical Applications:

Alloy for copper or brass. For joints with wider clearance due to sluggish flow.

#### Recommended Joint Clearance

003 - .005" (.076 - .127 mm)



PART NO.	DESCRIPTION	DIA	LENGTH	PRESENTATION	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
2620F15P	.050 x 1/8" x 28 STICK TUBE - 5 LB	.50 X 1/8"	10"	28 STICKS	TUBE	5 TUBES	7% PHOSPHORUS 91% COPPER 2% SILVER
2620F1	.050 x 1/8" x 28 STICK TUBE - 25 LB	.50 X 1/8"	10"	28 STICKS	TUBE	25 TUBES	

## PHOS COPPER ALLOYS

MODEL SHOWN:  
5620F15P

# STAY-SILV 5

RoHS COMPLIANT  
MADE IN THE USA

### DESCRIPTION

Stay-Silv® 5 is a medium-range alloy that is well suited where close fit-up cannot be maintained. This filler metal is somewhat more ductile than Harris® 0 or Stay-Silv 2®.

#### DETAILS:

**Solidus:** 1190°F / 643°C

**Liquidus:** 1500°F / 816°C

**Fluidity Rating:** 3

**Classification:**

AWS A5.8 BCuP-3 BS1845 CP4

#### Typical Applications:

Alloy for copper or brass. Used to bridge gaps where close fit-up cannot be maintained.

#### Recommended Joint Clearance

.003 - .006" (.076 - .152 mm)



PART NO.	DESCRIPTION	DIA	LENGTH	PRESENTATION	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
5620F15P	.050 x 1/8" x 28 STICK TUBE - 5 LB	.50 X 1/8"	10"	28 STICKS	TUBE	5 TUBES	6% PHOSPHORUS 89% COPPER 5% SILVER
5620F1	.050 x 1/8" x 28 STICK TUBE - 25 LB	.50 X 1/8"	10"	28 STICKS	TUBE	25 TUBES	
5620FMPPOP	.050 x 1/8" x 7 STICK MINI-PACK POP	0.50 X 1/8"	18"	7 STICKS	PACK	4 TUBES	



# STAY-SILV 6



## PHOS COPPER ALLOYS

MODEL SHOWN:  
6620F15P

### DESCRIPTION

Stay-Silv® 6 is a medium-range alloy that is slightly more fluid. It can be used where closer tolerances are available. It is somewhat more ductile than Harris® 0.

### DETAILS:

**Solidus:** 1190°F / 643°C

**Liquidus:** 1425°F / 774°C

**Fluidity Rating:** 5

**Classification:** N/A

### Typical Applications:

Alloy for copper or brass. Used for closer tolerances.

### Recommended Joint Clearance

.002 - .005" (.051mm - .127mm)



PART NO.	DESCRIPTION	DIA	LENGTH	PRESENTATION	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
6620F15P	.050 x 1/8" x 28 STICK TUBE - 5 LB	0.50 X 1/8"	28"	28 STICKS	TUBE	5 TUBES	6.5% PHOSPHORUS 87.5% COPPER 6% SILVER
6620F1	.050 x 1/8" x 28 STICK TUBE - 25 LB	0.50 X 1/8"	28"	28 STICKS	TUBE	25 TUBES	
6620F	.050 x 1/8" x 20 x 25 LB PACKAGE	0.50 X 1/8"	20"	25 LB	25 LB	BOX	
6636F	.050 x 1/8" x 36 x 25 LB PACKAGE	0.50 X 1/8"	36"	25 LB	25 LB	BOX	
6336R	1/16" DIA x 36 x 25 LB PACKAGE	1/16"	36"	25 LB	25 LB	BOX	
6536R	3/32" DIA x 36 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX	
6636R	1/8" DIA x 36 x 25 LB PACKAGE	1/8"	36"	25 LB	25 LB	BOX	
6636S	1/8" SQ x 36 x 25 LB PACKAGE	1/8"	36"	25 LB	25 LB	BOX	
6836R	3/16" DIA x 36 x 25 LB PACKAGE	3/16"	36"	25 LB	25 LB	BOX	

# STAY-SILV 15



## PHOS COPPER ALLOYS

MODEL SHOWN:  
15320F1

### DESCRIPTION

Stay-Silv® 15 has been considered the industry standard in the air-conditioning and refrigeration industry for many years. Its melting range makes this filler metal an excellent choice for situations where close fit-up does not exist and where thermal expansion and service vibration are involved.

### DETAILS:

**Solidus:** 1190°F / 643°C

**Liquidus:** 1480°F / 804°C

**Fluidity Rating:** 3

**Classification:**

AWS A5.8 BCuP-5 BS1845 CP1

### Typical Applications:

Alloy for copper or brass. Useful for wider clearances.

### Recommended Joint Clearance

.003 - .006" (.076 - .152mm)



PART NO.	DESCRIPTION	DIA	LENGTH	PRESENTATION	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
15620F15P	.050 x 1/8" x 28 STICK TUBE - 5LB	.50 X 1/8"	28"	28 STICKS	TUBE	5 TUBES	5% PHOSPHORUS 80% COPPER 15% SILVER
15620F1	.050 x 1/8" x 28 STICK TUBE - 25LB	.50 X 1/8"	28"	28 STICKS	TUBE	25 TUBES	
1520FMPPOP	.050 x 1/8" x 7 STICK MINI-PACK POP	0.50 X 1/8"	20"	7 STICKS	PACK	4 TUBES	



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PHOS COPPER

# HIGH SILVER ALLOYS

CADMIUM-FREE

THE HARRIS PRODUCTS GROUP MANUFACTURES A COMPLETE LINE OF CADMIUM-FREE, HIGH-SILVER BRAZING ALLOYS. ONLY PURE BASE METALS ARE USED. PRECISION PRODUCTION PROCEDURES ENSURE CONSISTENCY IN PRODUCT QUALITY, COMPOSITION, CHEMISTRY, DIMENSION AND PERFORMANCE.



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# STAY-SILV 40



## HIGH SILVER ALLOYS

MODEL SHOWN:  
4033

### DESCRIPTION

Safety-Silv® 40 is a ductile, free-flowing alloy that offers economy, good penetration into tight connections and medium temperature. Its silver to light yellow color looks like polished brass.

### DETAILS:

**Solidus:** 1250°F / 677°C

**Liquidus:** 1350°F / 732°C

**Fluidity Rating:** 5

**Classification:** N/A

### Typical Applications:

Used for steel, nickel and copper alloys. Suitable for wider clearances, yet provides good ductility.

### Recommended Joint Clearance

.002" - .005" (.051mm - .127mm)



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
4031	1/16" X 1 T.O. PACKAGE	1/16"	-	1 T.O.	COIL	-	25 PKS	40% SILVER 30.5% COPPER 29.5% ZINC
4033	1/16" X 3 T.O. PACKAGE	1/16"	-	3 T.O.	COIL	-	24 PKS	

# STAY-SILV 45



## HIGH SILVER ALLOYS

MODEL SHOWN:  
4533

### DESCRIPTION

Safety-Silv® 45 is an excellent general-purpose brazing alloy. It has good ductility and capillary flow. Its color is silver to light yellow.

### DETAILS:

**Solidus:** 1225°F / 663°C

**Liquidus:** 1370°F / 743°C

**Fluidity Rating:** 6.5

**Classification:**

AWS A5.8 BAg-5

### Typical Applications:

General purpose filler for steel and copper alloys. Melting range useful for wide clearances.



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
4531	1/16" X 1 T.O. PACKAGE	1/16"	-	1 T.O.	COIL	-	25 PKS	45% SILVER 30% COPPER 25% ZINC
4533	1/16" X 3 T.O. PACKAGE	1/16"	-	3 T.O.	COIL	-	24 PKS	

## WHAT IS CAPILLARY ACTION?

Capillary action is a combination of surface tension and adhesion. It pulls the molten alloy through the joint, and allows you to braze in all positions.



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HIGH SILVER



# STAY-SILV 45FC



## HIGH SILVER ALLOYS

MODEL SHOWN:  
45F3184

### DESCRIPTION

Safety-Silv® 45FC is the flux-coated (flux is on the wire) version of Safety-Silv® 45, eliminating manual flux application. It performs like a 45% silver cadmium-bearing alloy, but is cadmium-free. 45FC has a lower melting temperature than Safety-Silv® 45. It has excellent fillet-forming qualities producing high-strength, ductile joints. NSF 51 certified.

### DETAILS:

**Solidus:** 1195°F / 646°C

**Liquidus:** 1265°F / 685°C

**Fluidity Rating:** 7

**Classification:** BA9-36

### Typical Applications:

Good flow properties.  
Suitable for ferrous and non-ferrous base metals.



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
45F3184	1/16" x 18 4oz (9 STICK TUBE) - FC	1/16"	18"	9 STICKS	TUBE	-	25 TUBES	45% SILVER 27% COPPER 25% ZINC 3% TIN
45F318MPOP	1/16" x 18 MINI - PACK 3 STICK TUBE - FC	1/16"	18"	3 STICKS	PACK	4 PACKS	4 PACKS	
45F5184	3/32" x 18 x 4 oz (9 STICK TUBE) - FC	3/32"	18"	9 STICKS	TUBE	-	25 TUBES	



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# HIGH SILVER ALLOYS

MODEL SHOWN:  
5631

# STAY-SILV 56



## DESCRIPTION

Safety-Silv® 56 high silver content alloy produces premium-quality brazes. It is free-flowing with unsurpassed capillary attraction and deep penetration with high ductility. It is suitable for the food processing industry. Its silver color is an excellent match for stainless steel and silverware applications. Safety-Silv® 56 is available in flux-coated (the flux is on the wire), eliminating manual flux application. NSF 51 certified.

## DETAILS:

**Solidus:** 1145°F / 618°C  
**Liquidus:** 1205°F / 652°C  
**Fluidity Rating:** 8  
**Classification:** BAg-7

## Typical Applications:

Used for ferrous and non-ferrous alloys. Often used to braze stainless steel for food processing industry.



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
5625	3/64" X 5 T.O. PACKAGE	3/64"	-	5 T.O.	COIL	-	24 PKS	56% SILVER 22% COPPER 17% ZINC 5% TIN
56250	3/64" X 50 T.O. COIL	3/64"	-	5 T.O.	COIL	-	24 PKS	
56225SP	3/64" X 25 LB SPOOL	3/64"	-	25 LB (365 T.O.)	SPOOL	365 T.O.	1 SPOOL	
5631	1/16" X 1 T.O. PACKAGE	1/16"	-	1 T.O.	COIL	-	25 PKS	
5633	1/16" X 3 T.O. PACKAGE	1/16"	-	3 T.O.	COIL	-	24 PKS	
5635	1/16" X 5 T.O. PACKAGE	1/16"	-	5 T.O.	COIL	-	24 PKS	
56325	1/16" X 25 T.O. COIL	1/16"	-	25 T.O.	COIL	-	1 COIL	
56350	1/16" X 50 T.O. COIL	1/16"	-	50 T.O.	COIL	-	1 COIL	
56318L	1/16" X 18 X 15 T.O. TUBE	1/16"	18"	15 T.O.	TUBE	-	25 TUBES	
56318LMPPOP	1/16" X 18 - MINI 5 STICK POP	1/16"	18"	5 STICKS	PACK	4 PACKS	4 PACKS	
56336L	1/16" X 36 X 50 T.O. TUBE	1/16"	36"	50 T.O.	TUBE	-	-	
5611	1/32" X 1 T.O. PACKAGE	1/32"	-	1 T.O.	COIL	-	25 PKS	
5615	1/32" X 5 T.O. PACKAGE	1/32"	-	5 T.O.	COIL	-	24 PKS	
56150	1/32" X 50 T.O. COIL	1/32"	-	25 T.O.	COIL	-	1 COIL	
5653	3/32" X 3 T.O. PACKAGE	3/32"	-	3 T.O.	COIL	-	24 PKS	
5655	3/32" X 5 T.O. PACKAGE	3/32"	-	5 T.O.	COIL	-	24 PKS	
56550	3/32" X 50 T.O. PACKAGE	3/32"	-	50 T.O.	COIL	-	1 COIL	
56518L	3/32" X 18 X 15 T.O. TUBE	3/32"	18"	15 T.O.	TUBE	-	25 TUBES	
Z56518	3/32" X 18 X 300 T.O. BOX	3/32"	18"	300 T.O.	BOX	-	300 T.O.	
56525SP	3/32" X 25 LB SPOOL	3/32"	-	25 LB (365 T.O.)	SPOOL	-	1 SPOOL	
56618L	1/8" X 18 X 15 T.O. TUBE	1/8"	18"	15 T.O.	TUBE	-	25 TUBES	
56650	1/8" X 50 T.O. COIL	1/8"	-	50 T.O.	COIL	-	1 COIL	
56K	SILVER SOLDER KIT	1/16"	-	1 T.O.	COIL	12 KITS	48 KITS	
56KPOP	SILVER SOLDER KIT POP	1/16"	-	1 T.O.	COIL	4 KITS	4 KITS	



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
56F3184	1/16" X 18 40Z (9 STICK TUBE) - FC	1/16"	18"	9 STICKS	TUBE	-	25 TUBES	56% SILVER 22% COPPER 17% ZINC 5% TIN
56F318MPOP	1/16" X 18 MINI - PACK 3 STICK TUBE - FC	1/16"	18"	3 STICKS	PACK	4 PACKS	4 PACKS	
56F5184	3/32" X 18 X 4 OZ (9 STICK TUBE) - FC	3/32"	18"	9 STICKS	TUBE	-	25 TUBES	



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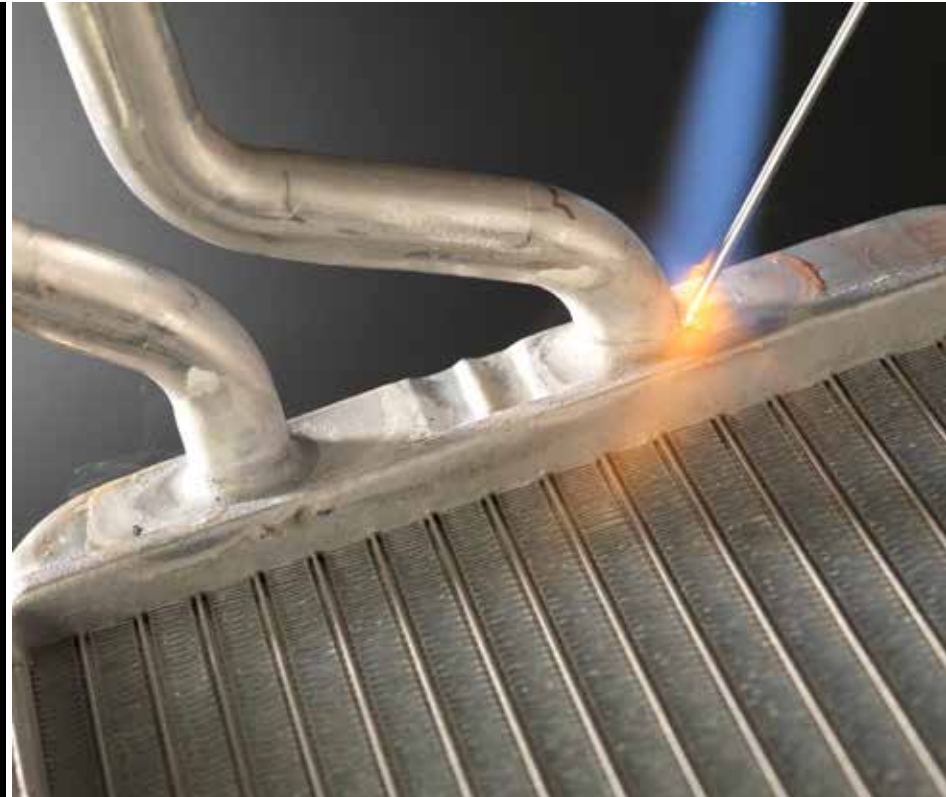
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HIGH SILVER



### BETTER PERFORMANCE

- Core design releases the flux only after sufficient preheating so both the flux and alloy flows at the right time into the capillary
- Proprietary custom flux blends available for customer specific applications
- Strict flux percentage tolerance ensures that the flux is consistent throughout the wire for repeatable high performance flow of the alloy
- We only use non-corrosive and non-hygroscopic flux with no flux binder



**ALUXCOR**



## ALUMINUM ALLOYS

MODEL SHOWN:  
ZN78CW09020POP

### DESCRIPTION

Aluxcor™ has excellent strength and corrosion resistance for joining aluminum-to-aluminum, aluminum-to-copper or aluminum-to-brass. It is free-flowing with unequaled capillary attraction, ductility and penetration. Aluxcor™ zinc aluminum alloy has non-corrosive and non-hygroscopic cesium flux that has a lower melting temperature and wider melting range than aluminum silicon alloys. NSF certified.



### TYPICAL APPLICATIONS:

Used for residential HVAC, automotive and appliance repairs.

#### FLUX CORED ALUMINUM AND ZINC/ALUMINUM ALLOYS

PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	MELTING RANGE °F	MELTING RANGE °C	FLUX CORE
AL200RC	Aluxcor™ 98/2	2% ALUMINUM 98% ZINC	710 °F 725 °F	377 °C 385 °C	Cesium Flux Formula - Non-corrosive and non-hygroscopic
ZN78CW09020POP	Aluxcor™ 78/22	22% ALUMINUM 78% ZINC	800 °F 900 °F	426 °C 492 °C	Cesium Flux Formula - Non-corrosive and non-hygroscopic

# LEAD-FREE SOLDERS

HVAC/R  
PLUMBING

THE HARRIS PRODUCTS GROUP OFFERS A WIDE RANGE OF SOLDERING ALLOYS FOR BOTH HVAC/R AND PLUMBING APPLICATIONS. EACH SOLDER PRODUCT MEETS THE HIGHEST STANDARD FOR CONSISTENCY AND PERFORMANCE.



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# STAY BRITE



## SILVER BEARING SOLDERS

MODEL SHOWN:  
SB31

### DESCRIPTION

Stay-Brite® solder is a Tin-Silver alloy engineered to provide a strong, ductile connection on copper, brass, steel, and stainless steel. It is an excellent alternative to brazing in many situations. It's lower working temperature eliminates the annealing or softening of the base metals that occur when using higher temperature phosphorus/copper or phosphorus/copper/silver brazing alloys. Rather than allowing the annealed copper tubing to accommodate the expansion, contraction, and vibration of the system joined with brazing alloys, Stay-Brite instead relies on the ductility of the alloy itself. In addition, Stay-Brite does not create the oxides during the metal joining process and as a result, does not require nitrogen purging. Stay-Brite is a eutectic alloy which means it's liquidus and solidus temperature of 430°F (221°C) are the same, resulting in a very fast flowing alloy that's ideal for connections with small clearances. Use with Stay-Clean Liquid or Stay Clean Paste Fluxes.



### TYPICAL APPLICATIONS:

Use for all metals with the exception of aluminum. Low temperature solder excellent for many HVAC connections.

PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
SB31	1/16" x 1 LB SPOOL	3.4 - 3.8% SILVER BALANCE TIN	430°F 221°C	430°F 221°C	ASTM B32 Sn96 NSF 51 J-STD-006 Sn96 Ag 04A NSF/ANSI STANDARD 61, Drinking water system components. NSF/ANSI 372 & US safe drinking water act amendments.
SB51	3/32" x 1 LB SPOOL				
SB61	1/8" x 1 LB SPOOL				

# STAY BRITE 8



## SILVER BEARING SOLDERS

MODEL SHOWN:  
SB811

### DESCRIPTION

Stay-Brite 8® solder is a Tin-Silver alloy engineered to provide a strong, ductile connection on copper, brass, steel, and stainless steel. It is an excellent alternative to brazing in many situations. It's lower working temperature eliminates the annealing or softening of the base metals that often occur when using higher temperature phosphorus/copper or phosphorus/copper/silver brazing alloys. Rather than allowing the annealed copper tubing to accommodate the expansion, contraction, and vibration of a system joined with brazing alloys, Stay-Brite 8 instead relies on the ductility of the alloy itself. In addition, Stay-Brite 8 does not create the oxides during the metal joining process and as a result, does not require nitrogen purging. Stay-Brite 8 has solidus of 430°F (221°C) and a liquidus of 535°F (279°C). This melting range provides the ability to fill wider clearance joints most typically found in HVAC systems. Use with Stay-Clean Liquid or Stay Clean Paste Fluxes.



### TYPICAL APPLICATIONS:

Use for all metals with the exception of aluminum. Low temperature solder excellent for many HVAC connections.

PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
SB831	1/16" x 1 LB SPOOL	5.5 - 6.0 % SILVER BALANCE TIN	430°F 221°C	535°F 279°C	NSF STANDARD 51
SB851	3/32" x 1 LB SPOOL				
SB861	1/8" x 1 LB SPOOL				

# BRIDGIT



## LEAD-FREE PLUMBING SOLDER

MODEL SHOWN:  
BRGT61

### DESCRIPTION

Bridgit® lead-free solder is widely used in plumbing applications where lead-bearing solders are prohibited. Its nickel content increases joint strength ensuring the strongest soldered connection. The antimony content lowers the melting temperature. Use with Bridgit® paste flux, Stay-Clean® paste flux or Stay-Clean® liquid flux for the best results.

### TYPICAL APPLICATIONS:

Excellent alloy for large diameter fittings and non-concentric pipes. Fills gaps and caps off easily and effectively.



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
BRGT61	1/8" x 1 LB SPOOL	.05 - 1.5% SILVER .05 - 2.0% NICKEL 2.5 - 3.5% COPPER 4.5 - 5.5% ANTIMONY BALANCE TIN	460 °F 238 °C	630 °F 332 °C	ASTM B32 ALLOY GRADE HB NSF/ANSI 61 NSF/ANSI 372

# STERLING



## LEAD-FREE SOLDER

MODEL SHOWN:  
331755

### DESCRIPTION

Harris Sterling® lead-free solid wire solder meets the highest product standards. It has a tensile strength of 7130 psi and shear strength of 5970 psi. Meets or exceeds the requirements for lead-free plumbing solder set forth in the Federal Safe Drinking Water Act. It is 100% environmentally safe with no lead, antimony or nickel.

### TYPICAL APPLICATIONS:

General plumbing and other potable water applications



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	MELTING TEMP	CLASSIFICATION
331755	.118" X 1 LB SPOOL X 50LB CARTON	4.0 - 5.0% COPPER .04% - .20% SELENIUM BALANCE TIN	410°F 210°C	ASTM B32 ALLOY GRADE TC NSF/ANSI 61 -G NSF/ANSI 372
331841	.118" X 1 LB SPOOL X 20LB CARTON			
331895	1/16" X 5 LB SPOOL X 50LB CARTON			
331897	.118" X 1/4 LB SPOOL X 50PK CARTON			
331898	.118" X 5 LB SPOOL X 50LB CARTON			



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LEAD-FREE SOLDER

**PREMIUM**

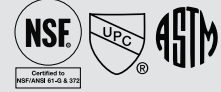


**SILVER LEAD-FREE SOLDER**

MODEL SHOWN:  
**331756**

**DESCRIPTION**

Harris Premium Silver® lead-free solid wire silver plumbing solder meets the highest product standards. Meets or exceeds the requirements for lead-free plumbing solder set forth in the Federal Safe Drinking Water Act. It is 100% environmentally safe with no lead, antimony or nickel. Its wide pasty temperature range 440°F to 640°F (227°C to 338°C) allows for more working time.



**TYPICAL APPLICATIONS:**

General plumbing and other potable water applications

PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	MELTING TEMP	CLASSIFICATION
331756	.118" X 1 LB SPOOL X 50 LB CARTON	95% TIN	419°F	ASTM B32 Alloy Grade TC NSF/ANSI 61
331844	.118" X 1 LB SPOOL X 20 LB CARTON	4.93% COPPER	215°C	
331900	.118" X 1/4 LB SPOOL X 50 PK CARTON	.07% SELENIUM		

**SELECT**

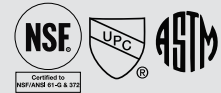


**LEAD-FREE SOLDER**

MODEL SHOWN:  
**331754**

**DESCRIPTION**

Harris Select® lead-free solid wire plumbing solder achieves the highest product standards. Select has a low melting temperature of 419°F and a high tensile strength of 6950 psi. NSF 61 certified for safe use in potable water systems. It meets or exceeds the requirements for lead-free plumbing solder set forth in the Federal Safe Drinking Water Act. It is 100% environmentally safe with no lead, antimony or nickel.



**TYPICAL APPLICATIONS:**

General plumbing and other potable water applications

PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	MELTING TEMP	CLASSIFICATION
331754	.118" X 1 LB SPOOL X 50 LB CARTON	95% TIN	452°F	ASTM B32 ALLOY
331769	SOLDER KIT 4 OZ SPOOL X 12 PK BLISTER CARD	4.93% COPPER .07% SELENIUM	233°C	



# SOLDER SAFE 95/5



## 95/5 LEAD-FREE SOLDER

MODEL SHOWN:  
331754

### DESCRIPTION

Harris 95/5 Solder has

### FEATURES AND BENEFITS

- Melting temperature: 455° F
- Tensile strength: 5500 psi
- Lead-Free Tin-Antimony Solder
- Narrow pasty range
- ASTM B-32



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
331760	.118" X 1 LB SPOOL X 50 LB CARTON	4.5% - 5.5% ANTIMONY BALANCE TIN	452°F 233°C	464°F 240°C	ASTM B32 ALLOY GRADE Sn95 Conforms to lead content requirements for "lead free" plumbing as defined by California, Vermont, Maryland, and Louisiana state laws, and the US Safe Drinking Water Act.
331861	3/32" X 1 LB SPOOL X 50 LB CARTON				
331901	.118" X 1/2 LB SPOOL X 50 PK CARTON				
331902	.118" X 1/4 LB SPOOL X 50 PK CARTON				

# SOLDER SAFE 97/3



## 97/3 LEAD-FREE SOLDER

MODEL SHOWN:  
331761

### DESCRIPTION

Harris Solder-Safe™ 97/3 lead-free solder is formulated for plumbing and other applications. It has a low melting point and a melting range that allow operators to fill tube/fitting connections. It is also suitable for assemblies with slightly wider clearance. Solder-Safe 97/3 solder is lead and antimony free..

### TYPICAL APPLICATIONS:

General plumbing and other potable water applications



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	MELTING TEMP	CLASSIFICATION
331761	.118" X 1 LB SPOOL X 50LB CARTON	95% TIN 4.93% COPPER	445°F 229°C	NSF/ANSI/CAN 61 -G NSF/ANSI 372 Conforms with lead content requirements for "lead free" plumbing as defined by California, Vermont, Maryland and Louisiana state laws, and the US Safe Drinking Water Act and amendments.
331864	1/16" X 1 LB SPOOL X 50LB CARTON			
331903	.118" X 1/2 LB SPOOL X 50PK CARTON			



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LEAD-FREE SOLDER

## PLUMBING LEAD-FREE SOLDER KITS

MODEL SHOWN:  
331769

### DESCRIPTION

Select® basic lead-free solid wire plumbing solder achieves the highest product standards. It meets or exceeds the requirements for lead-free plumbing solder set forth in the Federal Safe Drinking Water Act. It is 100% environmentally safe with no antimony or nickel.

#### KIT INCLUDES:

4 oz. (113g) Select® lead-free solder  
1 oz. (28g) lead-free water-soluble flux  
2.25" multi-purpose brush  
6" sand cloth

Sterling® premium lead-free solid wire solder kit meets the highest product standards. It meets or exceeds the requirements for lead-free plumbing solder set forth in the Federal Safe Drinking Water Act. It is 100% environmentally safe with no antimony or nickel. It has a tensile strength of 7130 psi and shear strength of 5970 psi.

#### KIT INCLUDES:

8 oz. (226g) Sterling® lead-free solder  
1.7 oz. (48g) lead-free water-soluble flux  
1/2" wire fitting brush  
4" flux brush  
6" sand cloth

### TYPICAL APPLICATIONS:

General plumbing and other potable water applications



PLUMBING  
KITS



PART NO.	DESCRIPTION	SOLDER CHEMICAL COMPOSITION	MELTING TEMP	CLASSIFICATION
<b>SELECT BASIC PLUMBING SOLDER KIT</b>				
331769	SELECT BASIC PLUMBING SOLDER KIT 4 OZ 12 PK	95% TIN 4.93% COPPER .07% SELENIUM	419°F 215°C	SOLDER: ASTM B32 ALLOY, NSF/ANSI 61-G & 372 FLUX: ASTM B-813, NSF 61
<b>STERLING PREMIUM PLUMBING SOLDERING KIT</b>				
331935	STERLING PREMIUM PLUMBING SOLDER KIT 8 OZ 6 PK	4.0 - 5.0% COPPER .04% - 20% SELENIUM BALANCE TIN	410°F 210°C	SOLDER: ASTM B32 ALLOY GRADE TC, NSF/ANSI 61-G & 372 FLUX: ASTM B-813, NSF 61

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# LEADED SOLDERS

HVAC/R  
PLUMBING

THE 40/60, 50/50 AND 60/40 TIN-LEAD COMPOSITION SOLDERS COMPRISE THE MAJORITY OF LEAD SOLDER USE. THESE TN BASED SOLDERS AR FREQUENTLY USED FOR GENERAL REPAIR, ELECTRICAL CONNECTIONS, RADIATORS AND DRAIN/WASTE/VENT (DWV) PLUMBING TUBE. THESE SOLDERS ARE AVAILABLE IN SOLID WIRE AND FLUX-CORED FORMS. FLUX-CORED SOLDERS ARE AVAILABLE IN BOTH ROSIN AND ACID CORE TYPES.



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CAUTION: It is illegal to use lead-bearing solders in public and private potable water systems.

NOTE: Several states prohibit a plumbing supply business from selling lead-bearing solders. Customers should check with the respective agency in the state in which the lead-bearing solders are to be sold or distributed.

## 40/60

A general purpose solder with a 1000° F melting range. It is often used for body work “wiping” applications. It is also frequently used for sheet metal joints and auto radiator repair.

## 50/50

A popular tin/lead alloy with a 600° F melting range. Compared to 40/60, the narrower melting range improves flow, yet provides sufficient body to “cap” finished joints. 50/50 is used for general soldering work including non-potable water DWV, copper tube plumbing applications.

## 60/40

With an approximate 150° F melting range, 60/40 requires less heat to reach its melting temperature. This is often beneficial when soldering electrical or electronic components. This solder is also a popular choice for stain glass applications.



# 40/60



## 40/60 LEADED SOLDER

MODEL SHOWN:  
331881

### DESCRIPTION

Harris 40/60 tin/lead solder is a general-purpose solder with a wide melting range. 40/60 can solder copper and most copper alloys, lead, high nickel alloys and steel, with some exceptions. Heat sources include soldering guns, irons and torch applications. It is not recommended in high stress or vibration joints in the cooling industry due to lack of sufficient elongation properties. This solder has a tensile strength of 5400 psi and shear strength of 4600 psi.



### TYPICAL APPLICATIONS

General-purpose soldering, automotive bodywork (wiping) applications and radiator repair and soldering sheet metal joints. Use only in non-potable

PART #	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
331850	1/8" X 1 LB SPOOL X 50 LB CARTON	40% TIN	361°F	460°F	ASTM B32
331881	1/8" X 1/2 LB SPOOL X 50 PK CARTON	60% LEAD	183°C	238°C	

# 50/50



## 50/50 LEADED SOLDER

MODEL SHOWN:  
331887

### DESCRIPTION

Harris 50/50 tin/lead solder is one of the most popular and most often used leaded solder. 50/50 can solder copper and most copper alloys, lead, high nickel alloys and steel, with some exceptions. Heat sources include soldering guns, irons and torch applications. It is not recommended in high stress or vibration joints in the cooling industry due to lack of sufficient elongation properties. This solder has a tensile strength of 6000 psi and shear strength of 5200 psi.



### TYPICAL APPLICATIONS

General purpose soldering, automotive and radiator repairs, water drain/waste/vent (DWV), copper-tube plumbing and electrical applications. Use only in non-potable water applications.

PART #	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
331753	1/8" X 1 LB SPOOL X 50 LB CARTON	50% TIN 50% LEAD	361°F 183°C	421°F 216°C	ASTM B32
331886	1/8" X 1/2 LB SPOOL X 50 PK CARTON				
331887	1/8" X 1/4 LB SPOOL X 50 PK CARTON				

# 60/40



## 60/40 LEADED SOLDER

MODEL SHOWN:  
331858

### DESCRIPTION

Harris 60/40 tin/lead solder is a popular choice for electrical and electronic applications. 60/40 can solder copper and most copper alloys, lead, high nickel alloys and steel, with some exceptions. Heat sources include soldering guns, irons and torch applications. It is not recommended in high stress or vibration joints in the cooling industry due to lack of sufficient elongation properties. 60/40 requires less heat to reach its melting temperature. This is often beneficial when soldering electrical or electronic components. This solder has a tensile strength of 7600 psi and shear strength of 5600 psi. Available with rosin or acid cores.



### TYPICAL APPLICATIONS

General purpose soldering, automotive and radiator repairs, water drain/waste/vent (DWV), copper-tube plumbing and electrical applications. Use only in non-potable water applications.

PART #	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
331858	1/8" X 1LB SPOOL X 50LB CARTON	60% TIN 40% LEAD	361°F 183°C	374°F 190°C	ASTM B32
<b>ROSIN CORE</b>					
331857	1/8" X 1LB SPOOL X 50LB CARTON	2% - 3% ROSIN CORE	361°F 183°C	374°F 190°C	ASTM B32

# PRO INFO

## BRAZING/ SOLDERING FLUX

### **PASTE FLUX:**

Designed for use with lead-free solders. Works extremely well with Bridgit® lead-free solder in potable water systems and equally well with other solders

### **WATER SOLUBLE FLUX:**

A water flushable paste that holds its shape and will not slump. Use with plumbing applications, copper and copper-alloy tubes, heating, air-conditioning, mechanical piping, and fire sprinklers.

### **ALUMINUM FLUX:**

A liquid flux for use with aluminum soldering. Use with Al-Solder® 500. Joins aluminum to dissimilar metals.

### **PASTE FLUX:**

An active soldering flux formulated for use with tin-lead, tin-antimony, and tin-silver solders.

### **LIQUID FLUX:**

A general purpose zinc chloride flux for soldering with all soft solders use with tin-lead solder, tin-antimony solder, Stay-Brite® solder, for soldering virtually all metals, except aluminum, magnesium or titanium. Not recommended for use in electrical or electronic applications.

### **BLACK FLUX:**

An all purpose, high temperature flux for use in silver brazing. Formulated for applications where the work is subjected to rapid, localized heating.

### **WHITE FLUX:**

An all purpose, low temperature flux for use in silver brazing. Use with most ferrous and non ferrous metals, not recommended on aluminum, magnesium, and titanium.

### **POWDER FLUX:**

Stay-Silv® white powder flux is similar to the white paste flux but in a dry powder mixture. It is typically applied by heating the braze rod end and dipping it into the flux.



# FLUX

HVAC/R  
PLUMBING

QUALITY BRAZED JOINTS REQUIRE FLUX TO PROTECT THE JOINT DURING HEATING AND PROMOTE COMPLETE BRAZE ALLOY FLOW. TO ENSURE THE BEST CONNECTIONS HARRIS DESIGNED, DEVELOPED, AND PRODUCED A VARIETY OF FLUXES FOR SPECIFIC APPLICATIONS TO MEET OUR CUSTOMER'S NEEDS.

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FLUX FOR MULTIPLE APPLICATIONS.**

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# STAY-CLEAN



## FLUX

MODEL SHOWN:  
SCLF16

### DESCRIPTION

Stay-Clean® is an inorganic acid and salt-type flux. It is formulated to be active at temperatures optimum for a range of solder compositions. It is ideal for soldering a variety of base metals. The flux residue should be removed after soldering. Pre-cleaning is required with Stay-Clean® flux. Stay-Clean® Paste Flux is designed primarily for copper-to-copper and copper-to-brass connections. The paste form works well with most leaded and lead-free solder compositions. Stay-Clean® Liquid Flux effectively removes surface oxides and prevents oxide formation during soldering. It can be used with most tin-based solder compositions and is an excellent companion flux with Harris Stay Brite® and Stay Brite® 8. This liquid flux is clear to slightly yellow in color and has a pH of 1.2.



### TYPICAL APPLICATIONS:

Stay-Clean® Paste Flux is ideal for soldering tube joints. It is not recommended for electrical or electronic applications due to the potential corrosive residue of the flux. Stay-Clean® liquid flux works well on copper and brass but is more frequently used on base metals that require a more aggressive flux such as steel, nickel and stainless steel. It is not suitable for aluminum or magnesium.

PART NO.	DESCRIPTION	SIZE	FLUX TYPE	ACTIVE TEMP	CLASSIFICATION	CARTON QTY
SCPF1	STAY-CLEAN® PASTE FLUX 1 LB JAR	1 LB JAR	PASTE	Up to 600°F Up to 316°C		12
SCPF4	STAY-CLEAN® PASTE FLUX 4 OZ JAR	4 OZ JAR	PASTE	Up to 600°F Up to 316°C	A-A51145D, Type 1 Form A	24
SCPF4POP	STAY-CLEAN® PASTE FLUX 4 OZ JAR POP	4 OZ JAR	PASTE	Up to 600°F Up to 316°C"		16
SCLF4	STAY-CLEAN® FLUX 4 OZ (ORM-D) NO AIR!	4 OZ BOTTLE	LIQUID	Up to 700°F Up to 371°C		48
SCLF16	STAY-CLEAN® FLUX 16 OZ (ORM-D) NO AIR!	16 OZ BOTTLE	LIQUID	Up to 700°F Up to 371°C	A-A51145D, Type 1 Form A	24
SCLF32	STAY-CLEAN® FLUX 32 OZ (ORM-D) NO AIR!	32 OZ BOTTLE	LIQUID	Up to 700°F Up to 371°C		12

# BRIDGIT



## FLUX

MODEL SHOWN:  
BRPF4

### DESCRIPTION

Bridgit® Paste Flux is formulated to be active over a wide temperature range. This makes it an excellent choice for most all solder compositions. It is ideal for use where a longer heating cycle is required as it resists thermal decomposition. Because Bridgit® paste flux stays active to 800°F it covers the range required by most lead-free solders. Bridgit® is burn resistant, thus reducing carbon formations that may result in voids and leaks. Certified to NSF/ANSI 372 and meets all requirements of the Safe Drinking Water Act.

### TYPICAL APPLICATIONS:

This flux is unexcelled for use in soldering copper, brass, bronze, galvanized and other plumbing fittings. Bridgit® works extremely well with Bridgit® and other lead-free solders in potable water systems.



PART NO.	DESCRIPTION	SIZE	FLUX TYPE	ACTIVE TEMP	CLASSIFICATION	CARTON QTY
BRPF1	BRIDGIT® PASTE FLUX 1 LB JAR	1 LB JAR	BURN RESISTANT PASTE	200°F - 800°F 93°C - 427°C	ASTM B32 GRADE Sn 40A	12
BRPF4	BRIDGIT® PASTE FLUX 4 OZ JAR	4 OZ JAR W/ BRUSH CAP	BURN RESISTANT PASTE	200°F - 800°F 93°C - 427°C		24



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FLUX

25

# SOLDERING FLUX



## WATER SOLUBLE SOLDERING FLUX

MODEL SHOWN:  
331771

### DESCRIPTION

Lead-free water flushable plumbing paste flux that holds its shape and will not slump. A water-soluble alternative to petroleum-based plumbing fluxes. Begins cleaning metals at room temperature. It provides excellent solderability with any lead-free solder. It aids in the removal of oxides and impurities. Helps draw solder into joints to provide better adhesion of alloy to pipe. Easy clean-up with water after soldering.

### TYPICAL APPLICATIONS:

Plumbing fixtures and repairs; Copper and copper alloy tubes; Heating; Air-Conditioning; Mechanical piping; Fire sprinklers



PART NO.	DESCRIPTION	SIZE	FLUX TYPE	ACTIVE TEMP	CLASSIFICATION	CARTON QTY
331771	WATER-SOLUBLE LEAD-FREE SOLDERING FLUX	1.7 OZ JAR 48 G JAR	WATER- SOLUBLE	200°F - 600°F 93°C - 315°C	ASTM B-813; NSF/ANSI 61; RoHS Compliant; Meets Copper Development Association requirements	30

# SOLDERING FLUX



## PETROLEUM-BASED PASTE SOLDERING FLUX

MODEL SHOWN:  
331917

### DESCRIPTION

This lead-free petroleum-based lead-free soldering flux aids in the removal of oxides and impurities. It draws solder into joints to provide better adhesion of alloy to pipes. This past flux can be used in some potable applications depending on local plumbing codes for usage and restrictions. Convenient brush cap with flux container.

### TYPICAL APPLICATIONS:

Soldering copper pipes and plumbing fittings; HVAC systems; Fire sprinklers



PART NO.	DESCRIPTION	SIZE	FLUX TYPE	ACTIVE TEMP	CLASSIFICATION	CARTON QTY
331917	PETROLEUM BASED PASTE SOLDERING FLUX	4 OZ BOTTLE W/BRUSH CAP 113 G BOTTLE W/BRUSH CAP	PASTE	200°F - 600°F 93°C - 315°C	ASTM B-813; NSF/ANSI 61; RoHS Compliant; Conforms to 0-F-506C, Type 1, Form B; MIL-S-6872A	5





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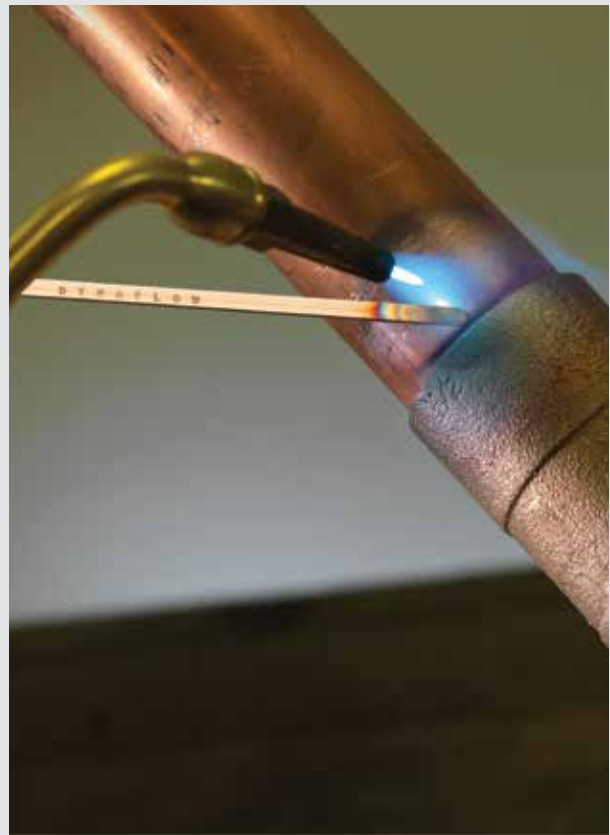
# PRO INFO

## DIFFERENTIATING BETWEEN BRAZING AND SOLDERING

ONE OF THE MAIN DIFFERENCES BETWEEN BRAZING AND SOLDERING IS WORKING TEMPERATURE. SOLDERING TAKES PLACE BELOW 840°F AND USES TIN AS THE PRIMARY ALLOYING ELEMENT. BRAZE ALLOYS ARE COPPER-BASED AND TEND TO MELT AT HIGHER TEMPERATURES – ABOVE 1190°F FOR COPPER JOINING. BOTH SOLDERING AND BRAZING PROVIDE SEALS VIA CAPILLARY ACTIONS, WHERE THE MELTED FILLER FLOWS INTO THE SPACE BETWEEN TUBE AND FITTING, KNOWN AS THE CAPILLARY SPACE, AND ADHERES TO THE TUBE AND FITTING SURFACES. BRAZING DELIVERS GREATER FATIGUE RESISTANCE AND DEVELOPED JOINT STRENGTH THAN SOLDERING.



SOLDER



BRAZE



# BRUSHES



## FITTING BRUSH

MODEL SHOWN:  
331766

### DESCRIPTION

This high quality, dense wire, fitting brush is constructed of heavy-duty high carbon steel wire bristles. The bristles ensure a sharp cutting surface. Designed for cleaning and etching the inside of copper fittings prior to soldering. Additionally, they can clean plastic and brass fast and effectively. The galvanized twisted steel shaft ensures long lasting and durable performance. The plastic handle is easy-to-grip. Color-coded by size for easy identification.



PART #	DESCRIPTION	COLOR	CARTON QTY.
331766	FITTING BRUSH 1/2"	BLACK ■	12
331767	FITTING BRUSH 3/4"	WHITE □	12
331916	FITTING BRUSH 1"	RED ■	12
331915	FITTING BRUSH 1-1/4"	BLACK ■	12
331914	FITTING BRUSH 1-1/2"	BLUE ■	12
331913	FITTING BRUSH 2"	RED ■	12

# BRUSHES



## TUBE CLEANING BRUSH

MODEL SHOWN:  
331772

### DESCRIPTION

This high-quality, dense wire, tube cleaning brush is constructed of heavy-duty steel wire bristles. The bristles ensure a sharp cutting surface. They are designed for cleaning and etching copper tubes prior to soldering. Additionally, they can clean plastic and brass fast and effectively. The ergonomic plastic handle with ridges is easy-to-grip for the most efficient use. It is color-coded by size for easy identification.

### TYPICAL APPLICATIONS:

Cleaning and etching copper tubes



PART #	DESCRIPTION	COLOR	CARTON QTY.
331772	TUBE CLEANING BRUSH 1/2"	BLACK ■	12
331773	TUBE CLEANING BRUSH 3/4"	WHITE □	12
331938	TUBE CLEANING BRUSH 1"	RED ■	12



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# BRUSHES



## MULTI-PURPOSE BRUSH

MODEL SHOWN:  
331765

### DESCRIPTION

Multi-purpose 4" X 1/2" (101.6mm X 13mm) short hand-held brush. Brush has a lightweight metal handle and synthetic bristles. Packaged 5 brushes per blister card.

### TYPICAL APPLICATIONS:

Use to apply fluxes, instant solder pastes, grease and other general brushing needs



PART #	DESCRIPTION	COLOR	CARTON QTY.
331765	MULTI-PURPOSE BRUSH 4" - 5 PK BLISTER CARD	SILVER	12

# ABRASIVES



## OPEN MESH CLOTH

MODEL SHOWN:  
331923

### DESCRIPTION

Harris' open mesh cloth is grain-bonded on both sides for tight, leak-proof solder joints. This 180 grit abrasive mesh is constructed of silicon carbide, leaving a less gritty residue. It is completely waterproof. Lasts longer than sand cloth.

### TYPICAL APPLICATIONS:

Polishing, debarring and prepping joints for soldering, as well as metal and plastic tubing and pipes



PART #	DESCRIPTION	GRIT	CARTON QTY
331923	OPEN MESH CLOTH 2 YARDS	180	36
331924	OPEN MESH CLOTH 5 YARDS	180	12
331919	OPEN MESH CLOTH 10 YARDS	180	12
331921	OPEN MESH CLOTH 25 YARDS	180	12

# ABRASIVES



## SAND CLOTH

MODEL SHOWN:  
331768

### DESCRIPTION

Harris' sand cloth is a durable and efficient abrasive. It has a flexible cloth backing. This 120 grit water resistant cloth is constructed of resin-bonded aluminum oxide. Ideal for preparing plumbing fixtures or pipes.

### TYPICAL APPLICATIONS:

Polishing and debarring copper pipes and fittings and prepping plumbing fixtures and pipes for soldering



PART #	DESCRIPTION	GRIT	CARTON QTY
331768	SAND CLOTH 2 YARDS	120	36
331925	SAND CLOTH 5 YARDS	120	12
331920	SAND CLOTH 10 YARDS	120	6
331922	SAND CLOTH 25 YARDS	120	6

# COLD COAT



## THERMAL SHIELD GEL SPRAY

MODEL SHOWN:  
331912

### DESCRIPTION

Cold Coat™ professional grade thermal shield spray slows the transfer of heat in metal while soldering, welding or brazing. Reduces the risk of hidden fires and heat damage when welding or soldering in compromised areas. Protects sensitive valves, gasket and previously soldered joints that may be damaged during welding or soldering. Rapidly cools hot surfaces. Shields adjoining surfaces from overheating, damage, discoloration or distortion due to heat when soldering, brazing or welding. Protects plastic, tubing, insulation and wiring near work area when working in confined areas. Non-toxic and 100% biodegradable.



### TYPICAL APPLICATIONS:

Provides protection of metals during brazing, soldering or welding

PART #	DESCRIPTION	COLOR	CARTON QTY
331912	COLD COAT™ THERMAL SHIELD GEL SPRAY 32OZ BOTTLE - 6PK	CLEAR	6

# HOSE



## HOSE

MODEL SHOWN:  
4300775

### DESCRIPTION

The 3/16", 12' red single-line acetylene welding hose, with A & A fittings, is kink-proof and designed for safety and service. (2) 3/8"-24 l.h. swivel fittings. It has a 200 max psi rating.

The 3/16", 12' twin-line oxy-acetylene welding hose, with A & A fittings, R-Grade, is kink-proof and designed for safety and service. It has a 200 max psi rating. It has brass fittings with green (oxygen) and red (acetylene) hoses.



### TYPICAL APPLICATIONS:

Gas connection using acetylene or oxy-acetylene for welding.

PART NO.	DESCRIPTION	HOSE TYPE	GAS SERVICE	LENGTH	GRADE	COLOR	FITTINGS
4300775	HOSE, 3/16" X 12' A-A SINGLE RED	SINGLE	ACETYLENE	12 FT		RED	A & A
4300155	HOSE, 3/16X12 TWIN A-A R-GRADE ACETYLENE	TWIN	OXYGEN & ACETYLENE	12 FT	"R"	RED & GREEN	A & A



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ACCESSORIES

# OXY FUEL EQUIPMENT

HVAC/R  
PLUMBING

OXY-FUEL BRAZING IS A SIMPLE YET EFFECTIVE METHOD FOR JOINING METAL THAT PRODUCES SOUND, LEAK-PROOF CONNECTIONS. HARRIS OFFERS A VARIETY OF OXY-FUEL OUTFITS. OUR PORT-A-TORCH® OUTFITS OFFER THE ULTIMATE IN PORTABILITY. OUR STANDARD BRAZING OUTFITS ARE EQUIPPED WITH ALL EQUIPMENT NECESSARY TO BRAZE WITH THE EXCEPTION OF CYLINDERS. WHATEVER THE BRAZING JOB, HARRIS HAS A COMPLETE LINE OF EQUIPMENT TO MEET YOUR NEEDS

 **GET CONNECTED**  
@harrisproductsgroup

## PRO INFO

Manual oxy-fuel brazing is common in the air conditioning and refrigeration industry. Properly prepared base metals, uniform heat, proper selection of brazing alloys and fluxes, along with operator skill are critical factors in making sound brazed joints. Here are some typical pitfalls to avoid to ensure your brazing joints are sound:

**PITFALL NO. 1:** The outside of the joint is hot, but the inside is not hot enough. Remember to heat the tube first, which will conduct heat into the fitting to raise the inside temperature.

**PITFALL NO. 2:** The flux has broken down due to excessive heat. Flux can become saturated with oxides if it is overheated, preventing flow of the brazing alloy. A softer flame or a heavier coating of flux will help.

**PITFALL NO. 3:** The brazing alloy balls up instead of running into the joint. Either the base metals have not reached brazing temperature, and the alloy has been melted by the torch flame, or the joint has overheated, resulting in flux that no longer is active. Review the heating procedure. Another possibility is that the base metals are not properly cleaned.

**PITFALL NO. 4:** The brazing alloy flows away from, instead of into, the joint. The fitting may not have reached the proper brazing temperature. Direct the flame toward the fitting.

**PITFALL NO. 5:** The brazing alloy cracks after it solidifies. With copper connections especially, a likely cause is insufficient braze penetration into the joint. This may cause the brazing alloy to crack under stress or vibration. Be sure to hold to recommended clearance and review your brazing technique.

## HVAC PURGING REGULATOR

MODEL SHOWN:  
601-400-580

601  
MODEL



### DESCRIPTION

The model 601 is designed for applications where weight and size are critical factors. Used for HVAC purging, pressure testing with nitrogen or other inert gases. Gauges feature rubber gauge guards for added protection in abusive conditions. Plastic knob for easy grip and precise adjustment. Maximum delivery pressure 400 or 800 PSIG.

### DETAILS

**Capacity:** Light/Medium Duty

**Gauges:** 50mm ABS plastic-psi/bar

**Pressure Regulation:**

0.4 PSIG/100 PSIG

**Seat:** One-piece encapsulated seat design with internal filter and PTFE Teflon® Seat

**Body:** Brass

**Outlet:** 1/4" 45° Flare SAE

**Certifications:** CGA E-4

**Where Used:** HVAC purging, pressure testing

**Weight:** 1.39 lbs./ 0.63 kg.

**Related Items:**

Rubber Gauge Guards

P/N: CPR63332



PART #	MODEL #	GAS	MAX. INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3000648	601-400-580	Ar, He, N2	3000	0-400	600	4500	CGA 580	1/4" 45° flare SAE
3000649	601-800-580	Ar, He, N2	3000	0-800	1450	4500	CGA 580	1/4" 45° flare SAE

## NITROGEN FLOWMETER

MODEL SHOWN:  
31

31  
MODEL

1YR  
WARRANTY

### DESCRIPTION

Flow meter allows for a low controlled flow of nitrogen gas through the copper tube to prevent oxidation. Nitrogen purging prevents contamination.

\*NOTE: Flowmeter must be mounted vertically for accurate reading

### DETAILS

**Capacity:** Light duty

**Gauges:** N/A

**Seat:** N/A

**Body:** Brass

**Where Used:** Brazing and back purging applications

**Weight:** 0.986 lbs./ 0.45 kg.



PART #	MODEL #	GAS	FLOW CAPACITY SCFH	COMPENSATED PSIG	MAX. INLET PSIG	INLET CONNECTION	OUTLET CONNECTION
5400855	31-2 N <sub>2</sub>	N <sub>2</sub>	0 - 70	50	100	1/4" - SAE FLARE (F)	1/4" - SAE FLARE (M)



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OXY FUEL EQUIPMENT



**PAT**  
MODEL

## DESCRIPTION

The Harris HVAC Port-A-Torch® contains all the quality equipment needed for brazing. Packaged in a rugged, molded plastic carrying case, the solid brass brazing handle and cutting attachment have industry standard connections which make them compatible with most brazing equipment. The outfit is designed to carry one MC acetylene cylinder and one 20 cu. ft. oxygen cylinder. As supplied, the outfit is capable of cutting up to a 1" plate and welding up to a 1/16" plate. The outfit can cut up to a 4" plate and weld up to a 1/2" plate with larger tips and acetylene cylinder.

## DETAILS

**Capacity:** Cuts up to 1" thick, welds to 1/16"

**Duty:** Light

**Mixer Type:** Equal pressure

**Warranty:** 7 years - Regulator  
1 year - All other components

**Related Items:** FlashGuard® Check Valves



PART #	MODEL #	TORCH HANDLE	MIXER	CUTTING TIP	CUTTING ATTACHMENT	WELDING/ BRAZING TIPS	REGULATORS		ACCESSORIES
							OXYGEN	FUEL	
4400177	15HV601-200A NO C/A DLX	15-4HV	B-15-3HV	-	-	5090-1 5090-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>Goggles</li> <li>Striker</li> <li>12 1/2' x 3/16"A to A Hose</li> </ul>
4400176	15HV601-200A DLX	15-4HV	B-15-3HV	3690-0	36-2HV	5090-1 5090-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>Goggles</li> <li>Striker</li> <li>12 1/2' x 3/16"A to A Hose</li> </ul>
4400175	15HV601-200A NO C/A DLX	15-4HV	B-15-3HV	-	-	5090-1 5090-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>Goggles</li> <li>Striker • MC #5 Wrench</li> <li>12 1/2' x 3/16"A to A Hose</li> <li>20 CU. Ft. O<sub>2</sub> Cylinder</li> <li>10 CU. Ft. MC Acet. Cylinder</li> </ul>
4400174	15HV601-200A DLX	15-4HV	B-15-3HV	3690-0	36-2HV	5090-1 5090-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>Goggles</li> <li>Striker • MC #5 Wrench</li> <li>12 1/2' x 3/16"A to A Hose</li> <li>20 CU. Ft. O<sub>2</sub> Cylinder</li> <li>10 CU. Ft. MC Acet. Cylinder</li> </ul>

**WHEN  
PORTABILITY  
IS A MUST!**



# 15-4HV

MODEL

1YR WARRANTY

## LIGHT WEIGHT BRAZING HANDLE

### DESCRIPTION

The Model 15 is a lightweight solid brass brazing handle with front valves for more convenient adjustment while welding or brazing. The Model 15 is compatible with all fuel gases. The brazing handle has industry standard connections which make it compatible with most brazing equipment. It can be used for brazing, welding, and light heating.

### DETAILS

**Capacity:** Welds to 5/16"/7.9mm

**Length:** 5 3/4"/146.0mm

**Weight:** 0.5 lb./0.23 kg.

**Hose connections:** 3/8" - 24 "A"

**Optional Equipment:**

P/N: 4300835 Model 88 - 6 CVTA (R&L) check valves



PART NO.	MODEL NO.	MIXERS COMPATIBLE MIXER(S)	TIP TUBE COMPATIBLE TIP TUBE(S)	WELDING/BRAZING TIP STYLE ACET/H <sub>2</sub> (SIZE)
1401414	15-4HV	B-15-3HV	HMA J-15	5090-(1-5)

# 36-2HV

MODEL

1YR WARRANTY

## CUTTING ATTACHMENT – FOR USE WITH ALL FUEL GASES

MODEL SHOWN:  
36-2HV

### DESCRIPTION

The Model 36-2HV is a \*Victor® compatible cutting attachment with brazed triangular stainless steel tubes, making it light in weight while still providing exceptional strength and rigidity. The cutting attachment has an industry standard connections which make them compatible with most brazing equipment. The captive union nut protects the seats and "O" rings from damage. It features a fold forward cutting lever allowing easier connection, even with gloves on. The ease-on cutting valve provides smoother controlled starts. The forged solid brass head provides years of safe, dependable service, even under the most abusive conditions.

### DETAILS

**Capacity:** Cuts to 3"/76.2mm acetylene; 1"/25.4mm alternate fuels

**Duty:** Light

**Length:** 7 1/2"/190.5mm

**Weight:** 0.75 lbs./0.34 kg.

**Mixer Type:** Equal pressure

**Where Used:** HVAC, maintenance, metal art, etc.



PART NO.	MODEL NO.	HEAD ANGLE	COMPATIBLE HANDLES	TIP STYLES ACETYLENE / H <sub>2</sub>	ALTERNATE* FUEL
1300055	36-2HV	90°	15-4HV	3690AC	3690-P

\*Propylene or propane-based fuels and natural gas.



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OXY FUEL EQUIPMENT

# B-15-3HV

MODEL

1YR WARRANTY

## LIGHT DUTY EQUAL PRESSURE MIXER

MODEL SHOWN:  
B-15-3HV

### DESCRIPTION

The Model B-15-3HV is an "E" equal or positive pressure \*Victor® compatible mixer for welding, brazing and is approved for use with all fuel gases. Thread sealants are not required when used with genuine Harris tips.

### DETAILS

**Capacity:** Welds to 1/2"/12.7mm

Heats to 60,000 BTU

**Duty:** Light

**Thread size:** Mixer to tip or tube – 5/16" - 27

**Where Used:** Metal art, maintenance, general repairs & installation



PART NO.	MODEL NO.	COMPATIBLE HANDLE(S)	ACETYLENE BRAZING/WELDING TIPS (SIZES)
9101335	B-15-3HV	15-4HV	5090 (0-10)

# 5090

MODEL

1YR WARRANTY

MADE IN THE USA

## ACETYLENE WELDING AND BRAZING TIPS

MODEL SHOWN:  
5090

### DESCRIPTION

Model 5090 tips are manufactured using environmentally-friendly tellurium copper that has excellent machining properties resulting in a higher quality tip. They are swaged for more precise and consistent flames. They use a universal mixer for sizes 1-5, eliminating the expense of using a different mixer for every tip size. All 5090 tips have a metal-to-metal mixer seat virtually eliminating the possibility of leaks and the need for thread sealants when used with Harris mixers.

### DETAILS

**Where Used:** HVAC, Metal Arts, Maintenance

**Compatible Equipment:**  
C-9 Tip Cleaner P/N: 900156  
**Thread Size:** 5/16" - 27



PART NO.	TIP SIZE NO.	METAL THICKNESS INCHES	COPPER TUBING SIZE			
			HVAC/R TUBING		PLUMBING TUBING SIZE	
			NOMINAL DIAMETER	TIP SIZE NO.	NOMINAL DIAMETER	TIP SIZE NO.
1601771	1	1/32"	1/4"	3/4	3/8"	2
1601772	2	3/64"	3/8"	4	1/2"	2/3
1601773	3	1/16"	1/2"	4	3/4"	3/4
1601774	4	3/32"	5/8"	5	1	4/5
1601775	5	1/8"	3/4"	5	1 1/2"	5/6

## GENERAL PREHEAT SINGLE-PIECE HAND CUTTING TIPS

MODEL SHOWN:  
3690

# 3690

MODEL

1YR  
WARRANTY

### DESCRIPTION

Acetylene cutting tips specifically used with the light duty Harris Model 36 series of cutting attachments.

### DETAILS

**Construction:** One-piece

**Preheat Type:** General

**Where Used:** HVAC, maintenance, metal art, etc.

**Compatible Equipment:**

C-9 Tip cleaner P/N: 9000156



PART NO.	MODEL NO.	DEPTH OF CUT	O <sub>2</sub> PSIG	O <sub>2</sub> FLOW SCFH	FUEL PSIG	FUEL SCFH	DRILL SIZE
1500650	3690-0	¼" - ½"	20 - 25	70 - 80	5	10 - 15	NO. 60
1500660	3690-1	½" - 1"	25 - 40	95 - 105	5	15 - 25	NO. 56
1500670	3690-2	1" - 3"	40 - 60	180 - 215	5	20 - 30	NO. 52

# HMA J-15

MODEL

1YR  
WARRANTY

## OXYGEN ACETYLENE ROSEBUD TIP

MODELS SHOWN:  
HMA-J-15

### DESCRIPTION

The Model "J" heating tips are a single-piece, all copper tip tube and tip combination specifically used for oxygen acetylene heating applications. Thread sealants are not required when used with genuine Harris mixers.

### DETAILS

**Where used:**

HVAC, Metal Arts, Maintenance, Etc.



#### "J" SERIES TIP LESS MIXER

#### COMPATIBLE TORCH AND MIXER

PART NO.	MODEL NO.	TORCH MODEL NO.	MIXER MODEL NO.
1800555	HMA J-15	15-4HV	B-15-3HV



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OXY FUEL EQUIPMENT

37

# inferno®

BY HARRIS

## SWIRL COMBUSTION TECHNOLOGY

The revolutionary Inferno® tip has a specially designed insert that delivers reliable swirl combustion performance every time. The swirl combustion of the Inferno® tip is unlike anything offered on the market. Contractors get a consistent, hotter flame that will engulf and wrap around the work piece for maximum efficiency.

## DURABLE, LONG-LIFE DESIGN

Tips take a beating, so the Inferno® is constructed from thick and strong 304 stainless steel tube stock. All Inferno® tips are crafted from industrial grade materials designed to stand up in the field. The Inferno® by The Harris Products Group is a tip that is built to last.

## QUALITY, PRECISION MANUFACTURING

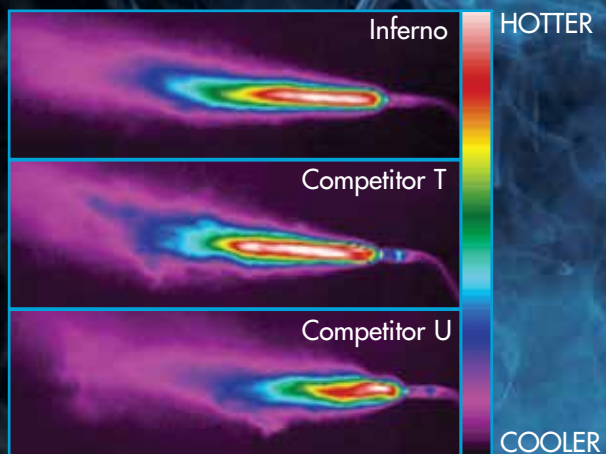
Engineers at The Harris Products Group, in developing the Inferno®, understand that the heat contractors need starts with the precision of the tip orifice. To get the best flame, the team at The Harris Products Group developed a unique manufacturing process that allows for consistent production of all Inferno® tip orifices. Our exacting manufacturing standards ensure the optimal delivery of fuel gas, resulting in the perfect flame. In addition, during the manufacturing process, every tip is tested twice, once to ensure the perfect orifice and once to ensure flame quality – this all adds up to making a truly great, hot tip.

## THE HOTTEST TIP, EVERYTIME

The technology behind the Inferno® is the result of exhaustive research and development followed by exacting standards in manufacturing. The lack of heat, inconsistency and “Horns” you might find in the flames of other brands are not found in the flame of the Inferno® by The Harris Products Group. With Inferno®, you get a richer, hotter, more perfect burn.

## PROOF POSITIVE – THE PERFECT FLAME

Using thermal photography techniques, the product development team at The Harris Products Group evaluated the relative flame consistency and heat of the Inferno® tips. The team focused on developing a configuration in the design of the Inferno® tips that would produce the proper heat with reliable and repeatable flame performance.





# MORE HEAT, CONTROL AND CONSISTENCY

Contractors in heating, ventilation, air conditioning, plumbing and refrigeration know that when it comes to quality and performance, the heat, temperature consistency and flame need to be perfect every time. The equipment they choose and the brand they rely on need to deliver. We created the Inferno<sup>®</sup> to meet the rigorous needs of today's contractor.

## YOUR GO-TO TIP

The Inferno<sup>®</sup> by Harris can deliver what projects in the field require – a hot, consistent and controllable flame with optimal safety for a job well done. Sure, professional contractors need to have air-fuel and oxy fuel equipment choices at their disposal. But why be burdened with a complicated oxy fuel setup when a high-performance air fuel Inferno<sup>®</sup> tip is really the best tool for the job? Contractors can rely on the Inferno<sup>®</sup> by Harris for the hot, consistent and controllable flame they need.

## EASY TO INTEGRATE

All Inferno<sup>®</sup> tips were designed to work and integrate with today's existing quick-connect air fuel handles. This allows contractors to simply and quickly connect the Inferno<sup>®</sup> tip to their existing torch handle and they are ready to work. And, the Inferno<sup>®</sup> by The Harris Products Group was designed to be compact and portable, meeting the real-world needs that contractors have.

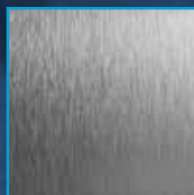
## INFERNO<sup>®</sup> APPLICATIONS



COPPER



BRASS



STAINLESS



ALUMINUM



STEEL



CARBIDES



Applications in the field vary.

Contractors will have confidence with the Inferno<sup>®</sup> by The Harris Products Group that the right combination of tip and alloys needed to get the job done right are always available.

# AIR FUEL EQUIPMENT

## AIR-FUEL HAND TORCHES FOR DEMANDING PROFESSIONALS

The line of Harris air-fuel hand torches brings high performance and convenience to professional heating, ventilation, air conditioning, plumbing and refrigeration contractors. Built with heating performance, temperature consistency and flame control in mind, a Harris hand torch is the perfect partner for demanding brazing and soldering applications.

## HOT TECHNOLOGY

Professional contractors need high-performance torches with truly hot flames engineered to deliver faster brazing and soldering times. Harris hand torches incorporate specially designed high-output swirl combustion tips that are tested for optimal brazing and soldering performance.

## DURABLE MATERIALS

Harris hand torches are constructed to stand up in the harshest situations. With industrial grade materials like 304 stainless steel and 360 brass, Harris hand torches mean business.

## VERSATILE PERFORMANCE

Harris hand torches have the heating performance and temperature consistency needed for many of today's common brazing and soldering situations.



PART NO.	1400356	1400355	1400359	1400357	1400353	PART NO.	4300672	4300675
MODEL	HSLT604HD	HSLT604	HTS99	HTM9	HTM11	MODEL	MAP-Pro®	Propane
DESCRIPTION	Heavy Duty Trigger Torch	Trigger Torch	Auto Ignite	Manual Lighting	Manual Lighting	DESCRIPTION	14.1 oz. MAP-Pro®	14.1 oz. Propane
MAP-Pro®	SOLDERING CAPACITY	3/4" - 4" 20 - 102 mm	1/8" - 3" 3 - 76 mm	1/4" - 3" 6 - 76 mm	1/4" - 3" 6 - 76 mm	UNITS PER CASE	12	12
	BRAZING CAPACITY	1/4" - 1 1/4" 6 - 32 mm	1/16" - 1" 1.6 - 25 mm	1/4" - 1 3/4" 6 - 45 mm	1/4" - 1 3/4" 6 - 45 mm	CASES PER PALLET	90	90
PROPANE	SOLDERING CAPACITY	3/4" - 3" 20 - 76 mm	1/8" - 2" 3 - 51 mm	1/4" - 3" 6 - 76 mm	1/4" - 3" 6 - 76 mm			
	BRAZING CAPACITY	1/4" - 1" 6 - 25 mm	1/16" - 3/4" 1.6 - 20 mm	1/4" - 1" 6 - 25 mm	1/4" - 1" 6 - 25 mm			

# INFERNO® KITS

## QUICK CONNECT "A" HOSE CONNECTIONS - ACETYLENE

MODEL SHOWN:  
HX-3B HQA-4

### DESCRIPTION

The revolutionary Inferno® tip has a specially designed insert that delivers reliable swirl combustion performance every time. The swirl combustion of the Inferno® tip is unlike anything offered on the market. Contractors get a consistent, hotter flame that will engulf and wrap around the work piece for maximum efficiency.

### TYPICAL APPLICATIONS:

Applications include brazing, soldering and heating. Contractors will have confidence with the Inferno® by The Harris Products Group that the right combination of tip and alloys needed to get the job done right are always available.



PART NO.	DESCRIPTION	BRAZING HANDLE	TANK CONN	FUEL GAS REGULATOR	BRAZING TIPS	WRENCH	HOSE
4400083	HX-3B HQA-4	HQA-4	B	601-15-520A	HA-3i, HA-11i	#5 CHROME	3/16" x 12' AxA RED
4400084	HX-4B HQA-4	HQA-4	B	601-15-520A	HA-5i, HA-14i	#5 CHROME	3/16" x 12' AxA RED
4400085	HX-5B HQA-4	HQA-4	B	601-15-520A	HA-5i	#5 CHROME	3/16" x 12' AxA RED
4400087	HX-5MC HQA-4	HQA-4	MC	601-15-200A	HA-5i	#5 CHROME	3/16" x 12' AxA RED
4400088	HX-6MC HQA-4	HQA-4	MC	601-15-200A	HA-3i, HA-8i	#5 CHROME	3/16" x 12' AxA RED

## AIR FUEL EQUIPMENT INFERNO AIR FUEL QUICK CONNECT SWIRL TIPS



### COPPER TUBE CAPACITY

PART NO.	MODEL	TIP SIZE		GAS FLOW		SOFT SOLDER		BRAZING	
		INCHES	MM	@14 PSI	(0.9 BAR)	INCHES	MM	INCHES	MM
				SCFH	M3/HR				
1601110	HA-3i	1/4"	6.65	3.10	0.09	UP TO 1"	25.40	UP TO 1/2"	UP TO 12.70
1601111	HA-5i	5/16"	7.87	5.80	0.16	3/4" - 2"	19.05 - 50.80	1/4" - 1"	6.35 - 25.40
1601112	HA-8i	3/8"	9.65	6.60	0.19	1" - 3"	25.40 - 76.20	1/2" - 1 1/4"	12.70 - 31.75
1601113	HA-11i	7/16"	11.18	9.80	0.28	1 1/4" - 4"	31.75 - 101.60	7/8" - 2"	22.23 - 50.80
1601114	HA-14i	1/2"	12.70	12.60	0.36	2" - 5"	50.80 - 127.00	1 1/2" - 3"	38.10 - 76.20
1601115	HA-32i	3/4"	19.05	27.50	0.78	4" - 6"	101.60 - 152.40	1 1/2" - 5"	38.10 - 127.00

ACETYLENE



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AIR FUEL EQUIPMENT

# PRO INFO

## NITROGEN PURGE & BRAZING

**MOST HVAC INSTALLATION INSTRUCTIONS REQUIRE FLOWING NITROGEN THROUGH THE COPPER TUBE DURING BRAZING. THIS IS AN IMPORTANT STEP IN PRODUCING A QUALITY HVAC SYSTEM.**

Oxygen in the air combines with copper to form surface copper oxide. We see this on copper tube as a light to dark brown discoloration. You've probably seen ACR/medical gas copper tube supplied from the tube mill nitrogen charged and capped. This is designed to prevent this oxide formation inside the tube. Once the caps are removed and the tube is cut for installation, the nitrogen protection is lost.

At high brazing temperature a heavier black oxide forms (cupric oxide). On cooling this oxide flakes off to form "scale". While mostly cosmetic on the tube exterior, inside the tube the oxide flakes are carried by the refrigerant through the system. This contaminant can restrict flow through small orifices such as metering devices or the pilot valve capillary tube in a reversing valve. This problem has long been an issue in brazing HVAC tube. It has become more important with the change from HCFC refrigerants like R-22 that use mineral oil to the new HFC refrigerants (410a) using POE oils. Due to their polar nature, POE oils have a solvent effect and can "scrub" the copper tube walls. Oxide from tube walls and loose scale can circulate through the system.

To prevent oxidation, flow dry nitrogen through the tube during brazing. Nitrogen is inert, (non- reactive), and will displace the oxygen to prevent scale formation. Nitrogen is typically introduced into the system through the Schrader valve (after removing the core), or other system opening. Connect a hose or tube from the nitrogen cylinder to one end of the pipe. The cylinder will be equipped with a regulator or flow control valve such as a Harris Model 801 HVAC purging regulator.

There is no universal requirement for the delivery pressure setting, but the goal is to use low volume/pressure to displace the oxygen. A suggested starting point is 2 -3 CFH or 1.5 - 2 PSI. Some users will set pressure until they feel a slight flow at the exit point on the back of their hand. It's good practice to initiate flow before heating and continue to flow nitrogen until the part has cooled.

Avoid an excessive flow rate that builds pressure inside the tube. A high flow rate will tend to cool the tube reducing brazing heat efficiency. Excess nitrogen pressure can build up inside the tube and reduce braze alloy penetration. A small hole in a cap at the end of the line will allow the nitrogen to escape.

**It's a good idea to experiment with flow rates by test brazing parts on the bench. Section the finished assemblies and inspect for a clean inner tube wall.**

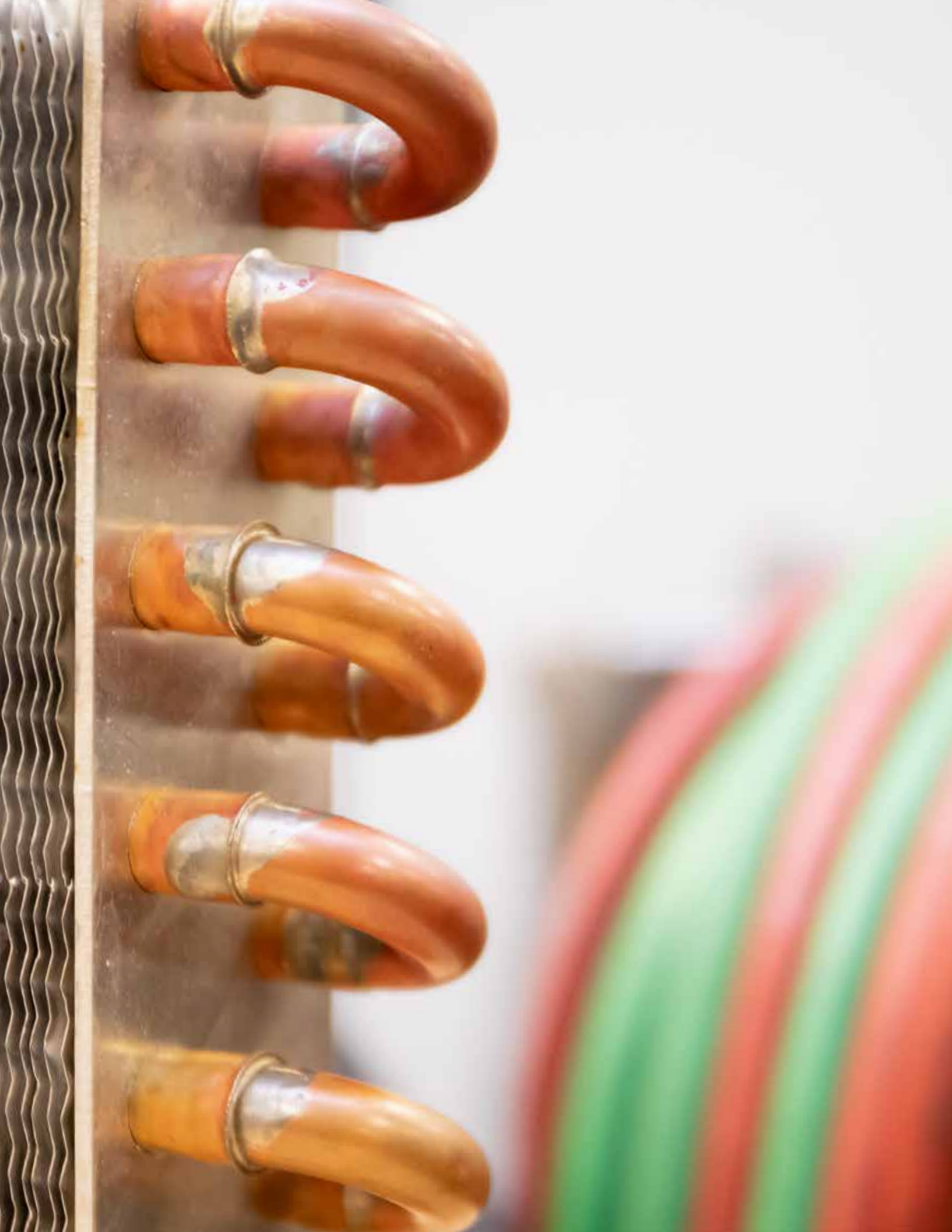
### NITROGEN PURGE



Without nitrogen purge

With nitrogen purge









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