

# Turn to the **Pros**

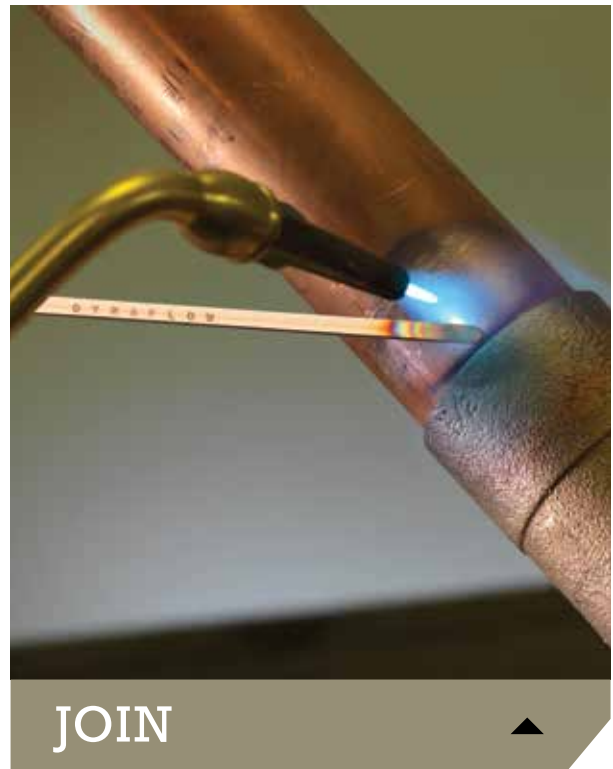


A LINCOLN ELECTRIC COMPANY

**HVAC/R & PLUMBING 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 PROFESSIONAL TRADESMEN. HAVING THE RIGHT TOOLS FROM HARRIS WILL DELIVER A JOB WELL DONE, EVERY TIME. WE'RE 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 operation 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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# THE HARRIS PRODUCTS GROUP



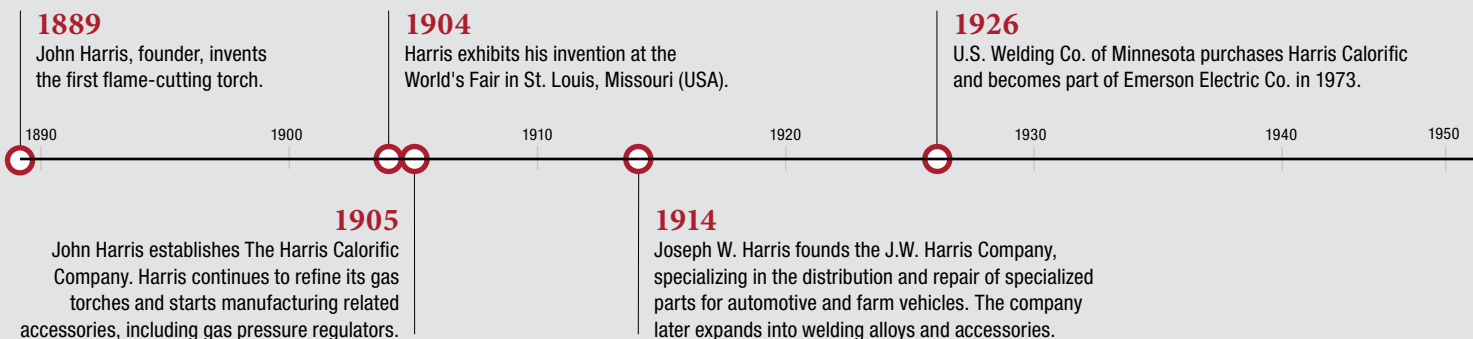
The Harris Products Group was formed by combining two strong names in the brazing business—Harris Calorific and J.W. Harris. The Harris Products Group is a world leader in metalworking products used in the brazing, soldering, welding, cutting, and gas distribution industries. The combined company offers excellence in the manufacture of:

- Brazing and soldering alloys
- Brazing and soldering torch equipment
- Preforms, rings, and return bends
- Welding alloys
- Fluxes
- Industrial and specialty gas regulation equipment



The Harris Products Group is a wholly-owned subsidiary of The Lincoln Electric Company. Lincoln has more than 50 manufacturing locations, including operations and joint ventures in 20 countries and a worldwide network of distributors and sales offices covering more than 160 countries.

## THE HARRIS PRODUCTS GROUP HISTORY



## MANUFACTURING FACILITIES

Based in Mason, Ohio, The Harris Products Group has four manufacturing locations and a worldwide network of distributors and sales offices covering more than 90 countries.



**1960-1980**  
Both Harris companies expand around the world.

**2005**  
Lincoln Electric purchases the privately-held J.W. Harris Company.

**2006**  
Harris Calorific and J.W. Harris combine, creating The Harris Products Group.

**1990**  
Lincoln Electric purchases Harris Calorific from Emerson Electric.

**2008**  
The Harris Products Group purchases Brastak in Brazil.

**2012**  
Harris expands their equipment offerings to include new innovative products specifically designed for production brazing including Perfect Flame™ technology.

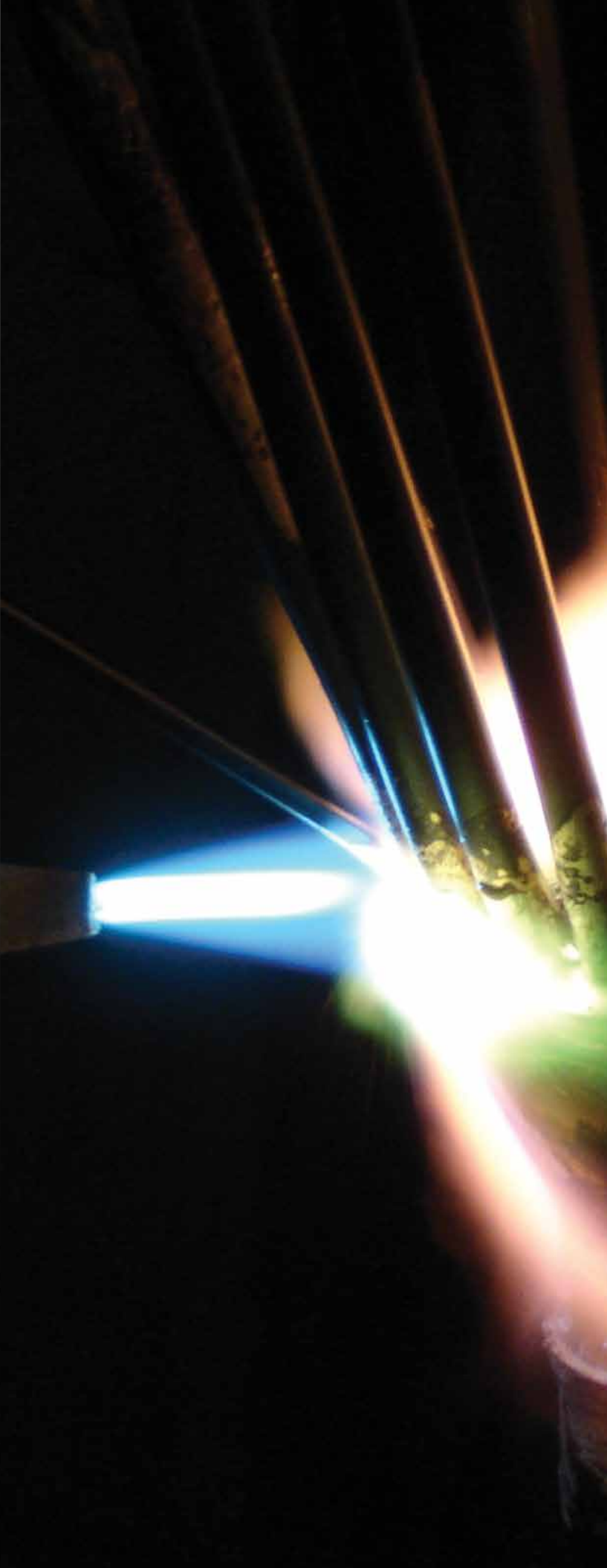
## FILLER METALS SELECTION CHART

PRODUCTS	QQ-B-654A	AMS	AWS A5.8	Ag	Cu	Zn	Ni	Sn	OTHER	SOLIDUS		LIQUIDUS		FLUIDITY RATING*	TYPICAL APPLICATION	
										°F	°C	°F	°C			
DYNAFLOW®				6	87.9					6.1P	1190	643	1465	796	3	Premium alloy for copper or brass. Excellent strength and ductility, use as replacement for 15.
BLOCKADE®			BCuP-9			REM		6.5	6.5P Si		1178	637	1247	674		For copper or brass. Lower brazing temperature, excellent replacement for many silver bearing BCuP alloys.
HARRIS 0			BCuP-2		92.9					7.1P	1310	710	1475	802	5	For copper. Requires medium fit-up, .002-.007" clearance.
STAY-SILV® 2			BCuP-6	2	91.0					7.0P	1190	643	1450	788	4	Broadens melting range of 0. For copper or brass. Clearance range .002-.005".
STAY-SILV® 5			BCuP-3	5	89.0					6.0P	1190	643	1500	816	3	For copper or brass. Used to bridge gaps where close fit-up can't be maintained.
STAY-SILV® 6				6	87.5					6.5P	1190	643	1425	774	5	For copper or brass. Medium range alloy for applications with clearances or .002-.005".
STAY-SILV® 15	BCuP-5		BCuP-5	15	80.0					5.0P	1190	643	1480	804	3	For copper or brass. Useful for wide clearance. .002-.006". Good ductility.
LOW FUMING BRONZE			RBCuZn-C		58	40		1	1 Fe		1590	866	1630	888		For steel and cast iron. Braze welding type alloy with flux coating.
SAFETY-SILV® 25				25	43	30		2			1270	688	1435	779	5	For steel to copper alloys. Moderate ductility. For dissimilar metals joint should be in compression on cooling.
SAFETY-SILV® 30	BAG-20		BAG-20	30	38	32					1250	677	1410	766	6	Use with ferrous and non-ferrous base metals. Flow suitable for bridging gaps.
SAFETY-SILV® 35			BAG-35	35	32	33					1250	677	1350	732	5	Ferrous and non-ferrous base metals. Moderate temperature and good ductility.
SAFETY-SILV® 38T			BAG-34	38	32	28		2			1220	660	1325	718	7	Low-temperature, free-flowing alloy with exceptional fillet-forming quality. For ferrous and non-ferrous metals.
SAFETY-SILV® 40				40	30.5	29.5					1250	660	1350	732	5	For steel, nickel, and copper alloys. Suitable for wider clearance yet provides good ductility.
SAFETY-SILV® 40T			BAG-28	40	30	28		2			1220	660	1310	710	6.5	Good flow properties. Suitable for ferrous and non-ferrous base metals.
SAFETY-SILV® 45	BAG-5		BAG-5	45	30	25					1225	663	1370	743	6.5	General purpose filler for steel and copper alloys. Melting range useful for wide clearances.
SAFETY-SILV® 45T			BAG-36	45	27	25		3			1195	646	1265	685	7	Good flow properties. Suitable for ferrous and non-ferrous base metals.
SAFETY-SILV® 50			BAG-6	50	34	16					1270	688	1425	774	5.5	Often used to braze galvanized steel but suitable for bridging gaps in other ferrous and non-ferrous metals.
SAFETY-SILV® 50N		4788	BAG-24	50	20	28		2			1220	660	1305	707	7	For stainless steel applications to prevent crevice corrosion.
SAFETY-SILV® 56	BAG-7	4763	BAG-7	56	22	17		5			1145	618	1205	652	8	For ferrous and non-ferrous alloys. Often used to braze stainless steel for food service. NSF 51 listed.
AL-BRAZE™ 1070			BAISI4								1070	577	1080	582		For brazing aluminum base metals.
AL-BRAZE™ 4043											1065	574	1170	632		Aluminum repair, brazing of splits/holes. Wider melting range than Al-Braze™ 1070.
ALCOR®											824	440	824	440		For the repair of heat exchangers, air conditioners, aluminum alloy condensers and other applications.
ALSOLDER™ 500						15		85			391	199	482	250		A low temperature solder for aluminum and copper.
NICK®											438	225	729	387		Fit small tight fitting connections and to bridge gaps in large, loose fitting, or non-concentric pipe.
SPEEDY®											450	232	555	290		Faster melting range. Allows operator to fit small, tight fitting pipe connections quickly.
STAY-BRITE®				4				96			430	221	430	221	10	Low-temperature solder for all metals except aluminum. Used in refrigeration joints. NSF 51 listed.
STAY-BRITE® 8				6				94			430	221	535	279	8	Similar to Stay-Brite®. Plastic range useful in bridging wider gaps. Certified to NSF 51 listed.
BRIDGIT®											460	238	630	332	6	Lead-free, nickel & silver-bearing solder of exceptional strength & capping ability. NSF 61 listed.

\* The higher the fluidity rating, the faster the alloy flows within the melting range.

**WARNING** Protect yourself and others. Read and understand this information. BRAZING AND SOLDERING ALLOYS AND FLUXES MAY PRODUCE FUMES AND GASES HAZARDOUS TO YOUR HEALTH. • Before use, read and understand the manufacturer's instructions, Material Safety Data Sheets (MSDS) and your employer's safety practices. • Keep your head out of the fumes. • Use enough ventilation, exhaust at the flame or both, to keep fumes and gases from your breathing zone and the general area. • For maximum safety, be certified for and wear a respirator at all times when welding or brazing. • Wear correct eye, ear and body protection. • Do not touch live electrical parts. • See American National Standard Z49.1, Safety in welding, cutting and allied processes, published by the American Welding Society, 500 N.W. LeJeune Road, Miami Florida 33126; OSHA Safety and Health Standards, 29 CFR 1910, Available from the U.S. Government printing office, Washington, D.C. 20402. • MSDS are available for all Harris products. MSDS contain detailed safety and health information about possible hazards associated with use of these products. MSDS are available from your employer or by contacting the Harris Products Group, Mason, OH 45040.





**PRO INFO:**

**ESTIMATING AMOUNTS OF BRAZING ALLOYS REQUIRED**

- 1 Locate the tube diameter to be joined and the wire size to be used. Where the row and the column intersect is the approximate length in inches of alloy required per joint.
- 2 Multiply the length of the alloy needed per joint by the total number of joints.
- 3 To convert the total length to pounds or troy ounces, divide by the inches of alloy/lb. in row A or the inches of alloy/troy oz. in row B.

ESTIMATING BRAZING ALLOY AMOUNTS						
TUBE DIAMETER	3/64" WIRE	1/16" WIRE	3/32" WIRE	.050"x 1/8" ROD	TIP SIZE	ESTIMATED ACETYLENE USE (C.F.H.)
1/4"	1 1/4"	3/4"			4	6-14
3/8"	1 1/2"	1"			4	6-14
1/2"	2"	1 1/2"	3/4"	7/8"	5	8-18
3/4"	3"	2"	1"	1 1/8"	5	8-18
1"		3"	1 1/2"	1 5/8"	6	10-20
1 1/4"		4"	2"	2 1/2"	6	10-20
1 1/2"			2 1/2"	2 3/4"	7	13-25
2"			3 3/4"	4 1/2"	8	16-32
2 1/2"			6"	7 1/2"	8	16-32
3"			10"	11 1/2"	9	20-37
3 1/2"			12"	13 3/4"	9	20-37
4"			14"	16"	10	24-42
6"			21"	23 3/4"	10	24-42
A	1900"	1068"	475"	513"	in. of alloy/lb.	
B	118"	67"	29"		in. of alloy/troy oz.	

A- Phos/copper/silver alloys, Dynaflo<sup>®</sup>, Harris<sup>®</sup> 15, etc.  
 B- Silver Brazing alloys, Safety-Silv<sup>®</sup> 40, 45, 45T, 56  
 The above figures are approximate and will vary depending on joint clearance, depth, and operator technique.

# 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 INDUSTRY REQUIRES.



GET CONNECTED

Go to [www.twitter.com/HarrisProducts](http://www.twitter.com/HarrisProducts)

## Dynaflow®

Dynaflow® is an exceptionally pure phos/copper/silver brazing alloy recommended for all copper to copper and copper to brass cooling applications. This alloy has provided decades of serviceability and economics to our customers. Dynaflow® is a premium, medium range silver alloy developed to mirror the performance characteristics of the 15% silver brazing filler metals. Excellent for brazing both tight and loose fitted application. It is a leading choice for operators, service technicians, and end users.

## BLOCKADE

Blockade® is the first of a new family of silicon/tin alloy brazing filler metals. Blockade® is engineered to join copper, brass, or bronze. Blockade's innovative composition provides the ability to form a large shoulder, or cap, at the braze connection. Excellent for all industries.

## Low Fuming Bronze (LFB)

A braze-welding alloy used to braze steel, steel alloys, and cast iron. LFB is frequently used to braze steel brackets, straps, angles and related fittings. Rod is deposited by melting it along the length of the joint. This alloy requires wider joint gaps, fillets, or v-grooved butt joints for best results.

## HARRIS 0

Low cost alloy for many copper-to-copper applications where moderate fit-up can be maintained and brazing temperature is not critical.

## Stay-Silv® 2

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.

## Stay-Silv® 5

Stay-Silv® 5 is useful primarily where fit-up cannot be tightly controlled. Stay-Silv® 5 is a medium melting range alloy.

## Stay-Silv® 6

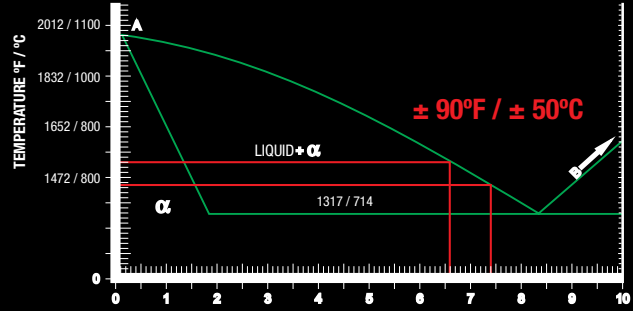
Stay-Silv® 6 is slightly more fluid and can be used where closer tolerances are available and is somewhat more ductile than Harris 0.

## Stay-Silv® 15

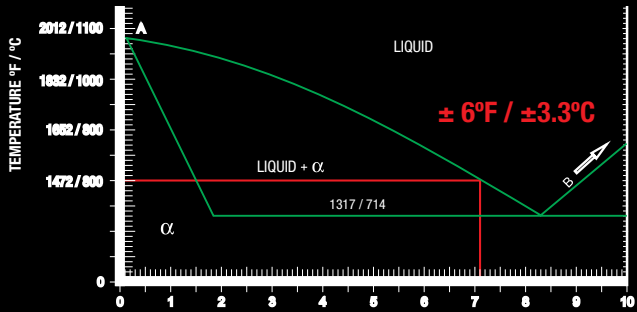
Stay-Silv® 15 is the industry standard for air conditioning/refrigeration applications. Its melting range is useful in filling wider clearances while providing good service ductility.

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.

**Standard B-CuP-2 Quality**



**Harris Quality**



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

But our dedication to making the world's purest and most consistent brazing alloys has not changed; we are committed to giving you the best tool 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.



**HARRIS MANUFACTURES  
THE MOST RECOGNIZED  
BRAZING ALLOYS IN THE  
WORLD.**

**THEY ARE MADE IN THE USA  
FROM ONLY THE PUREST  
RAW MATERIALS,  
ACCEPT NO IMITATIONS.**

**ASK FOR GENIUNE HARRIS.**



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Orders: 1.800.733.4533

**PHOS COPPER ALLOYS**

DESCRIPTION	DIA	LENGTH	PRESENTATION	PER PACKAGE	MASTER
.050 x 1/16 x 20 x 51 STICK TUBE	0.50 X 1/16"	20"	51 UNITS	TUBE	25 TUBES
.050 x 1/16 x 20 x 25 LB PACKAGE	0.50 X 1/16"	20"	25 LB	25 LB	BOX
.050 x 1/8" x 28 STICK TUBE - 5LB	0.50 X 1/8"	28"	28 UNITS	TUBE	5 LB
.050 x 1/8" x 28 STICK TUBE - 25LB	0.50 X 1/8"	28"	28 UNITS	TUBE	25 TUBES
.050 x 1/8" x 20 x 5 LB PACKAGE	0.50 X 1/8"	20"	5 LB	TUBE	5 LB
050 x 1/8" x 20 x 25 LB PACKAGE	0.50 X 1/8"	20"	25 LB	25 LB	BOX
050 x 1/8" x 20 x 25 LB PACKAGE	0.50 X 1/8"	20"	25 LB	25 LB	BOX
1/16" DIA x 20 x 25 LB PACKAGE	1/16"	20"	25 LB	25 LB	BOX
1/16" DIA x 36 x 25 LB PACKAGE	1/16"	36"	25 LB	25 LB	BOX
1/16" DIA x 20 x 51 STICK TUBE	1/16"	20"	51 STICKS	TUBE	25 TUBES
2MM DIA x 20 STICK TUBE	2 MM	20"	20 STICKS	TUBE	25 TUBES
2MM DIA x 20 x 25 LB PACKAGE	2 MM	20"	25 LB	25 LB	BOX
2MM DIA x 500MM x 20 STICK TUBE FC	2MM X 500 MM	20"	20 STICKS	TUBE	25 TUBES
3/32" DIA x 20 x 24 STICK TUBE	3/32"	20"	24 STICKS	TUBE	25 TUBES
3/32" DIA x 20 x 25 LB PACKAGE	3/32"	20"	25 LB	25 LB	BOX
3/32" DIA x 36 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX
3/32" SQ x 20 x 20 STICK TUBE	3/32"	20"	20 STICKS	TUBE	25 TUBES
3/32" SQ x 20 x 25 LB PACKAGE	3/32"	20"	25 LB	25 LB	BOX
3/32" SQ x 36 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX
1/8" DIA x 20 x 14 STICK TUBE	1/8"	20"	14 STICKS	TUBE	25 TUBES
1/8" DIA x 20 x 25 LB PACKAGE	1/8"	20"	25 LB	25 LB	BOX
1/8" DIA x 36 x 25 LB PACKAGE	1/8"	36"	25 LB	25 LB	BOX
1/8" SQ x 20 x 11 STICK TUBE	1/8"	20"	11 STICKS	TUBE	25 TUBES
1/8" SQ x 20 x 25 LB PACKAGE	1/8"	20"	25 LB	25 LB	BOX
1/8" SQ x 36 x 10 LB PACKAGE	1/8"	36"	10 LB	TUBE	BOX
1/8" SQ x 36 x 25 LB PACKAGE	1/8"	36"	25 LB	25 LB	BOX
3/16" DIA x 36 x 25 LB PACKAGE	3/16"	36"	25 LB	25 LB	BOX
1/4" DIA x 36 x 25 LB PACKAGE BLANK	1/4"	36"	25 LB	25 LB	BOX
.050 x 1/8" x MINI - PACK 8 STICK POP	0.50 X 1/8"	18"	8 STICKS	PACK	4 PACKS*





DYNAFLOW®

BLOCKADE®

HARRIS 0

STAY-SILV® 2

STAY-SILV® 5

STAY-SILV® 6

STAY-SILV® 15

LFB

DYNAFLOW®	BLOCKADE®	HARRIS 0	STAY-SILV® 2	STAY-SILV® 5	STAY-SILV® 6	STAY-SILV® 15	LFB
						15320F1	
						15320F	
D620F15P	BK220R15P	0620F15P	2620F15P	5620F15P	6620F15P	15620F15P	
D620F1		0620F1	2620F1	5620F1	6620F1	15620F1	
				5620F5			
D620F		0620F	2620F	5620F	6620F	156205	
		0636F	2636F	5636F	6636F	15636F	
	BK320R	0320R	2320R	5320R		15320R	
	BK336R	0336R	2336R	5336R	6336R	15336R	
		0320R1		5320R1		15320R1	
	BK220R1						
	BK220R1						
	BKFC2500R1						
		0520R1		5520R1		15520R1	
D520R	BK520R	0520R	2520R	5520R		15520R	
D536R	BK536R	0536R	2536R	5536R	6536R	15536R	
		0520S1					
		0520S	2520S			15520S	
		0536S		5536S		15536S	
		0620R1		5620R1		155620R1	
D620R	BK620R	0620R	2620R	5620R		15620R	
	BK636R	0636R	2636R	5636R	6636R	15636R	
						15620S1	
		0620S				15620S	
D636S						15636S10	
		0636S		5636S	6636S	15636S	
					6836R		
		0936RK					
D620FMPPOP		0620FMPPOP		5620FMPPOP		1520FMPPOP	



THE HARRIS PRODUCTS GROUP  
www.harrisproductsgroup.com

Orders: 1.800.733.4533

PHOS COPPER

# 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 UNITS	TUBE	5 LB	6.1% PHOSPHORUS 87.9% COPPER
D620F1	.050 x 1/8" x 28 STICK TUBE - 25 LB	0.50 X 1/8"	28"	28 UNITS	TUBE	25 TUBES	
D620F	.050 x 1/8" x 20 x 5 LB PACKAGE	0.50 X 1/8"	20"	5 LB	TUBE	5 LB	
D520R	3/32" DIA x 20 x 25 LB PACKAGE	3/32"	20"	25 LB	25 LB	BOX	
D536R	3/32" DIA x 36 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX	
D620R	1/8" DIA x 20 x 25 LB PACKAGE	1/8"	20"	25 LB	25 LB	BOX	
D636S	1/8" SQ x 36 x 25 LB PACKAGE	1/8"	36"	25 LB	25 LB	BOX	
D620FMPPOP	.050 x 1/8" x MINI - PACK 8 STICK POP	0.50 X 1/8"	18"	8 STICKS	PACK	4 TUBES*	

# BLOCKADE

## PHOS COPPER ALLOYS

MODEL SHOWN:  
BK220R15P

### DESCRIPTION

Blockade®'s innovative composition provides the ability to form a large shoulder or cap at the braze connection. It is a low melting temperature alloy which is very fluid and fast flowing. Best for tight fitting connections under two inches diameter and great for copper to brass applications like solenoid valves, ball valves, distributors, and schrader valves. Blockade® is self-fluxing on copper and its lower melting temperature makes it an excellent choice for brass.

### DETAILS:

**Solidus:** 1178°F / 637°C

**Liquidus:** 1247°F / 674°

**Fluidity Rating:** 7

**Classification:**

AWS A5.8 BCu-P9

### Typical Applications:

For copper or brass. Lower brazing temperature, excellent replacement for many silver bearing BCuP alloys. Can also be used to replace some BAg alloys. Recommended joint clearance .002 - .005" (.058 - 0.127 mm).



PART NO.	DESCRIPTION	DIA	LENGTH	PRESENTATION	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
BK220R15P	.050 X 1/8" X 28 STICK TUBE - 5 LB	0.50 X 1/8"	28"	28 UNITS	TUBE	5 LB	6.5% PHOSPHORUS 6% - 7% TIN .01 - 40% SILICON BALANCE COPPER
BK320R	1/16" DIA X 20 X 25 LB PACKAGE	1/16"	20"	25 LB	25 LB	BOX	
BK336R	1/16" DIA X 36 X 25 LB PACKAGE	1/16"	36"	25 LB	25 LB	BOX	
BK220R1	2MM DIA X 20 STICK TUBE	2 MM	20"	20 STICKS	TUBE	25 TUBES	
BK220R	2MM DIA X 20 X 25 LB PACKAGE	2 MM	20"	25 LB	25 LB	BOX	
BKFC2500R1	2MM DIA X 500MM X 20 STICK TUBE FC	2MM X 500 MM	20"	20 STICKS	TUBE	25 TUBES	
BK520R	3/32" DIA X 20 X 25 LB PACKAGE	3/32"	20"	25 LB	25 LB	BOX	
BK536R	3/32" DIA X 36 X 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX	
BK620R	1/8" DIA X 20 X 25 LB PACKAGE	1/8"	20"	25 LB	25 LB	BOX	
BK636R	1/8" DIA X 36 X 25 LB PACKAGE	1/8"	36"	25 LB	25 LB	BOX	

### DESCRIPTION

Recognized and trusted all over the world, this is our most popular copper-to-copper brazing alloy which 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 our finished material shows our 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:

For copper or brass. Good for application where moderate fit-up can maintained and brazing temperature is not critical. Recommended joint clearance .002 - .007" (0.051 - 0.177 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"	28"	28 UNITS	TUBE	5 LB	92.9% COPPER 7.1% PHOSPHORUS
0620F1	.050 x 1/8" x 28 STICK TUBE - 25LB	0.50 X 1/8"	28"	28 UNITS	TUBE	25 TUBES	
0620F	.050 x 1/8" x 20 x 25 LB PACKAGE	0.50 X 1/8"	20"	25 LB	25 LB	BOX	
0636F	.050 x 1/8" x 36 x 25 LB PACKAGE	0.50 X 1/8"	36"	25 LB	25 LB	BOX	
0320R	1/16" DIA x 20 x 25 LB PACKAGE	1/16"	20"	25 LB	25 LB	BOX	
0336R	1/16" DIA x 36 x 25 LB PACKAGE	1/16"	36"	25 LB	25 LB	BOX	
0320R1	1/16" DIA x 20 x 51 STICK TUBE	1/16"	20"	51 STICKS	TUBE	25 TUBES	
0520R1	3/32" DIA x 20 x 24 STICK TUBE	3/32"	20"	24 STICKS	TUBE	25 TUBES	
0520R	3/32" DIA x 20 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX	
0536R	3/32" DIA x 36 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX	
0520S1	3/32" SQ x 20 x 20 STICK TUBE	3/32"	20"	20 STICKS	TUBE	25 TUBES	
0520S	3/32" SQ x 20 x 25 LB PACKAGE	3/32"	20"	25 LB	25 LB	BOX	
0536S	3/32" SQ x 36 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX	
0620R1	1/8" DIA x 20 x 14 STICK TUBE	1/8"	20"	14 STICKS	TUBE	25 TUBES	
0620R	1/8" DIA x 20 x 25 LB PACKAGE	1/8"	20"	25 Lb	25 lb	BOX	
0636R	1/8" DIA x 36 x 25 LB PACKAGE	1/8"	36"	25 LB	25 LB	BOX	
0620S	1/8" SQ x 20 x 25 LB PACKAGE	1/8"	20"	25 LB	25 LB	BOX	
0636S	1/8" SQ x 36 x 25 LB PACKAGE	1/8"	36"	25 Lb	25 lb	BOX	
0936RK	1/4" DIA x 36 x 25 LB PACKAGE BLANK	1/4"	36"	25 LB	25 LB	BOX	
0620FMPOP	.050 x 1/8" x MINI - PACK 8 STICK POP	0.50 X 1/8"	18"	8 STICKS	PACK	4 PACKS*	

### PERFORMANCE FOCUS

Harris brazing alloys are the result of proprietary technology that precisely controls the phosphorus content above market standards.

### PHOSPHORUS CONTENT

The phosphorous content determines the precise melting temperature and performance. All Harris phosphorus/copper and silver/phosphorus/copper brazing alloys conform to +/- 6° Fahrenheit of the specified liquidus temperature. Conformity to such specification assures the operator of consistent brazing performance with every application. The advantage is apparent in automated brazing operations where control of flow temperatures can significantly reduce the incidence of rejects.

# STAY-SILV 2

## PHOS COPPER ALLOYS

MODEL SHOWN:  
2620F15P

### DESCRIPTION

Stay-Silv 2® is an economical, low silver alloy, designed to broaden 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:

For copper or brass. Sluggish flow, used for joints with wider clearance. 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 - 5LB	0.50 X 1/8"	28	28 UNITS	TUBE	5LB	2% SILVER 7% PHOSPHORUS 91% COPPER
2620F1	.050 x 1/8" x 28 STICK TUBE - 25 TUBE	0.50 X 1/8"	28	28 UNITS	TUBE	25 TUBES	
2620F	.050 x 1/8" x 20 x 25 LB BOX	0.50 X 1/8"	20"	25 LB	25 LB	BOX	
2636F	.050 x 1/8" x 36 x 25 LB PACKAGE	0.50 X 1/8"	36"	25 LB	25 LB	BOX	
2320R	1/16" DIA x 20 x 25 LB BOX	1/16"	20"	25 LB	25 LB	BOX	
2336R	1/16" DIA x 36 x 25 LB BOX	1/16"	36"	25 LB	25 LB	BOX	
2520R	3/32" DIA x 20 x 25 LB BOX	3/32"	20"	25 LB	25 LB	BOX	
2536R	3/32" DIA x 36 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX	
2520S	3/32" SQ x 20 x 25 LB PACKAGE	3/32"	20"	25 LB	25 LB	BOX	
2620R	1/8" DIA x 20 x 25 LB PACKAGE	1/8"	20"	25 LB	25 LB	BOX	
2636R	1/8" DIA x 36 x 25 LB PACKAGE	1/8"	36"	25 LB	25 LB	BOX	

# STAY-SILV 5

## PHOS COPPER ALLOYS

MODEL SHOWN:  
5620F15P

### DESCRIPTION

This medium-range alloy 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:

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 - 5LB	0.50 X 1/8"	28"	28 UNITS	TUBE	5 LB	5% SILVER 6% PHOSPHORUS 89% COPPER
5620F1	.050 x 1/8" x 28 STICK TUBE - 25LB	0.50 X 1/8"	28"	28 UNITS	TUBE	25 TUBES	
5620F5	.050 x 1/8" x 20 x 5 LB PACKAGE	0.50 X 1/8"	20"	5 LB	TUBE	5 LB	
5620F	.050 x 1/8" x 20 x 25 LB PACKAGE	0.50 X 1/8"	20"	25 LB	25 LB	BOX	
5636F	.050 x 1/8" x 36 x 25 LB PACKAGE	0.50 X 1/8"	36"	25 LB	25 LB	BOX	
5320R	1/16" DIA x 20 x 25 LB PACKAGE	1/16"	20"	25 LB	25 LB	BOX	
5336R	1/16" DIA x 36 x 25 LB PACKAGE	1/16"	36"	25 LB	25 LB	BOX	
5320R1	1/16" DIA x 20 x 51 STICK TUBE	1/16"	20"	51 STICKS	TUBE	25 TUBES	
5520R1	3/32" DIA x 20 x 24 STICK TUBE	3/32"	20"	24 STICKS	TUBE	25 TUBES	
5520R	3/32" DIA x 20 x 25 LB PACKAGE	3/32"	20"	25 LB	25 LB	BOX	
5536R	3/32" DIA x 36 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX	
5536S	3/32" SQ x 36 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX	
5620R1	1/8" DIA x 20 x 14 STICK TUBE	1/8"	20"	14 STICKS	TUBE	25 TUBES	
5620R	1/8" DIA x 20 x 25 LB PACKAGE	1/8"	20"	25 LB	25 LB	BOX	
5636R	1/8" DIA x 20 x 25 LB PACKAGE	1/8"	20"	25 LB	25 LB	BOX	
5636S	1/8" SQ x 36 x 25 LB PACKAGE	1/8"	36"	25 LB	25 LB	BOX	
5620FMPPOP	.050 x 1/8" x MINI - PACK 8 STICK POP	0.50 X 1/8"	18"	8 STICKS	PACK	4 PACKS*	



**DESCRIPTION**

These medium-range alloys are well suited where close fit-up cannot be maintained. These filler metals are somewhat more ductile than Harris 0 or Stay-Silv 2.

**DETAILS:**

**Solidus:** 1190°F / 643°C

**Liquidus:** 1425°F / 774°C

**Fluidity Rating:** 5

**Classification:**

N/A

**Typical Applications:**

For copper or brass. Medium range alloy. Recommended joint clearance .002 - .005" (.076 - .051 mm).



PART NO.	DESCRIPTION	DIA	LENGTH	PRESENTATION	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
6620F15P	.050 x 1/8" x 28 STICK TUBE - 5LB	0.50 X 1/8"	28"	28 UNITS	TUBE	5 LB	6% SILVER 6.5% PHOSPHORUS 87.5% COPPER
6620F1	.050 x 1/8" x 28 STICK TUBE - 25LB	0.50 X 1/8"	28"	28 UNITS	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	1/8"	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	



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## PHOS COPPER ALLOYS

MODEL SHOWN:  
15320F1

### DESCRIPTION

For many years, the standards of the industry Harris Stay-Silv® 15 silver alloys has proven its value. This filler metal is excellent for situations in which 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:

For copper or brass. Useful for wide clearances. Recommended joint clearance .002 - .006" (.076 - .152 mm).



PART NO.	DESCRIPTION	DIA	LENGTH	PRESENTATION	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
15320F1	.050 x 1/16 x 20 x 51 STICK TUBE	0.50 X 1/16"	20"	51 UNITS	TUBE	25 TUBES	15% SILVER 5% PHOSPHORUS 80% COPPER
15320F	.050 x 1/16 x 20 x 25 LB PACKAGE	0.50 X 1/16"	20"	25 LB	25 LB	BOX	
15620F15P	.050 x 1/8" x 28 STICK TUBE - 5LB	0.50 X 1/8"	28"	28 UNITS	TUBE	5 LB	
15620F1	.050 x 1/8" x 28 STICK TUBE - 25LB	0.50 X 1/8"	28"	28 UNITS	TUBE	25 TUBES	
15620F	.050 x 1/8" x 20 x 25 LB PACKAGE	0.50 X 1/8"	20"	25 LB	25 LB	BOX	
15636F	.050 x 1/8" x 36 x 25 LB PACKAGE	1/16"	36"	25 LB	25 LB	BOX	
15320R	1/16" DIA x 20 x 25 LB PACKAGE	1/16"	20"	25 LB	25 LB	BOX	
15336R	1/16" DIA x 36 x 25 LB PACKAGE	1/16"	36"	25 LB	25 LB	BOX	
15320R1	1/16" DIA x 20 x 51 STICK TUBE	1/16"	20"	51 STICKS	TUBE	25 TUBES	
15520R1	3/32" DIA x 20 x 24 STICK TUBE	3/32"	20"	24 STICKS	TUBE	25 TUBES	
15520R	3/32" DIA x 20 x 25 LB PACKAGE	3/32"	20"	25 LB	25 LB	BOX	
15536R	3/32" DIA x 36 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX	
15520S	3/32" SQ x 20 x 25 LB PACKAGE	3/32"	20"	25 LB	25 LB	BOX	
15536S	3/32" SQ x 36 x 25 LB PACKAGE	3/32"	36"	25 LB	25 LB	BOX	
15620R1	1/8" DIA x 20 x 14 STICK TUBE	1/8"	20"	14 STICKS	TUBE	25 TUBES	
15620R	1/8" DIA x 20 x 25 LB PACKAGE	1/8"	20"	25 LB	25 LB	BOX	
15636R	1/8" DIA x 36 x 25 LB PACKAGE	1/8"	36"	25 LB	25 LB	BOX	
15620S1	1/8" SQ x 20 x 11 STICK TUBE	1/8"	20"	11 STICKS	TUBE	25 TUBES	
15620S	1/8" SQ x 20 x 25 LB PACKAGE	1/8"	20"	25 LB	25 LB	BOX	
15636S10	1/8" SQ x 36 x 10 LB PACKAGE	1/8"	36"	10 LB	TUBE	BOX	
15636S	1/8" SQ x 36 x 25 LB PACKAGE	1/8"	36"	25 LB	25 LB	BOX	
1520FMPPOPW	.050 x 1/8" x MINI - PACK 8 STICK POP	0.50 X 1/8"	18"	8 STICKS	PACK	4 PACKS*	

## LOW FUMING BRONZE

MODEL SHOWN:  
015FC503POP

### DESCRIPTION

A braze-welding alloy used to braze steel, steel alloys, and cast iron. LFB is frequently used to braze steel brackets, straps, angles and related fittings. Rod is deposited by melting it along the length of the joint. This alloy requires wider joint gaps, fillets, or vee-grooved butt joints for best results.

### DETAILS:

**Solidus:** 1590°F / 866°C

**Liquidus:** 1630°F / 888°C

**Fluidity Rating:** N/A

**Classification:** N/A

### Typical Applications:

For steel, steel alloys, and cast iron.



PART NO.	DESCRIPTION	DIA	LENGTH	PRESENTATION	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
015FC503POP	3/32" DIA x 18 x 3 STICK TUBE	3/32"	18"	3 STICKS	-	-	58% COPPER BALANCE OTHER

# RING OF FIRE



## PHOS COPPER ALLOYS

MODEL SHOWN:  
RF15750

### DESCRIPTION

Ring of Fire™ is the perfect alternative for any brazing project. It's easy to use, gives you a consistent braze every time and meets the same high standards you expect from Harris.

### TYPICAL APPLICATIONS:

When you're working in the field, you need supplies and tools you can rely on and that make your job easier. Ring of Fire™ is a great alternative to rod for any brazing project. It's easy to use and gives you a consistent braze every time. With the same formulation, testing and standards as the Harris' signature Stay-Silv® 15 (15% silver alloy), you can now purchase it in ring form.

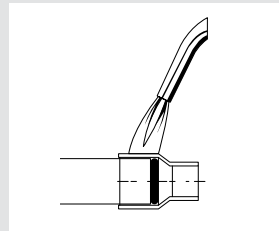
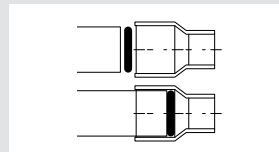
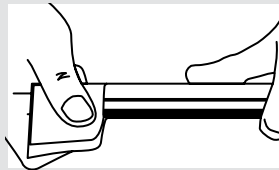
\*Free display with purchase of all sizes



PART NO.	DESCRIPTION	SIZE
RF15250	SS15 - 1/4 JOINT RING X 25 PKG	1/4"
RF15375	SS15 - 3/8 JOINT RING X 25 PKG	3/8
RF15500	SS15 - 1/2 JOINT RING X 25 PKG	1/2
RF15625	SS15 - 5/8 JOINT RING X 25 PKG	5/8
RF15750	SS15 - 3/4 JOINT RING X 25 PKG	3/4
RF15875	SS15 - 7/8 JOINT RING X 25 PKG	7/8
RF151125	SS15 - 1 1/8 JOINT RING X 10 PKG	1 1/8
RF15VAR	SS15 - TUBING JOINT RING VARIETY PACK	VARIETY

## RING OF FIRE™

### 3 STEPS FOR A TIGHT, LEAK-PROOF JOINT USING STAY-SILV 15% BRAZING RINGS



- 1** Clean the tube, pipe and fittings to be brazed.
- 2** Place the Ring of Fire inside the coupling and insert the tube. Be sure the ring is at the bottom and touches the end of the tube.
- 3** Heat the tube and coupling, applying heat to all the parts. Heat will transfer throughout the part and draw the alloy through the capillary space. The molten braze will appear around the top of the coupling for easy visual verification of the completed braze.



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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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## **SAFETY-SILV® 25**

A low cost, general purpose silver brazing alloy. Exhibits moderate ductility and slightly higher melting temperature than alloys containing higher percentages of silver and/or tin.

## **SAFETY-SILV® 30**

A cadmium free alloy with a melting range of 175°F (79°C) with good flow and good fillet forming quality. It produces high strength and ductile joints.

## **SAFETY-SILV® 35**

This smooth flowing alloy exhibits good ductility on ferrous and non-ferrous base materials. It is often used as an economical alternative to higher silver content alloys.

## **SAFETY-SILV® 38T**

This tin bearing alloy combines excellent fillet-forming characteristics with good flow properties. The addition of a small amount of tin provides qualities normally associated with alloys containing greater quantities of silver.

## **SAFETY-SILV® 40T**

Similar to 38T in its ability for excellent fillets and maintain good mechanical properties while flowing at a lower temperature.

## **SAFETY-SILV® 45**

Excellent general-purpose brazing alloy. Good ductility and capillary flow. Color is silver to light yellow. Available in flux coated (the flux is on the wire) which eliminates manual flux application.

## **SAFETY-SILV® 45T**

Performs like a 45% silver, cadmium bearing alloy, but is cadmium-free. Lower melting temperature than Safety-Silv® 45. Excellent fillet forming qualities. Produces high strength, ductile joints. NSF certified to NSF 51.



## **SAFETY-SILV® 50**

This composition has long been an industry standard. Similar to Safety-Silv® 45, it is an excellent choice for applications requiring a good blend of strength, ductility, and electrical conductivity.

## **SAFETY-SILV® 50N**

Often used to braze stainless steel to limit interface corrosion. It is also an excellent choice for tungsten carbide brazing applications.

## **SAFETY-SILV® 56**

High silver content alloy that makes premium quality brazes. Free flowing with unsurpassed capillary attraction and deep penetration. Ductility is high, and corrosion resistance is excellent. Offers highest elongation of silver brazing alloys. Can be used in the food processing industry. Silver color is an excellent match for stainless steel and silverware applications. NSF certified to NSF 51.





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Our cadmium-free alloys offer excellent performance characteristics and dependable results, while eliminating hazardous cadmium fumes. The charts throughout this brochure allow our customers to select the appropriate alloy. If you need additional technical assistance please call 1-800-733-4533 or visit our website at [www.harrisproductsgroup.com](http://www.harrisproductsgroup.com).



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**HIGH SILVER ALLOY**

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## QUICK SELECTION GUIDE

### HIGH SILVER ALLOYS

DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER
3/64" x 1 T.O. PACKAGE	3/64"		1 T.O.	COIL		25 PKS
3/64" x 5 T.O. PACKAGE	3/64"		5 T.O.	COIL		24 PKS
3/64" x 50 T.O. COIL	3/64"		50 T.O.	COIL		1 COIL
1/16" x 1 T.O. PACKAGE	1/16"		1 T.O.	COIL		25 PKS
1/16" x 3 T.O. PACKAGE	1/16"		3 T.O.	COIL		24 PKS
1/16" x 5 T.O. PACKAGE	1/16"		5 T.O.	COIL		24 PKS
1/16" x 25 T.O. COIL	1/16"		25 T.O.	COIL		1 COIL
1/16" x 50 T.O. COIL	1/16"		50 T.O.	COIL		1 COIL
1/16" x 18 x 15 T.O. TUBE	1/16"	18"	15 T.O.	TUBE		25 TUBES
1/16" x 36 x 365 T.O.	1/16"	36"	300 T.O.	BOX		300 T.O.
1/16" x 36 x 50 T.O. TUBE	1/16"	36"	50 T.O.	TUBE		600 T.O.
1/32" x 1 T.O. PACKAGE	1/32"		1 T.O.	COIL		25 PKS
1/32" x 3 T.O. PACKAGE	1/32"		3 T.O.	COIL		24 PKS
1/32" x 5 T.O. PACKAGE	1/32"		5 T.O.	COIL		24 PKS
1/32" x 50 T.O. COIL	1/32"		50 T.O.	COIL		1 COIL
3/32" x 1 T.O. PACKAGE	3/32"		1 T.O.	COIL		25 PKS
3/32" x 3 T.O. PACKAGE	3/32"		3 T.O.	COIL		24 PKS
3/32" x 5 T.O. PACKAGE	3/32"		5 T.O.	COIL		24 PKS
3/32" x 36 x 50 T.O. TUBE	3/32"	36"	50 T.O.	TUBE		300 T.O.
3/32" x 50 T.O. COIL	3/32"		50 T.O.	COIL		1 COIL
3/32"DIA x 36 x 365 T.O.	3/32"	36"	300 T.O.	BOX		300 T.O.
3/32" x 18 x 15 T.O. TUBE	3/32"	18"	15 T.O.	TUBE		25 TUBES
1/8" x 18 x 15 T.O. TUBE	1/8"	18"	15 T.O.	TUBE		25 TUBES
1/8" x 50 T.O. COIL	1/8"		50 T.O.	COIL		1 COIL
1/16" x 18 x 4 T.O. TUBE - FC	1/16"	18"	4 T.O.	TUBE		25 TUBES
SILVER SOLDER KIT	1/16"		1 T.O.	COIL	12 KITS	48 KITS
SILVER SOLDER KIT POP	1/16"		1 T.O.	COIL	4 KITS	4 KITS
1/16" x 18 MINI-PACK 5 STICK POP	1/16"	18"	5 Sticks		4 PKS	4 PKS
3/32" x 18 MINI-PACK 3 STICK POP	3/32"	18"	3 Sticks		4 PKS	4 PKS



	SAFETY-SILV <sup>®</sup> 25	SAFETY-SILV <sup>®</sup> 30	SAFETY-SILV <sup>®</sup> 35	SAFETY-SILV <sup>®</sup> 38T	SAFETY-SILV <sup>®</sup> 40	SAFETY-SILV <sup>®</sup> 40T	SAFETY-SILV <sup>®</sup> 45
							4521
							4525
		30250					45250H
		3031	3531		4031		4531
			3533		4033		4533
			35325				45325H
	25350	30350	35350	38T350	40350H	40T350	45350H
	25318L	30318L	35318L		40318L	40T318L	45318L
				Z38T336			
				38T336L			45336L
							4511
							4513
							4515
							45150H
							4551
							4553
							4555
					40536L		45536L
	25550		35550	38T550	40550H	40T550	45550H
		30518L	35518L			40T518L	45518L
		30618L	35618L				45618L
		30F3184	35F3184		40F3184		
							45K
							45KPOP
							45318LMPPOP
							45518LMPPOP



## QUICK SELECTION GUIDE

### HIGH SILVER ALLOYS

DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER
2MM x 500 MM 4 STICK TUBE	2MM	500MM	4 STICKS	TUBE		50 TUBES
3/64" x 5 T.O. PACKAGE	3/64"		5 T.O.	COIL		24 PKS
3/64" x 50 T.O. COIL	3/64"		50 T.O.	COIL		1 COIL
3/64" x 25 LB SPOOL	3/64"		25 LB (365 T.O.)	SPOOL	365 T.O.	1 SPOOL
1/16" x 1 T.O. PACKAGE	1/16"		1 T.O.	COIL		25 PKS
1/16" x 3 T.O. PACKAGE	1/16"		3 T.O.	COIL		24 PKS
1/16" x 5 T.O. PACKAGE	1/16"		5 T.O.	COIL		24 PKS
1/16" x 25 T.O. BOX	1/16"		25 T.O.	COIL		1 COIL
1/16" x 50 T.O. BOX	1/16"		50 T.O.	COIL		1 COIL
1/16" x 18 x 15 T.O. TUBE	1/16"	18"	15 T.O.	TUBE		25 TUBES
1/16" x 18 4oz (9 STICK TUBE) - FC	1/16"	18"	9 STICKS	TUBE		25 TUBES
1/16" x 18 x (2) 1 LB BAGS IN TUBE - FC	1/16"	18"	1 LB	TUBE	2 LBS	8 LBS
1/16" x 18 MINI - PACK 3 STICK TUBE - FC	1/16"	18"	3 STICKS	PACK	4 PACKS	4 PACKS
1/16" x 18 MINI - PACK 5 STICK POP	1/16"	18"	5 STICKS	PACK	4 PACKS	4 PACKS
1/16" x 36 x 50 T.O. TUBE	1/16"	36"	50 T.O.	TUBE		25 TUBES
1/32" x 1 T.O. PACKAGE	1/32"		1 T.O.	COIL		25 PKS
1/32" x 5 T.O. PACKAGE	1/32"		5 T.O.	COIL		24 PKS
1/32" x 25 T.O. COIL	1/32"		25 T.O.	COIL		1 COIL
1/32" x 50 T.O. COIL	1/32"		50 T.O.	COIL		1 COIL
3/32" x 3 T.O. PACKAGE	3/32"		3 T.O.	COIL		24 PKS
3/32" x 5 T.O. PACKAGE	3/32"		5 T.O.	COIL		24 PKS
3/32" x 36 x 50 T.O. TUBE	3/32"	36"	50 T.O.	TUBE		25 TUBES
3/32" x 50 T.O. COIL	3/32"		50 T.O.	COIL		1 COIL
3/32" x 18 x 4 oz (9 STICK TUBE) - FC	3/32"	18"	9 STICKS	TUBE		25 TUBES
3/32" x 18 x (2) 1LB BAG IN TUBE - FC	3/32"	18"	1 LB	TUBE	2 LBS	8 LBS
3/32" x 18 x 15 T.O. TUBE	3/32"	18"	15 T.O.	TUBE		25 TUBES
3/32" x 18 x 300 T.O. BOX	3/32"	18"	300 T.O.	BOX		300 T.O.
3/32" DIA x 25 LB SPOOL	3/32"		25 LB (365 T.O.)	SPOOL		1 SPOOL
1/8" x 18 x 15 T.O. TUBE	1/8"	18"	15 T.O.	TUBE		25 TUBES
1/8" x 18 x 4 oz (9 STICK TUBE) - FC	1/8"	18"	9 STICKS	TUBE		25 TUBES
1/8" x 18 x (2) 1 LB BAG IN TUBE - FC	1/8"	18"	1 LB	TUBE	2 LBS	8 LBS
1/8" x 50 T.O. COIL	1/8"		50 T.O.	COIL		1 COIL
3/64" x 50 T.O. COIL	3/64"		50 T.O.	COIL		1 COIL
SILVER SOLDER KIT	1/16"		1 T.O.	COIL	12 KITS	48 KITS
SILVER SOLDER KIT POP	1/16"		1 T.O.	COIL	4 KITS	4 KITS



	SAFETY-SILV® 45T FLUX CORED	SAFETY-SILV® 45FC	SAFETY-SILV® 45T	SAFETY-SILV® 50	SAFETY-SILV® 50N	SAFETY-SILV® 56	SAFETY-SILV® 56FC
	45TCW25004						
						5625	
						56250	
			45T225SP			56225SP	
			45T31	5031	50N31	5631	
			45T33	5035		5633	
			45T35		50N35	5635	
					50N325	56325	
			45T350	50318L	50N350	56350	
			45T318L		50N318L	56318L	
	45F3184		45TF3184				56F3184
	45F318L						56F318L
	45F318MPOP		45TF318L				56F318MPOP
						56318LMPOP	
					50N336L	56336L	
						5611	
						5615	
					50N125		
					50N150	56150	
						5653	
						5655	
				50536L	50N536L		
				50550H	50N550	56550	
	45F5184						56F5184
	45F518L						56F518L
					50N518L	56518L	
						Z56518	
						56525SP	
						56618L	
	45F6184						
	45F618L						
				50650		56650	
					50N250		
						56K	
						56KPOP	





# SAFETY-SILV 25



## HIGH SILVER ALLOYS

MODEL SHOWN:  
25350

### DESCRIPTION

A low cost, general purpose silver brazing alloy. Exhibits moderate ductility and slightly higher melting temperature than alloys containing higher percentages of silver and / or tin.

### DETAILS:

**Solidus:** 1270°F / 688°C

**Liquidus:** 1435°F / 779°C

**Fluidity Rating:** 5

**Classification:**

AWS A5.8 BAg-37

### Typical Applications:

For steel and copper alloys. Moderate ductility. For dissimilar metals, joint should be in compression on cooling.



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
25350	1/16" x 50 T.O. COIL	1/16"	-	50 T.O.	COIL	-	1 COIL	25% SILVER 43% COPPER 30% ZINC 2% TIN
25318L	1/16" x 18 x 15 T.O. TUBE	1/16"	18"	15 T.O.	TUBE	-	25 TUBES	
25550	3/32" x 50 T.O. COIL	3/32"	-	50 T.O.	COIL	-	1 COIL	

# SAFETY-SILV 30



## HIGH SILVER ALLOYS

MODEL SHOWN:  
30318L

### DESCRIPTION

A moderate temperature filler metal with flow characteristics useful for wider gaps.

### DETAILS:

**Solidus:** 1250°F / 677°C

**Liquidus:** 1410°F / 766°C

**Fluidity Rating:** 6

**Classification:**

AWS A5.8 BAg-20 QQ-B-654A  
BAg-20

### Typical Applications:

Use with ferrous and nonferrous based metals. Flow suitable for bridging gaps.



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
30250	3/64" x 50 T.O. COIL	3/64"	-	50 T.O.	COIL	-	1 COIL	30% SILVER 38% COPPER 32% ZINC
3031	1/16" x 1 T.O. PACKAGE	1/16"	-	1 T.O.	COIL	-	25 PKS	
30350	1/16" x 50 T.O. COIL	1/16"	-	50 T.O.	COIL	-	1 COIL	
30318L	1/16" x 18 x 15 T.O. TUBE	1/16"	18"	15 T.O.	TUBE	-	25 TUBES	
30518L	3/32" x 18 x 15 T.O. TUBE	3/32"	18"	15 T.O.	TUBE	-	25 TUBES	
30618L	1/8" x 18 x 15 T.O. TUBE	1/8"	18"	15 T.O.	TUBE	-	25 TUBES	
30650	1/8" x 50 T.O. COIL	1/8"	-	50 T.O.	COIL	-	1 COIL	
30F3184	1/16" x 18 x 4 T.O. TUBE - FC	1/16"	18"	4 T.O.	TUBE	-	25 TUBES	



## WHAT IS A FLUIDITY RATING?

THE HIGHER THE FLUIDITY RATING, THE FASTER THE ALLOY FLOWS WITHIN THE MELTING RANGE.

# SAFETY-SILV 35



## HIGH SILVER ALLOYS

MODEL SHOWN:  
3531

### DESCRIPTION

A good selection for replacing the cadmium alloys. Safety-Silv® 35 joints are strong, ductile with brazing temperatures only slightly higher than cadmium-bearing 30 and 35 silver alloys.

### DETAILS:

**Solidus:** 1250°F / 677°C

**Liquidus:** 1350°F / 732°C

**Fluidity Rating:** 5

**Classification:**

AWS A5.8 BAg-35

### Typical Applications:

Use with ferrous and nonferrous based metals. Moderate temperature and good ductility.



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
3531	1/16" x 1 T.O. PACKAGE	1/16"	-	1 T.O.	COIL	-	25 PKS	35% SILVER 32% COPPER 33% ZINC
3533	1/16" x 3 T.O. PACKAGE	1/16"	-	3 T.O.	COIL	-	24 PKS	
3535	1/16" x 5 T.O. PACKAGE	1/16"	-	5 T.O.	COIL	-	24 PKS	
35325	1/16" x 25 T.O. COIL	1/16"	-	25 T.O.	COIL	-	COIL	
35350	1/16" x 50 T.O. COIL	1/16"	-	25 T.O.	COIL	-	COIL	
35318L	1/16" x 18 x 15 T.O. TUBE	1/16"	18"	15 T.O.	TUBE	-	25 TUBES	
35550	3/32" x 50 T.O. COIL	3/32"	50"	50 T.O.	COIL	-	COIL	
Z35536	3/32" DIA x 36 x 365 T.O.	3/32"	36"	365 T.O.	BOX	-	365 T.O.	
35518L	3/32" x 18 x 15 T.O. TUBE	3/32"	18"	15 T.O.	TUBE	-	25 TUBES	
35618L	1/8" x 18 x 15 T.O. TUBE	1/8"	18"	15 T.O.	TUBE	-	25 TUBES	
35650	1/8" x 50 T.O. COIL	1/8"	-	50 T.O.	COIL	-	1 COIL	
35F3184	1/16" x 18 x 4 T.O. TUBE - FC	1/16"	18"	4 T.O.	TUBE	-	25 TUBES	

# SAFETY-SILV 38T



## HIGH SILVER ALLOYS

MODEL SHOWN:  
38T550

### DESCRIPTION

This tin-bearing alloy combines excellent fillet-forming characteristics with good flow properties. The addition of a small amount of tin provides qualities normally associated with alloys containing greater quantities of silver.

### DETAILS:

**Solidus:** 1220°F \ 660°C

**Liquidus:** 1325°F \ 718°C

**Fluidity Rating:** 7

**Classification:**

AWS A5.8 BAg-34

AMS 4761

### Typical Applications:

Low-temperature, free-flowing alloy with exceptional fillet-forming quality. Use with ferrous and nonferrous based metals.



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
38T350	1/16" X 50 T.O. COIL	1/16"	-	50 T.O.	COIL	-	1 COIL	38% SILVER 32% COPPER 28% ZINC 2% TIN
Z38T336	1/16" X 36 X 365 T.O.	1/16"	36"	365 T.O.	BOX	-	365 T.O.	
38T336L	1/16" X 36 X 50 T.O. TUBE	1/16"	36"	50 T.O.	TUBE	-	600 T.O.	
38T550	3/32" X 50 T.O. COIL	3/32"	-	50 T.O.	COIL	-	1 COIL	



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Orders: 1.800.733.4533

HIGH SILVER ALLOY

# SAFETY-SILV 40



## HIGH SILVER ALLOYS

MODEL SHOWN:  
4033

### DESCRIPTION

Ductile, free-flowing alloy that offers economy, good penetration into tight connections and medium temperature. Silver to light yellow color like polished brass.

### DETAILS:

**Solidus:** 1250°F / 677°C

**Liquidus:** 1350°F / 732°C

**Fluidity Rating:** 5

**Classification:**

N/A

### Typical Applications:

For steel, nickel, and copper alloys. Suitable for wider clearance, yet provides good ductility.



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	
4035	1/16" X 5 T.O. PACKAGE	1/16"	-	5 T.O.	COIL	-	24 PKS	
40350H	1/16" X 50 T.O. COIL	1/16"	-	50 T.O.	COIL	-	1 COIL	
40318L	1/16" X 18 X 15 T.O. TUBE	1/16"	18"	15 T.O.	TUBE	-	25 TUBES	
40536L	3/32" X 36 X 50 T.O. TUBE	3/32"	36"	50 T.O.	TUBE	-	300 T.O.	
40550H	3/32" X 50 T.O. COIL	3/32"	-	50 T.O.	COIL	-	1 COIL	
40F3184	1/16" X 18 X 4 T.O. TUBE - FC	1/16"	18"	4 T.O.	TUBE	-	25 TUBES	

# SAFETY-SILV 40T



## HIGH SILVER ALLOYS

MODEL SHOWN:  
40T318L

### DESCRIPTION

Similar to 38T in its ability to form excellent fillets and maintain good mechanical properties.

### DETAILS:

**Solidus:** 1220°F / 660°C

**Liquidus:** 1310°F / 710°C

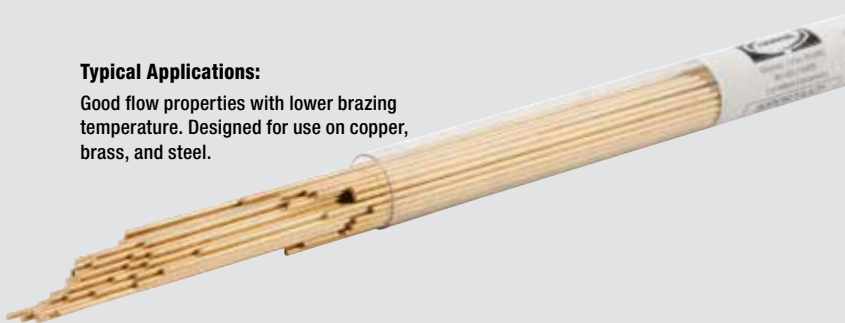
**Fluidity Rating:** 6.5

**Classification:**

AWS A5.8 BAg-28

### Typical Applications:

Good flow properties with lower brazing temperature. Designed for use on copper, brass, and steel.



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
40T350	1/16" x 50 T.O. COIL	1/16"	-	50 T.O.	COIL	-	1 COIL	40% SILVER 30% COPPER 28% ZINC 2% TIN
40T318L	1/16" x 18 x 15 T.O. TUBE	1/16"	18"	15 T.O.	TUBE	-	25 TUBES	
40T550	3/32" x 50 T.O. COIL	3/32"	-	50 T.O.	COIL	-	1 COIL	
40T518L	3/32" x 18 x 15 T.O. TUBE	3/32"	18"	15 T.O.	TUBE	-	25 TUBES	

# SAFETY-SILV 45



## HIGH SILVER ALLOYS

MODEL SHOWN:  
4533

### DESCRIPTION

Excellent general-purpose brazing alloy. Good ductility and capillary flow. Color is silver to light yellow. Available in flux coated (the flux is on the wire) which eliminates manual flux application.

### 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
4521	3/64" X 1 T.O. PACKAGE	3/64"	-	1 T.O.	COIL	-	25 PKS	45% SILVER 30% COPPER 25% ZINC
4525	3/64" X 5 T.O. PACKAGE	3/64"	-	5 T.O.	COIL	-	24 PKS	
45250H	3/64" X 50 T.O. COIL	3/64"	-	50 T.O.	COIL	-	1 COIL	
4531	1/16" X 1 T.O. PACKAGE	1/16"	-	1 T.O.	COIL	-	25 PKS	
4533	1/16" X 3 T.O. PACKAGE	1/16"	-	3 T.O.	COIL	-	24 PKS	
4535	1/16" X 5 T.O. PACKAGE	1/16"	-	5 T.O.	COIL	-	24 PKS	
45325H	1/16" X 25 T.O. COIL	1/16"	-	25 T.O.	COIL	-	1 COIL	
45350H	1/16" X 50 T.O. COIL	1/16"	-	50 T.O.	COIL	-	1 COIL	
45318L	1/16" X 18 X 15 T.O. TUBE	1/16"	18"	15 T.O.	COIL	-	1 COIL	
45336L	1/16" X 36 X 50 T.O. TUBE	1/16"	36"	50 T.O.	TUBE	-	600 T.O.	
4511	1/32" X 1 T.O. PACKAGE	1/32"	-	1 T.O.	COIL	-	25 PKS	
4513	1/32" X 3 T.O. PACKAGE	1/32"	-	3 T.O.	COIL	-	24 PKS	
4515	1/32" X 5 T.O. PACKAGE	1/32"	-	5 T.O.	COIL	-	24 PKS	
45150H	1/32" X 50 T.O. COIL	1/32"	-	50 T.O.	COIL	-	1 COIL	
4551	3/32" X 1 T.O. PACKAGE	3/32"	-	1 T.O.	COIL	-	25 PKS	
4553	3/32" X 3 T.O. PACKAGE	3/32"	-	3 T.O.	COIL	-	24 PKS	
4555	3/32" X 5 T.O. PACKAGE	3/32"	-	5 T.O.	COIL	-	24 PKS	
45536L	3/32" X 36 X 50 T.O. TUBE	3/32"	36"	50 T.O.	TUBE	-	300 T.O.	
45550H	3/32" X 50 T.O. COIL	3/32"	-	50 T.O.	COIL	-	1 COIL	
45518L	3/32" X 18 X 15 T.O. TUBE	3/32"	18"	15 T.O.	TUBE	-	25 TUBES	
45618L	1/8" X 18 X 15 T.O. TUBE	1/8"	18"	15 T.O.	TUBE	-	25 TUBES	
45650H	1/8" X 50 T.O. COIL	1/8"	-	50 T.O.	COIL	-	1 COIL	
45K	SILVER SOLDER KIT	1/16"	-	1 T.O.	COIL	12 KITS	48 KITS	
45KPOP	SILVER SOLDER KIT POP	1/16"	-	1 T.O.	COIL	4 KITS	4 KITS	
45318LMPOP	1/16" X 18 MINI-PACK 5 STICK POP	1/16"	18"	5 STICKS	-	4 PKS	4 PKS	
45518LMPOP	3/32" X 18 MINI-PACK 3 STICK POP	3/32"	18"	3 STICKS	-	4 PKS	4 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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Orders: 1.800.733.4533

HIGH SILVER ALLOY

# SAFETY-SILV 45T FLUX CORED



## HIGH SILVER ALLOYS

MODEL SHOWN:  
45TCW25004

### DESCRIPTION

Similar to 38T in its ability to form excellent fillets and maintain good mechanical properties.

### DETAILS:

**Solidus:** 1195°F / 646°C

**Liquidus:** 1265°F / 685°C

**Fluidity Rating:** 7

**Classification:**

BAG-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
45TCW25004	2MM X 500 MM 4 STICK TUBE	2MM	500MM	4 STICKS	TUBE	-	50 TUBES	45% SILVER 27% COPPER 25% ZINC 3% TIN

# SAFETY-SILV 45FC



## HIGH SILVER ALLOYS

MODEL SHOWN:  
45F3184

### DESCRIPTION

Performs like a 45% silver cadmium-bearing alloy but is cadmium-free. Lower melting temperature than Safety-Silv 45. Excellent fillet-forming qualities produces high-strength, ductile joints. NSF Certified to NSF 51.

### DETAILS:

**Solidus:** 1195°F / 646°C

**Liquidus:** 1265°F / 685°C

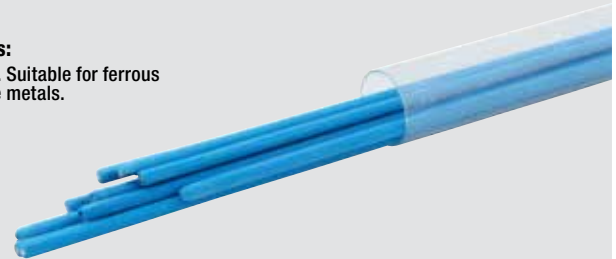
**Fluidity Rating:** 7

**Classification:**

BAG-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
45F318L	1/16" x 18 x (2) 1LB BAGS IN TUBE - FC	1/16"	18"	1 LB	TUBE	2 LBS	8 LBS	
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	
45F518L	3/32" x 18 x (2) 1LB BAG IN TUBE - FC	3/32"	18"	1 LB	TUBE	2 LBS	8 LBS	
45F6184	1/8" x 18 x 4 oz (9 STICK TUBE) - FC	1/8"	18"	9 STICKS	TUBE	-	25 TUBES	
45F618L	1/8" x 18 x (2) 1 LB BAG IN TUBE - FC	1/8"	18"	1 LB	TUBE	2 LBS	8 LBS	



# SAFETY-SILV 45T



## HIGH SILVER ALLOYS

MODEL SHOWN:  
**45T31**

### DESCRIPTION

Performs like a 45% silver cadmium-bearing alloy but is cadmium-free. Lower melting temperature than Safety-Silv 45. Excellent fillet-forming qualities produces high-strength, ductile joints. NSF Certified to NSF 51.

### DETAILS:

**Solidus:** 1195°F / 646°C

**Liquidus:** 1265°F / 685°C

**Fluidity Rating:** 7

**Classification:** BAg-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
45T225SP	3/64" X 25 LB SPOOL	3/64"	-	25 LB (365 T.O.)	SPOOL	365 T.O.	1 SPOOL	45% SILVER 27% COPPER 25% ZINC 3% TIN
45T31	1/16" X 1 T.O. PACKAGE	1/16"	-	1 T.O.	COIL	-	25 PKS	
45T33	1/16" X 3 T.O. PACKAGE	1/16"	-	3 T.O.	COIL	-	24 PKS	
45T35	1/16" X 5 T.O. PACKAGE	1/16"	-	5 T.O.	COIL	-	24 PKS	
45T350	1/16" X 50 T.O. COIL	1/16"	-	50 T.O.	COIL	-	1 COIL	
45T318L	1/16" X 18 X 15 T.O. TUBE	1/16"	18"	15 T.O.	TUBE	-	25 TUBES	
45TF3184	1/16" X 18 40Z (9 STICK TUBE) - FC	1/16"	18"	9 STICKS	TUBE	-	25 TUBES	
45TF318L	1/16" X 18 MINI - PACK 3 STICK TUBE - FC	1/16"	18"	3 STICKS	PACK	4 PACKS	4 PACKS	

# SAFETY-SILV 50



## HIGH SILVER ALLOYS

MODEL SHOWN:  
**5031**

### DESCRIPTION

Useful in brazing electrical connections and is a cadmium-free replacement for 50% silver alloys. It has a wide melting range suitable for bridging gaps where poor fit-ups are encountered.

### DETAILS:

**Solidus:** 1270°F / 688°C

**Liquidus:** 1425°F / 774°C

**Fluidity Rating:** 5.5

**Classification:** BAg-6

### Typical Applications:

Often used to braze galvanized steel, but suitable for bridging gaps in other ferrous and non-ferrous base metals.



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
5031	1/16" X 1 T.O. PACKAGE	1/16"	-	1 T.O.	COIL	-	25 PKS	50% SILVER 34% COPPER 16% ZINC 2% NICKEL
5035	1/16" X 3 T.O. PACKAGE	1/16"	-	3 T.O.	COIL	-	24 PKS	
50318L	1/16" X 50 T.O. COIL	1/16"	-	50 T.O.	COIL	-	1 COIL	
50536L	3/32" X 36 X 50 T.O. TUBE	3/32"	36"	50 T.O.	TUBE	-	25 TUBE	
50550H	3/32" X 50 T.O. COIL	3/32"	-	50 T.O.	COIL	-	1 COIL	
50650	1/8" X 50 T.O. COIL	1/8"	-	50 T.O.	COIL	-	1 COIL	



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Orders: 1.800.733.4533

# SAFETY-SILV 50N



## HIGH SILVER ALLOYS

MODEL SHOWN:  
**50N31**

### DESCRIPTION

This 50% silver alloy is a good replacement for the 3% nickel, cadmium alloy (AWS BAg-3). It is especially helpful where low brazing temperature must be maintained. It can be used to braze tungsten carbide, stainless steel, as well as other steel, copper, and nickel alloys.

### DETAILS:

**Solidus:** 11220°F / 660°C

**Liquidus:** 1305°F / 707°C

**Fluidity Rating:** 7

**Classification:** BAg-24

### Typical Applications:

Low melting braze alloy with good flow. Primarily, used for brazing stainless steel, nickel based alloys, and tungsten carbide inserts.



PART NO.	DESCRIPTION	DIA	LENGTH	WEIGHT	UNITS	PER PACKAGE	MASTER	CHEMICAL COMPOSITION
50N31	1/16" X 1 T.O. PACKAGE	1/16"	-	1 T.O.	COIL	-	25 PKS	50% SILVER 20% COPPER 28% ZINC 2% NICKEL
50N35	1/16" X 5 T.O. PACKAGE	1/16"	-	5 T.O.	COIL	-	24 PKS	
50N325	1/16" X 25 T.O. COIL	1/16"	-	25 T.O.	COIL	-	1 COIL	
50N350	1/16" X 50 T.O. COIL	1/16"	-	50 T.O.	COIL	-	1 COIL	
50N318L	1/16" X 18 X 15 T.O. TUBE	1/16"	18"	15 T.O.	TUBE	-	25 TUBES	
50N336L	1/16" X 36 X 50 T.O. TUBE	1/16"	36"	50 T.O.	TUBE	-	600 T.O	
50N125	1/32" X 25 T.O. COIL	1/32"	-	25 T.O.	COIL	-	1 COIL	
50N150	1/32" X 50 T.O. COIL	1/32"	-	50 T.O.	COIL	-	1 COIL	
50N536L	3/32" X 36 X 50 T.O. TUBE	3/32"	36"	50 T.O.	TUBE	-	25 TUBE	
50N550	3/32" X 50 T.O. COIL	3/32"	-	50 T.O.	COIL	-	1 COIL	
50N518L	3/32" X 18 X 15 T.O. TUBE	3/32"	18"	15 T.O.	TUBE	-	25 TUBES	
50N250	3/64" X 50 T.O. COIL	3/64"	-	50 T.O.	COIL	-	1 COIL	

# SAFETY-SILV 56



## HIGH SILVER ALLOYS

MODEL SHOWN:  
5631

### DESCRIPTION

High silver content alloy; makes premium-quality brazes. Free-flowing with unsurpassed capillary attraction and deep penetration with high ductility. Suitable for use in the food processing industry. Silver color is excellent match for stainless steel and silverware applications. NSF Listed

### DETAILS:

**Solidus:** 1145°F / 618°C

**Liquidus:** 1205°F / 652°C

**Fluidity Rating:** 8

**Classification:** BAg-7

### Typical Applications:

For ferrous and non-ferrous alloys. Often used to braze stainless steel for food service. NSF 51.



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	
56318LMPOP	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
56F318L	1/16" X 18 X (2) 1LB BAGS IN TUBE - FC	1/16"	18"	1 LB	TUBE	2 LBS	8 LBS	
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	
56F518L	3/32" X 18 X (2) 1LB BAG IN TUBE - FC	3/32"	18"	1 LB	TUBE	2 LBS	8 LBS	



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HIGH SILVER ALLOY

# ALUMINUM ALLOYS

CADMIUM-FREE

ALUMINUM COMPONENTS ARE BECOMING MORE PREVALENT IN THE HVAC/R INDUSTRY TO HELP MEET CUSTOMER REQUIREMENTS, HARRIS PRODUCES A VARIETY OF BRAZING AND SOLDERING PRODUCTS.



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## QUICK SELECTION GUIDE

### ALUMINUM ALLOYS



DESCRIPTION	AL-BRAZE® 1070	AL-BRAZE® 4043	ALCOR®	AL-SOLDER® 500	ALUXCOR®
AL-BRAZE® 1070 KIT	1070K	-	-	-	
AL-BRAZE® 1070 POWDER FLUX - 1/2 LB		-	-	-	
AL-BRAZE® 1070 POWDER FLUX 2 - 1/2 LB		-	-	-	
AL-BRAZE® EC POWDER FLUX - 1/2 LB JAR	ECDF1/2	-	-	-	
AL-BRAZE® EC POWDER FLUX - 40 LB PAIL	ECDF40	-	-	-	
AL-BRAZE® 4043 KIT	-	4043K	-	-	
ALCOR® - 2MM DIA x 10" x 25 LB PACKAGE	-	-	AL20010R	-	
ALCOR® - 2MM DIA x COIL	-	-	AL200RC	-	
AL-SOLDER® 500 - 1/16" DIA x 20 LB SPOOL	-	-	-	500320	
AL-SOLDER® 500 - 1/8" DIA x 1 LB SPOOL	-	-	-	50061H	
AL-SOLDER® 500 - 1/8" DIA x 20 LB SPOOL	-	-	-	500620	
AL-SOLDER® 500 - ALUM. KT. (ORM-D) NO AIR	-	-	-	500K	
ALUXCOR™ - 98/2	-	-	-	-	AL200RC
ALUXCOR™ - 78/22	-	-	-	-	ZN78CW09020POP

ALLOY	ALUMINUM %	SILICON %	ZINC %	TIN %	SOLIDUS		LIQUIDUS	
					°F	°C	°F	°C
AL-BRAZE® 1070	88	12	-	-	1070	577	1080	582
AL-BRAZE® 4043	95	5	-	-	1065	574	1170	632
ALCOR®	*	-	-	-	824	440	824	440
AL-SOLDER 500®	15	-	98	85	391	199	482	250
ALUXCOR™ - 98/2	2	-	98	-	-	-	-	-
ALUXCOR™ - 78/22	22	-	78	-	-	-	-	-

## FOR BRAZING

Our fast-flow Al-Braze® 1070 has become an industry standard. Our new Al-Braze® 4043 provides a wider melting range to help fill splits or gaps. Alcor® is a lower temperature flux cored solder that makes it easier to join low-melting aluminum base metals. An added benefit - the flux residue is non-corrosive. Al-Solder® 500 is the industry's most widely used product to join aluminum to aluminum and aluminum to copper.



## WHAT'S YOUR ALLOY

### AL-BRAZE® 1070, 4043

Superior brazing filler metals for joining aluminum. Al-Braze® 1070 is free-flowing with equaled capillary attraction. Al-Braze® 4043 provides a wider melting range. These alloys are not recommended for brazing aluminum directly to non-aluminum alloys as the joint may be brittle.

### ALCOR®

A very easy to use aluminum alloy with non-corrosive flux inside the wire; no external flux is required with this product. Designed for the repair of heat exchangers, air conditioners, aluminum alloy condensers and other applications. Very good fluidity with good capillary attraction. Post-braze cleaning unnecessary. Better than tin-zinc and aluminum silicon alloys for aluminum coil repair.

### AL-SOLDER® 500

Solder alloy for torch or iron. Used to join all solderable aluminum alloys to each other and to dissimilar metals. Also can be used for zinc die-cast. Forms excellent, corrosion resistant joints on the tough-to-solder aluminum alloys. Also beneficial as a high temperature solder on most other metals. Not recommended for magnesium.

### ALUXCORE™

Our ALUXCOR™ zinc aluminum alloys have non-corrosive and non-hygroscopic cesium flux with a lower melting temperature and wider melting range than aluminum silicon alloys. ALUXCOR 4047 has four different non-corrosive and non-hygroscopic flux combinations with no binder to fit your customer specific heating applications. The different formulas flux's release at increasing speeds in order from 15.1 being the slowest, to 15.4 being the fastest. The 15.3 formula is our most common for hand brazing applications but Harris now offers different formulas to best optimize flux release in controlled auto brazing heat applications.





# AL-BRAZE 1070



## ALUMINUM ALLOYS

MODEL SHOWN:  
1070K

### DESCRIPTION

Al-braze 1070 is free-flowing with unequaled capillary attraction, ductility and penetration. Excellent corrosion resistance.

### TYPICAL APPLICATIONS:

Superior brazing alloy for joining aluminum to aluminum. Excellent capillary attraction. Not recommended for brazing aluminum directly to non-aluminum alloys as the joint may be brittle.



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS
1070K	AL-BRAZE® 1070 KIT	88% ALUMINUM 12% SILICON	1070 °F 5777 °C	1080 °F 582 °C

# AL-BRAZE 4043



## ALUMINUM ALLOYS

MODEL SHOWN:  
4043K

### DESCRIPTION

Al-braze 4043 provides a wider melting range to help fill splits or gaps.

### TYPICAL APPLICATIONS:

Superior brazing alloy for joining aluminum to aluminum. Excellent capillary attraction.



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS
4043K	AL-BRAZE® 4043 KIT	95% ALUMINUM 5% SILICON	1065 °F 574 °C	1170 °F 632 °C

## AL-BRAZE FLUX

PART NO.	DESCRIPTION
ECDF1/2	AL-BRAZE® 1070 POWDER FLUX
ECDF40	AL-BRAZE® 1070 POWDER FLUX 2



# ALCOR



## ALUMINUM ALLOYS

MODEL SHOWN:  
AI20010RC

### DESCRIPTION

A very easy to use aluminum alloy with non-corrosive flux inside the wire; no external flux is required with this product. Designed for the repair of heat exchangers, air conditioners, aluminum alloy condensers and other applications.

### TYPICAL APPLICATIONS:

ALCoR is a good choice for joining aluminum alloys of the 1000, 3000, and 6000 series. It can also be used to join aluminum to copper. Can be used on heat exchangers, air conditioners, aluminum alloy condensers and other cooling applications.



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	MELTING RANGE °F	MELTING RANGE °C
AL20010R	ALCOR® - 2MM DIA x 10" x 25 LB PACKAGE	98% ZINC 85% ALUMINUM	710 °F 725 °F	377 °C 385 °C
AL200RC	ALCOR® - 2MM DIA x COIL			

## ALUMINUM ALLOYS

MODEL SHOWN:  
500K

# AL-SOLDER 500



### DESCRIPTION

Solder alloy for torch or iron. Used to join all solderable aluminum alloys to each other and to copper to aluminum and other dissimilar metals. Also can be used for zinc die-cast.

### TYPICAL APPLICATIONS:

Forms excellent, corrosion resistant joints on the tough-to-solder aluminum alloys. Provides tensile strength of up to 20,000 PSI.



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS
500320	AL-SOLDER® 500 - 1/16" DIA x 20 LB SPOOL	15% ZINC 85% SN	391 °F 199 °C	482 °F 250 °C
50061H	AL-SOLDER® 500 - 1/8" DIA x 1 LB SPOOL			
500620	AL-SOLDER® 500 - 1/8" DIA x 20 LB SPOOL			
500K	AL-SOLDER® 500 - ALUM. KT. (ORM-D) NO AIR			

**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**

**RoHS COMPLIANT**

**MADE IN THE USA**

**ALUMINUM ALLOYS**

MODEL SHOWN:  
**ZN78CW09020POP**

**DESCRIPTION**

With excellent strength and corrosion resistance for joining aluminum-to-aluminum or aluminum-to-copper or brass. Free flowing with unequalled capillary attraction, ductility, and penetration. Our ALUXCOR™ zinc aluminum alloys also have non-corrosive and non-hygroscopic cesium flux with a lower melting temperature and wider melting range than aluminum silicon alloys.

**TYPICAL APPLICATIONS:**

Residential HVAC , Automotive Appliance



**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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## NICK®

Nick® is a lead-free plumbing solder specifically formulated as a replacement for the tin/lead solders. It has a wide melting range (438 °F - 729°C) that allows operators to fill tight fitting pipe connections and also to bridge gaps in large, loose fitting or non-concentric pipe. Its ease of application in all types of copper joints, makes it the preferred solder of experienced operators and is the most forgiving in the hands of the less experienced. Nick® is a patented alloy which meets all Federal requirements for lead-free solders mandated by the Federal Safe Drinking Water Act Amendments of 1986. (Public Law 99-339)

## SPEEDY®

Speedy® has a faster melting range, which allows operators to fill small, tight-fitting pipe connections quickly. Speedy® low temperature, free flowing nature decreases cycle time while reducing setup time. Speedy® can be used with Stay-Clean® paste or liquid flux, as well as Bridgit® paste flux. Speedy® is a lead-free, low temperature alloy formulated for joining copper pipe in potable water systems. This tin-based alloy conforms to the 1986 Federal Safe Drinking Water Act Amendment.

## STAYBRITE® / STAYBRITE® 8

Silver-bearing solders are often used throughout the air conditioning industry as an alternative to brazing alloys. Both Stay-Brite® and Stay-Brite® 8 produce an overall component with greater strength than a brazed component whose base metals are weakened by annealment from high brazing heat. Stay-Brite® solders bond with all of the ferrous and nonferrous alloys. Joints soldered with Stay-Brite® solders exhibit considerably higher than necessary elongation for sound, dissimilar metal joints and vibration applications. Stay-Brite® 8 is especially effective in filling loosely fitted couplings. Use for all metals with the exception of aluminum. This is a low temperature solder excellent for many HVAC connections.





## BRIDGIT®

Lead-free solder widely used in plumbing applications where lead-bearing solders are prohibited. Contains nickel to increase joint strength. A wide melting range makes Bridgit® an excellent alloy for large diameter fittings and ill-fitted or non-concentric pipes. Fills gaps and caps off easily and effectively. Meets or exceeds NSF/ANSI 61, Annex G/California AB 1953.

## 95/5®

Tin-antimony solder well suited for applications where moderately elevated temperature is a factor. With higher electrical conductivity and high fluidity, 95/5 is recommended for lead-free installation of small diameter, tight fitting connections. Not recommended for use on brass or HVAC connections.

ALLOY	CHEMICAL COMPOSITION	SOLIDUS		LIQUIDUS		SPECIFICATIONS
		°F	°C	°F	°C	
Nick®	NICKEL BEARING	438	225	729	387	ASTM B32 GRADE HN, CERTIFIED TO NSF 61
Speedy®	97% TIN, 3% COPPER	450	232	555	290	-
Stay-Brite®	96% TIN, 4% SILVER	430	221	430	221	ASTM B32 GRADE SN96, CERTIFIED TO NSF 51; J-STD-006,
Stay-Brite® 8	94% TIN, 6% SILVER	430	221	535	279	CERTIFIED TO NSF 51
Bridgit®	NICKEL BEARING	460	238	630	332	ASTM B32 GRADE HB, CERTIFIED TO NSF 61
95/5	95% TIN, 5% ANTIMONY	452	233	464	240	ASTM B32 CLASS SB-5



## QUICK SELECTION GUIDE

### LEAD-FREE SOLDERS



DESCRIPTION	NICK®	SPEEDY®	STAYBRITE®
1/32" x 1 LB SPOOL			SB11
3/64" x 1 LB SPOOL			SB21
1/16" x 1 LB SPOOL			SB31
1/16" x 5 LB SPOOL			
1/16" x 20 LB SPOOL			
1/16" x 25 LB SPOOL			
1/16" x 50 LB SPOOL			
3/32" x 1 LB SPOOL			SB51
3/32" x 5 LB SPOOL			
3/32" x 25 LB SPOOL			
1/8" x 1 LB SPOOL	NICK61	SPDY61	SB61
1/8" x 5 LB SPOOL			SB65
1/8" x 5 LB ROSIN CORE			SBRC65
1/8" x 25 LB SPOOL			SB625
1 LB BAR x 24			
1/8" x 8oz SPOOL POP			SB61/2POP
1/8" x 1 LB SPOOL POP	NICK61POP	SPDY61POP	
KIT W/FLUX			SBSK
KIT W/FLUX POP			SBSKPOP



STAYBRITE® 8	BRIDGIT®	95/5 ROSIN CORE	95/5 SOLID CORE
SB811			
SB821			
SB831	BRGT31		95531
	BRGT35	955R35	
SB8325	BRGT325	955R325	
SB851	BRGT51		95551
SB855			955525
SB861	BRGT61		95561
	BRGT65		95565
	BRGT625		955625
	BRGT61/2POP		95561/2POP



# NICK



## LEAD FREE PLUMBING SOLDERS

MODEL SHOWN:  
**NICK61**

### DESCRIPTION

Nick® is a lead-free plumbing solder having been specifically formulated as a replacement for the tin/lead solders. It has a wide melting range (438 °F - 729 °C) that allows operators to fill small tight fitting pipe connections and also to bridge gaps in large, loose fitting or non-concentric pipe.

### TYPICAL APPLICATIONS:

Its ease of application in all types of copper joints, makes it the preferred solder of experienced operators and is the most forgiving in the hands of the less experienced. Nick is a patented alloy which meets all Federal requirements for lead-free solders mandated by the Federal Safe Drinking Water Act Amendments of 1986. (Public Law 99-339)



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
NICK61	1/8" x 1 LB SPOOL	.05 - .15% SILVER .15 - .25% NICKEL 3.5 - 4.5% COPPER BALANCE TIN	438°F 225°C	729°F 387°C	ASTM B32 Grade HN, Certified to NSF 61
NICK61POP	1/8" x 1 LB SPOOL POP				

# SPEEDY



## LEAD FREE PLUMBING SOLDERS

MODEL SHOWN:  
**SPDY61**

### DESCRIPTION

Speedy® has a faster melting range, which allows operators to fill small, tight-fitting pipe connections quickly. Speedy's low temperature, free following nature decreases cycle time while reducing setup time. Speedy® can be used with Stay-Clean® paste or liquid flux, as well as Bridgit® paste flux.

### TYPICAL APPLICATIONS:

Speedy® is a lead-free, low temperature alloy formulated for joining copper pipe in potable water systems. This tin-based alloy conforms to the 1986 Federal Safe Drinking Water Act Amendment.



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
SPDY61	1/8" x 1 LB SPOOL	2.5 - 3.5% COPPER BALANCE TIN	450°F 232°C	555°F 290°C	
SPDY61POP	1/8" x 1 LB SPOOL POP				

# BRIDGIT



## LEAD FREE PLUMBING SOLDERS

MODEL SHOWN:  
**BRGT31**

### DESCRIPTION

Lead-free solder widely used in plumbing applications where lead-bearing solders are prohibited. Contains nickel to increase joint strength.

### 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
BRGT31	1/16" 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
BRGT35	1/16" x 5 LB SPOOL				
BRGT325	1/16" x 25 LB SPOOL				
BRGT51	3/32" x 1 LB SPOOL				
BRGT61	1/8" x 1 LB SPOOL				
BRGT65	1/8" x 5 LB SPOOL				
BRGT625	1/8" x 25 LB SPOOL				
BRGT61/2POP	1/8" x 8oz SPOOL POP				

## PRO INFO WHAT YOU NEED TO KNOW ABOUT SOLDERING

- Soldering is similar to brazing but at lower temperature, below 840°F / 450°C
- Solders are primarily tin based alloys with various additions of lead, silver, antimony, zinc, etc.
- Heat sources include soldering irons, gas/air torches, propane, and propylene
- Tin based solders have less strength than copper based brazing alloys, so solder joints require longer over-lap
- In soldering, usually 5X the minimum base metal thickness is specified to develop adequate strength



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LEAD-FREE SOLDER



# STAY BRITE



## SILVER BEARING SOLDERS

MODEL SHOWN:  
SB31

### DESCRIPTION

Excellent general-purpose brazing alloy. Good ductility and capillary flow. Color is silver to light yellow. Available in flux coated (the flux is on the wire) which eliminates manual flux application.

### TYPICAL APPLICATIONS:

Engineered to provide a strong, ductile connection on copper, brass, steel and stainless steel.



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
SB11	1/32" 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.
SB21	3/64" x 1 LB SPOOL				
SB31	1/16" x 1 LB SPOOL				
SB51	3/32" x 1 LB SPOOL				
SB61	1/8" x 1 LB SPOOL				
SB65	1/8" x 5 LB SPOOL				
SBRC65	1/8" x 5 LB ROSIN CORE				
SB625	1/8" x 25 LB SPOOL				
SB61/2POP	1/8" x 8oz SPOOL POP				
SBSK	KIT W/FLUX				
SBSKPOP	KIT W/FLUX POP				

# STAY BRITE 8



## SILVER BEARING SOLDERS

MODEL SHOWN:  
SB811

### DESCRIPTION

Excellent general-purpose brazing alloy. Good ductility and capillary flow. Color is silver to light yellow. Available in flux coated (the flux is on the wire) which eliminates manual flux application.

### TYPICAL APPLICATIONS:

Engineered to provide a strong, ductile connection on copper, brass, steel and stainless steel.



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
SB811	1/32" x 1 LB SPOOL	5.5 - 6.0 % SILVER BALANCE TIN	430°F 221°C	535°F 279°C	NSF STANDARD 51
SB821	3/64" x 1 LB SPOOL				
SB831	1/16" x 1 LB SPOOL				
SB8325	1/16" x 25 LB SPOOL				
SB851	3/32" x 1 LB SPOOL				
SB855	3/32" x 5 LB SPOOL				
SB861	1/8" x 1 LB SPOOL				



**ROSIN CORE**  
**95/5**  
RoHS  
COMPLIANT  
MADE IN THE  
USA

**ELECTRICAL PRODUCTS**

MODEL SHOWN:  
**955R35**

**DESCRIPTION**

Tin-antimony solder well suited for lead free applications where moderately elevated temperature is a factor. With higher electrical conductivity and high fluidity, 95/5 is recommended for lead free installation of small diameter, tight fitting connections. Not recommended for use on brass or HVAC connections.

**TYPICAL APPLICATIONS:**

Useful for applications where moderately elevated temperature is a factor. It has a higher electrical conductivity and recommended where lead contamination must be avoided.



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
955R35	1/16" x 5 LB SPOOL	4.5 - 5.5% ANTIMONY TIN BALANCE	452°F 233°C	464°F 240°C	QQS-571 F(19 May 1994): Sn95Sb05WRAP2 STD-006: Sn95Sb5 (Solder Only) ASTM B32-04: Sb5 (Solder Only) J-STD-004: ROL1 (Flux Only)
955R325	1/16" x 25 LB SPOOL				



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**LEAD-FREE SOLDER**

# LEADED SOLDERS

HVAC/R  
PLUMBING

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

## QUICK SELECTION GUIDE



DESCRIPTION	40/60 ACID CORE	40/60 ROSIN CORE	40/60 SOLID CORE	50/50 ACID CORE
1/32" x 1 LB SPOOL				
1/16" x 1 LB SPOOL				
3/32" x 1 LB SPOOL		40R51	406051	
3/32" x 5 LB SPOOL		40R55	406055	50A55
3/32" x 20 LB SPOOL				
1/8" x 1 LB SPOOL	40A61	40R61	406061	50A61
1/8" x 5 LB SPOOL	40A65			
1/8" x 20 LB SPOOL				
TRI-BAR				
1 LB BAR				
1/16" x 8oz SPOOL POP				
1/8" x 8oz SPOOL POP				

## 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.



**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



50/50 ROSIN CORE	50/50 SOLID CORE	60/40 ROSIN CORE	60/40 SOLID CORE
		60R11	
50R31		60R31	604031
50R51		60R51	604051
			604055
		60R520	
50R61	505061	60R61	604061
		60R65	
	5050620		
	5050TB		
	50501B		60401B
		60R31/2POP	
	505061/2POP	60R61/2POP	



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**LEADED SOLDER**

# 40/60



## ELECTRICAL PRODUCTS

MODEL SHOWN:  
40A61

### DESCRIPTION

With some exceptions, the tin-lead solders can be used to solder copper and most copper alloys, lead, high nickel alloys, and steel. Tin-lead solders are not recommended in high stress or vibration joints in the cooling industry due to lack of sufficient elongation properties. Heat sources include soldering guns, irons, and torch applications. \*Lead bearing solders are not to be used in potable water

### TYPICAL APPLICATIONS:

A tin-lead alloy with a wide melting range. Used for automotive, radiator, general purpose soldering.



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
40A61	40/60 - 1/8" - 1 LB ACID CORE (3.18 MM - 0.4536 KG ACID CORE) - 1 SPOOL	40% TIN 60% LEAD	360°F 182°C	460°F 2238C	ASTM B32, Sn40A
40A65	40/60 -1/8" - 5 LB ACID CORE (3.18 MM - 227 KG ACID CORE) - 1 SPOOL				
40R51	40/60 -3/32" - 1 LB ROSIN CORE (3.18 MM - 0.4536 KG) - 1 SPOOL				
40R61	40/60 -1/8" - 1 LB ROSIN CORE (3.18 MM - 0.4536 KG) - 1 SPOOL				
406051	40/60 -3/32" - 1 LB (3.18 MM - 0.4536 KG) - 1 SPOOL				
406061	40/60 -1/8" - 1 LB (3.18 MM - 0.4536 KG) - 1 SPOOL				

# 50/50



## ELECTRICAL PRODUCTS

MODEL SHOWN:  
50A61

### DESCRIPTION

The tin lead solder group constitutes the largest portion of solders in use. With some exceptions, the tin lead solders can be used to solder copper and most copper alloys, lead high nickel alloys, and steel. Tin lead solders are not recommended in high stress or vibration joints in the cooling industry due to lack of sufficient elongation properties. Heat sources include soldering guns, irons, and torch applications. \*Lead bearing solders are not to be used in potable water systems.

### TYPICAL APPLICATIONS:

A tin-lead alloy with a wide melting range. Used for automotive, radiator, general purpose soldering, electrical applications.



PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
50A61	50/50- ACID CORE 1/8" - 1# Spool	50% TIN 50% LEAD	360°F 182°C	460°F 2238C	J-STD-006, Sn50, Pb50a
50R31	50/50-ROSIN CORE 1/16" - 1# Spool				
50R51	50/50-ROSIN CORE 3/32" - 1# Spool				
50R61	50/50-ROSIN CORE 1/8" - 1# Spool				
505061	50/50-1# BAR				
5050620	50/50-1/8" - 20# Spool				
5050TB	50/50-1# TRI BAR				
50501B	50/50-1# BAR				
505061/2POP	50/50-1/8" DIA - 1# Spool				



# 60/40



## ELECTRICAL PRODUCTS

MODEL SHOWN:  
60R11

### DESCRIPTION

The tin-lead solder group constitutes the largest portion of solders in use. With some exceptions, the tin-lead solders can be used to solder copper and most copper alloys, lead high nickel alloys, and steel. Tin-lead solders are not recommended in high stress or vibration joints in the cooling industry due to lack of sufficient elongation properties. Heat sources include soldering guns, irons, and torch applications.

\*Lead bearing solders are not to be used in potable water systems.



### TYPICAL APPLICATIONS:

These solders are also available with rosin or acid core. Useful in general purpose soldering, radiators, electrical components.

PART NO.	DESCRIPTION	CHEMICAL COMPOSITION	SOLIDUS	LIQUIDUS	CLASSIFICATION
60R31	60-40 - 1/16" - 1 lb Rosin Core (1.59 mm - 0.4536 kg Rosin Core) - 1 Spool	40% TIN 60% LEAD	360°F 182°C	460°F 2238C	ASTM B32 Sn60
60R51	60-40 - 3/32" - 1 lb Rosin Core (2.38 mm - 0.4536 kg Rosin Core) - 1 Spool				
60R31/2POP	60-40 - 1/16" - 8 oz Rosin Core (1.59 mm - 226.80 kg) - 1 Spool				
60R61/2POP	60-40 - 1/8" - 8 oz Rosin Core (3.18 mm - 226.80 kg Rosin Core) - 1 Spool				
604031	60-40 - 1/16" - 1 lb (1.59 mm - 0.4536 kg) - 1 Spool				
604051	60-40 - 3/32" - 1 lb (2.38 mm - 0.4536 kg) - 1 Spool Special Order				
604061	60-40 - 1/8" - 1 lb (3.18 mm - 0.4536 kg) - 1 Spool				
60401B	60-40 - 1 lb Bar (0.4536 kg Bar) - 1				



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



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# 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.

## QUICK SELECTION GUIDE



DESCRIPTION	BRIDGIT	STAY - CLEAN®	STAY-SILV® WHITE	STAY-SILV® BLACK	ECOSMART™ BLACK	ECOSMART™ GREEN
4 OZ BOTTLE	BRPF1- BRPF4POP	SCLF4 - SCAF4				
6.5 OZ BOTTLE			SSWF7 - SSWF7POP			
16 OZ BOTTLE		SCLF16				
32 OZ BOTTLE	BRPF4WS	SCLF32				
1 LB BOTTLE	BRPF1					
1 GALLON		SCLF1G				
55 GALLONS		SCLF55				
6.5 OZ JAR						ESF70ZPG
4 OZ JAR		SCPF4 - SCPF4POP				
1/4 LB JAR			SSWF1/4			
1/2 LB JAR			SSWF1/2	SSBF1/2	ESF1/2PB - ESF1/2DB	ESF1/2PG - ESF1/2DG
1 LB JAR		SCPF1	SSWF1	SSBF1	ESF1PB	ESF1PG
5 LB JAR			SSWF5	SSBF5	ESF5PB	ESF5PG
25 LB PAIL			SSWF25		ESF25DB	ESF25PG
30 LB PAIL				SSBF30		
40 LB PAIL					ESF40DB	ESF40DG
60 LB PAIL			SSWF60	SSBF60		

## HARRIS OFFERS A WIDE RANGE OF SOLDER FLUX FOR MULTIPLE APPLICATIONS.



### 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.



# BRIDGIT



## FLUX

MODEL SHOWN:  
BRPF4

### DESCRIPTION

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. Meets all requirements of the Safe Drinking Water Act. Stays active to 800 °F and will not burn at soldering temperature. This reduces black carbon formations that can result in voids and leaks.

### TYPICAL APPLICATIONS:

Bridgit paste flux stays active to 800 °F. At soldering temperature, including those required by most new lead-free solders, Bridgit flux will not burn, thus reducing carbon formations that may result in leaks. The flux is unexcelled for use in soldering copper, brass, bronze, galvanized and other plumbing fittings. This flux works extremely well with Bridgit lead-free solder in potable water systems. This flux, however, should work equally well with other solders. Bridgit paste flux meets all requirements of the Safe Drinking Water act.



PART NO.	SIZE	FLUX	ACTIVE RANGE		SPECIFICATIONS
			°F	°C	
BRPF1	1 LB BOTTLE	BURN RESISTANT	200° - 800°	93° - 427°	ASTM B32 GRADE Sn 40A
BRPF4	4 OZ BOTTLE	BURN RESISTANT	200° - 800°	93° - 427°	ASTM B32 GRADE Sn 40A
BRPF4WS	32 OZ BOTTLE	WATER SOLUBLE	250° - 600°	121° - 315°	ASTM B32 GRADE Sn 60
BRPF4POP	4 OZ BOTTLE	BURN RESISTANT	250° - 600°	121° - 315°	ASTM B32 GRADE Sn 60

# STAY-CLEAN



## FLUX

MODEL SHOWN:  
SCLF16

### DESCRIPTION

Stay Clean liquid flux is an inorganic acid & salt type flux. It is formulated to be active at temperatures optimum for a range of solder compositions and is ideal for soldering a variety of base metals as noted below.

### TYPICAL APPLICATIONS:

Designed primarily for copper to copper and copper to brass connections the paste form is ideal for soldering tube joints. Not recommended for electrical or electronic applications due to the potential corrosive residue of the flux. Stay Clean® Paste flux works well with most leaded and lead-free solder compositions. Flux residue should be removed after soldering



PART NO.	SIZE	FLUX	ACTIVE RANGE		SPECIFICATIONS
			°F	°C	
SCPF1	1 LB JAR	PASTE	UP TO 600	UP TO 316	A-A51145D, Type 1 Form A
SCPF4	4 OZ JAR	PASTE	UP TO 600	UP TO 316	A-A51145D, Type 1 Form A
SCLF4	4 OZ BOTTLE	LIQUID	UP TO 700	UP TO 371	A-A51145D, Type 1 Form B
SCLF16	16 OZ BOTTLE	LIQUID	UP TO 700	UP TO 371	A-A51145D, Type 1 Form B
SCLF32	32 OZ BOTTLE	LIQUID	UP TO 700	UP TO 371	A-A51145D, Type 1 Form B
SCLF1G	1 GALLON	LIQUID	UP TO 700	UP TO 371	A-A51145D, Type 1 Form B
SCLF55	55 GALLONS	LIQUID	UP TO 700	UP TO 371	A-A51145D, Type 1 Form B
SCAF4	4 OZ BOTTLE	LIQUID	UP TO 700	UP TO 371	A-A51145D, Type 1 Form B
SCPF4POP	4 OZ JAR	PASTE	UP TO 700	UP TO 371	A-A51145D, Type 1 Form B



**STAY-SILV WHITE**



**FLUX**

MODEL SHOWN:  
**SSWF1**

**DESCRIPTION**

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

**TYPICAL APPLICATIONS:**

Use Stay-Silv® white flux when silver brazing cast iron, copper, brass, bronze, and steel brazing. For stainless steel Stay-Silv® Black Flux is recommended.



PART NO.	SIZE	FLUX	ACTIVE RANGE		SPECIFICATIONS
			°F	°C	
SSWF1	1 LB JAR	BRAZING FLUX	1050-1600	565-870	AWS A5.31 Classification FB3 A AMS 3410  Federal Specification O-F-499, Type B  EN 1045 Type FH10
SSWF1/4	1/4 LB JAR	BRAZING FLUX	1050-1600	565-870	
SSWF1/2	1/2 LB JAR	BRAZING FLUX	1050-1600	565-870	
SSWF5	5 LB JAR	BRAZING FLUX	1050-1600	565-870	
SSWF7	6.5 OZ BOTTLE	BRAZING FLUX	1050-1600	565-870	
SSWF25	25 LB PAIL	BRAZING FLUX	1050-1600	565-870	
SSWF60	60 LB PAIL	BRAZING FLUX	1050-1600	565-870	
SSWF7POP	6.5 OZ BOTTLE	BRAZING FLUX	1050-1600	565-870	

**STAY-SILV BLACK**



**FLUX**

MODEL SHOWN:  
**SSBF1/2**

**DESCRIPTION**

An all purpose, high-temperature flux for use in silver brazing. Formulated for applications where the work is subjected to rapid, localized heating. Particularly useful in applications where large amounts of refractory oxides may form, such as with stainless steel alloys. Use with stainless steel, carbide, heavy parts, and prolonged heating cycles.

**TYPICAL APPLICATIONS:**

Use Stay-Silv® Black Flux on heavy parts, where localized overheating may occur, and where parts are heated over a prolonged period. Stay-Silv® Black Flux is also suggested when brazing stainless steel.



PART NO.	DESCRIPTION	TYPE	ACTIVE RANGE		SPECIFICATIONS
			°F	°C	
SSBF1/2	1/2 LB JAR	BRAZING FLUX	1050-1800	566-982	0F499, Type B, AWS A5.31, CLASS FB3-C, AMS 3411
SSBF1	1 LB JAR	BRAZING FLUX	1050-1800	566-982	0F499, Type B, AWS A5.31, CLASS FB3-C, AMS 3411
SSBF5	5 LB JAR	BRAZING FLUX	1050-1800	566-982	0F499, Type B, AWS A5.31, CLASS FB3-C, AMS 3411
SSBF30	30 LB PAIL	BRAZING FLUX	1050-1800	566-982	0F499, Type B, AWS A5.31, CLASS FB3-C, AMS 3411
SSBF60	60 LB PAIL	BRAZING FLUX	1050-1800	566-982	0F499, Type B, AWS A5.31, CLASS FB3-C, AMS 3410





**ECOSMART  
BLACK****FLUX****MODEL SHOWN:  
ESF1/2PB****DESCRIPTION**

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.

**TYPICAL APPLICATIONS:**

- Environmentally-friendly boric acid and borax free
- Smooth consistency for easy application
- Powder flux has excellent adherence when heated rod is dipped into flux
- Dissolves surface oxides and protects against oxidation during heating
- Wide activation range
- Excellent flux coverage during heating
- Easy flux residue removal



PART NO.	SIZE	FLUX	ACTIVE RANGE		SPECIFICATIONS
			°F	°C	
ESF1/2PB	1/2 LB JAR	BLACK PASTE	700-1800	371-982	AWS A5.31M/A5.31: FB3-C
ESF1PB	1 LB JAR	BLACK PASTE	700-1800	371-982	AWS A5.31M/A5.31: FB3-C
ESF5PB	5 LB JAR	BLACK PASTE	700-1800	371-982	AWS A5.31M/A5.31: FB3-C
ESF1/2DB	1/2 LB JAR	BLACK POWDER	700-1800	371-982	AWS A5.31M/A5.31: FB3-J
ESF25DB	25 LB PAIL	BLACK POWDER	700-1800	371-982	AWS A5.31M/A5.31: FB3-J
ESF40DB	40 LB PAIL	BLACK POWDER	700-1800	371-982	AWS A5.31M/A5.31: FB3-J

**ECOSMART  
GREEN****FLUX****MODEL SHOWN:  
ESF70ZPG****DESCRIPTION**

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.

**TYPICAL APPLICATIONS:**

- Environmentally-friendly boric acid and borax free
- Smooth consistency for easy application
- Powder flux has excellent adherence when heated rod is dipped into flux
- Dissolves surface oxides and protects against oxidation during heating
- Wide activation range
- Excellent flux coverage during heating
- Easy flux residue removal



PART NO.	SIZE	FLUX	ACTIVE RANGE		SPECIFICATIONS
			°F	°C	
ESF70ZPG	6.5 OZ JAR	GREEN PASTE	800-1600	427-871	AWS A5.31M/A5.31: FB3-A
ESF1/2PG	1/2 LB JAR	GREEN PASTE	800-1600	427-871	AWS A5.31M/A5.31: FB3-A
ESF1PG	1 LB JAR	GREEN PASTE	800-1600	427-871	AWS A5.31M/A5.31: FB3-A
ESF5PG	5 LB JAR	GREEN PASTE	800-1600	427-871	AWS A5.31M/A5.31: FB3-A
ESF25PG	25 LB PAIL	GREEN PASTE	800-1600	427-871	AWS A5.31M/A5.31: FB3-A
ESF1/2DG	1/2 LB JAR	GREEN POWDER	800-1600	427-871	AWS A5.31M/A5.31: FB3-F
ESF25DG	25 LB PAIL	GREEN POWDER	800-1600	427-871	AWS A5.31M/A5.31: FB3-F
ESF40DG	40 LB PAIL	FLUX - GREEN POWDER	800-1600	427-871	AWS A5.31M/A5.31: FB3-F

# BRAZING AND SOLDERING SELECTION CHART

METALS TO BE JOINED	SOLDERS	BRAZING FILLER METALS	SOLIDUS	LIQUIDUS	FLUIDITY RATING*	FLUX	TORCHES & FLAMES
COPPER OR BRASS  <b>TO</b>  COPPER OR BRASS	Stay-Brite® Stay-Brite® 8 Bridgit®		430°F / 221°C 430°F / 221°C 460°F / 238°C	430°F / 221°C 535°F / 279°C 630°F / 332°C	10 8 6	Stay-Clean® soldering fluxes, liquid or paste.  Bridgit® paste or water soluble paste flux.	Harris Inferno® Air-fuel equipment
		Blockade® Harris® 0 Stay-Silv® 5 Dynaflo® Stay-Silv® 6 Stay-Silv® 15	1178°F / 637°C 1310°F / 710°C 1190°F / 643°C 1190°F / 643°C 1190°F / 643°C 1190°F / 643°C	1247°F / 674°C 1475°F / 802°C 1500°F / 816°C 1465°F / 796°C 1425°F / 774°C 1480°F / 804°C	7 5 3 3 5 3	No flux required for copper to copper joints with the phosphorus-bearing filler metals.  For brass and other copper alloys, use Stay-Silv® white brazing flux.  EcoSmart® Flux	Harris Inferno® Air-fuel equipment or Harris oxy-acetylene equipment (Neutral flame)
COPPER OR BRASS  <b>TO</b>  STEEL OR STAINLESS STEEL	Stay-Brite® Stay-Brite® 8		430°F / 221°C 430°F / 221°C	430°F / 221°C 535°F / 279°C	10 8	Stay-Clean® liquid soldering flux.	Harris Inferno® Air-fuel equipment
		Safety-Silv® 56 Safety-Silv® 38T Safety-Silv® 45 Safety-Silv® 45T	1145°F / 618°C 1120°F / 660°C 1125°F / 663°C 1195°F / 646°C	1205°F / 652°C 1325°F / 718°C 1370°F / 743°C 1265°F / 685°C	8 7 6.5 7	Stay-Silv® white brazing flux.  Stay-Silv® black flux for stainless steel. EcoSmart® Flux	Harris Inferno® Air-fuel equipment or Harris oxy-acetylene equipment (Slightly reducing flame)
STEEL OR STAINLESS STEEL  <b>TO</b>  STEEL OR STAINLESS STEEL	Stay-Brite® Stay-Brite®		430°F / 221°C 430°F / 221°C	430°F / 221°C 535°F / 279°C	10 8	Stay-Clean® liquid soldering flux.	Harris Inferno® Air-fuel equipment
		Safety-Silv® 56 Safety-Silv® 38T Safety-Silv® 40Ni2 Safety-Silv® 45 Safety-Silv® 45T Safety-Silv® 50N	1145°F / 618°C 1220°F / 660°C 1220°F / 660°C 1225°F / 663°C 1195°F / 646°C 1220°F / 660°C	1205°F / 652°C 1325°F / 718°C 1435°F / 779°C 1370°F / 743°C 1265°F / 685°C 1305°F / 707°C	8 7 4.5 6.5 7 7	Stay-Silv® white brazing flux.  Stay-Silv® black flux for stainless steel. EcoSmart® Flux	Harris Inferno® Air-fuel equipment or Harris oxy-acetylene equipment (Slightly reducing flame)
STEEL OR STAINLESS STEEL  <b>TO</b>  CARBIDES	Not Recommended	Safety-Silv® 40Ni2 Safety-Silv® 50N	1220°F / 660°C 1220°F / 660°C	1435°F / 779°C 1305°F / 707°C	4.5 7	Stay-Silv® black flux for stainless steel. EcoSmart® Flux	Harris oxy-acetylene equipment (Reducing flame)
ALUMINUM-TO-ALUMINUM (1) OR ALUMINUM- TO-COPPER OR BRASS (2) OR ALUMINUM-TO-STEEL OR STAINLESS STEEL (2)	Al-Solder® 500 Alcol®		391°F / 199°C ---	482°F / 250°C 824°F / 440°C	---- ----	Stay-Clean® aluminum soldering flux. Flux is contained inside the wire.	Harris Inferno® Air-fuel equipment
		Al -Braz® 4043 Al-Braz® 1070	1065°F / 574°C 1070°F / 577°C	1170°F / 632°C 1080°F / 582°C	7 9	Al-Braz® 1070 flux	Harris Inferno® Air-fuel equipment or Harris Oxy-acetylene equipment (Reducing flame)

NOTE: ALUMINUM TO DISSIMILAR METAL JOINTS MAY BE SUBJECT TO GALVANIC CORROSION

\*The higher the fluidity rating the faster the alloy flows within the melting range



# OXY ACETYLENE VS. AIR ACETYLENE

HVAC/R PLUMBING

FOR THE HVAC/R TECHNICIAN, CHOOSING THE RIGHT PROCESS FOR YOUR BRAZING AND SOLDERING APPLICATIONS DEPENDS ON MANY FACTORS INCLUDING BUDGET, VERSATILITY, BASE MATERIALS, PARTS SIZE, AND USER SKILL SET. THE CHART BELOW WILL HELP YOU CHOOSE THE RIGHT TOOL FOR SOLDERING AND BRAZING PIPE.



	AIR ACETYLENE	OXY ACETYLENE
<b>GENERAL APPLICATIONS</b>	Suited for installation and repair in field Confined spaces, portability, and versatility Thinner base metals	Suited for general repairs & installation and soldering Fast / high-volume work Thicker base metals
<b>PERFORMANCE</b>	Lower temperature up to 2000°F to 3000°F Low flame intensity - heat transfer slow Broad heat zone Tips have a wide operating range Smaller size and weight - more convenient to use	Higher temperature up to 6000°F High flame intensity - heat transfer fast Confined heat zone Generally tips have a narrow operating range Larger size and weight - less convenient to use
<b>SAFETY</b>	Very stable Durable and less expensive to repair Gases can be transported with less restrictions	Less safe due to possibility of flashbacks More expensive to repair Rules and regulations pertaining to safe transport of gases more complex

## HARRIS 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.	1400351	1400350	1400354	1400352	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	3/4" - 4" 20 - 102 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	1/2" - 2" 13 - 51 mm		CASES PER PALLET	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	3/4" - 3 1/2" 20 - 90 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	1/2" - 2" 13 - 51 mm			



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AIR FUEL TORCHES

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# 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.

## 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

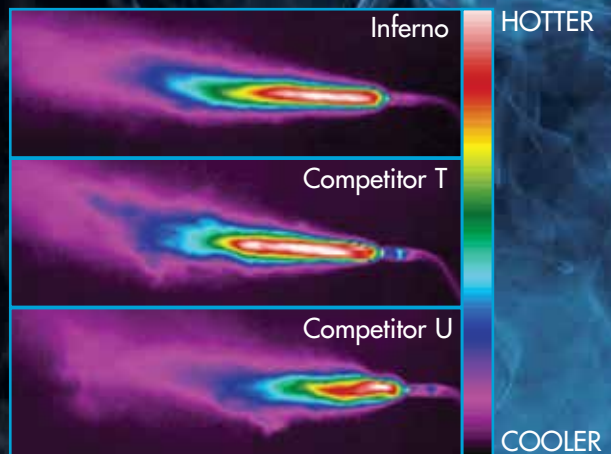
Using thermal photography techniques, the product development team at The Harris Products Group evaluated the relative flame consistency and heat of the Inferno® tips. The team focused on developing a configuration in the design of the Inferno® tips that would produce the proper heat with reliable and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

## 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.





# 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.

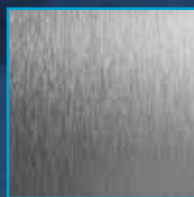
## INFERNO<sup>®</sup> APPLICATIONS



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.

### 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
4400086	HX-8B HQA-4	HQA-4	B	601-15-520A	HA-8i	#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 QUICK CONNECT BRAZING HANDLES

Harris air fuel torch handles are ergonomically designed with a super tough grip for balance and comfort.

### HQA-4

MODEL SHOWN:  
P/N: 1400084



### HQB-4

MODEL SHOWN:  
P/N: 1400085



# AIR FUEL EQUIPMENT INFERNO AIR FUEL QUICK CONNECT SWIRL TIPS

MODEL SHOWN:



ACETYLENE

PART NO.	MODEL	TIP SIZE		GAS FLOW		COPPER TUBE CAPACITY			
		INCHES	MM	@14 PSI	(0.9 BAR)	SOFT SOLDER		BRAZING	
				SCFH	M3/HR	INCHES	MM	INCHES	MM
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

PROPANE

PART NO.	MODEL	TIP SIZE		GAS FLOW		COPPER TUBE CAPACITY			
		INCHES	MM	@28 PSI	(1.9 BAR)	SOFT SOLDER		BRAZING	
				SCFH	M3/HR	INCHES	MM	INCHES	MM
1601130	HT-2i	5/16"	7.87	1.50	0.04	1/8" - 1/4"	3 - 6	1/16" - 1/4"	2 - 6
1601131	HT-3i	7/16"	11.18	3.10	0.09	1/4" - 1"	6 - 25	1/8" - 1/2"	3 - 13
1601132	HT-4i	1/2"	12.70	3.60	0.11	1/4" - 1 1/2"	6 - 38	1/4" - 3/4"	6 - 19
1601133	HT-5i	3/4"	19.05	11.50	0.33	1 1/2" - 2 1/2"	38 - 64	1/2" - 1 1/4"	13 - 32

PROPYLENE

1601130	HT-2i	5/16"	7.87	1.50	0.04	1/8" - 1 1/2"	3.18 - 38.10	1/8" - 1/4"	3.18 - 6.35
1601131	HT-3i	7/16"	11.18	3.10	0.09	1/4" - 1 1/2"	6.35 - 38.10	1/4" - 3/4"	6.35 - 19.05
1601132	HT-4i	1/2"	12.70	3.60	0.11	1/4" - 3"	6.35 - 76.20	1/2" - 1 1/4"	12.70 - 31.75
1601133	HT-5i	3/4"	19.05	11.50	0.33	2 1/2" - 6"	63.50 - 152.40	1 1/4" 2 1/2"	31.75 - 63.50



FOR APPLICATIONS  
WHERE **EXTREMELY**  
**HIGH VOLUMES OF**  
**GAS ARE REQUIRED**  
CHOOSE THE BEST-CHOOSE HARRIS



## SCREW CONNECT "A" HOSE CONNECTIONS - ACETYLENE

MODEL SHOWN:  
HSF-3 HAS-400

### 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 in the field vary. 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	HANDLE	TANK CONN	FUEL GAS REGULATOR	BRAZING TIPS	WRENCH	HOSE
4400091	HSF-3 HAS-400	HAS-400	MC	601-15-200A	HS-4	#5 CHROME	3/16" x 12' AxA RED
4400092	HSF-4 HAS-400	HAS-400	B	601-15-520A	HS-4	#5 CHROME	3/16" x 12' AxA RED

## AIR FUEL/ACETYLENE SCREW CONNECT

Harris air fuel torch handles are ergonomically designed with a super tough grip for balance and comfort.





# AIR FUEL EQUIPMENT INFERNO AIR FUEL SCREW CONNECT SWIRL TIPS



PART NO.	MODEL	TIP SIZE		GAS FLOW		COPPER TUBE CAPACITY			
						SOFT SOLDER		BRAZING	
		INCHES	MM	@9 PSI SCFH	(0.6 BAR) M3/HR	INCHES	MM	INCHES	MM
1601020	HS-1	3/16"	4.76	0.31	0.01	1/16" TO 1/8"	1.6 - 3.2	UP TO 1/16"	UP TO 1.6
1601021	HS-2	7/32"	5.36	0.92	0.03	1/8" - 3/8"	3.2 - 9.5	UP TO 1/8"	UP TO 3.2
1601022	HS-3	1/4"	6.35	3.30	0.09	3/8" - 1/2"	9.5 - 13	UP TO 3/8"	UP TO 9.5
1601023	HS-4	9/32"	7.14	4.60	0.13	1/2" - 1"	13 - 25	UP TO 1/2"	UP TO 13
1601024	HS-5	5/16"	7.94	6.60	0.19	3/4" - 1 1/2"	19 - 38	1/2" - 3/4"	13 - 19
1601025	HS-6	7/16"	11.11	12.70	0.36	1" - 4"	25 - 102	3/4" - 1 1/2"	19 - 38



A LINCOLN ELECTRIC COMPANY

**AS HVAC/R COMPANIES  
STRIVE TO REDUCE  
OVERALL COSTS,  
HARRIS CAN ASSIST  
IN THOSE EFFORTS.**

**OUR TECHNICAL  
TEAM IS FOCUSED  
ON COST REDUCTION  
SOLUTIONS FOR  
SPECIFIC APPLICATIONS  
IN YOUR PLANT.**



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AIR FUEL KITS



# 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

## QUICK SELECTION GUIDE

KIT



### OUTFIT

ACETYLENE

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HVAC PORT-A-TORCH



### PORT-A-TORCH

ACETYLENE

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COMPONENTS PARTS



**15-4HV**  
MODEL

BRAZE HANDLE

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**B-15-3V**  
MODEL

MIXER

p.68



**5090**  
MODEL

BRAZE TIP

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**3690**  
MODEL

CUT TIP

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**J-15**  
MODEL

HEAT TIP

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**36-2HV**  
MODEL

CUT ATTACHMENT

p.69

## 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.

## QUICK SELECTION GUIDE

### HVAC PORT-A-TORCH



#### PORT-A-TORCH

BRAZE HANDLE

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### COMPONENTS PARTS



#### 19-6A MODEL

BRAZE HANDLE

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#### H-16-2E MODEL

MIXER

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#### 23A90 MODEL

BRAZE TIP

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#### 3690AC MODEL

CUT TIP

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#### 36-2 MODEL

CUT ATTACHMENT

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

# MIT

MODEL

## OXYGEN ACETYLENE OUTFITS

MODEL SHOWN:  
15HV601-200A

### DESCRIPTION

The Harris HVAC Outfits contains all the quality equipment needed for brazing. The solid brass brazing handle and cutting attachment have industry standard connections which make them compatible with most brazing equipment. 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	
4400179	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>3/16" x 12.5" A to A Hose</li> </ul>
4400181	15HV601-520A NO C/A DLX	15-4HV	B-15-3HV	-	-	5090-1 5090-3	601-80-540A	601-15-520A	<ul style="list-style-type: none"> <li>Goggles</li> <li>Striker</li> <li>3/16" x 12.5" A to A Hose</li> </ul>
4400178	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>3/16" x 12.5" A to A Hose</li> </ul>
4400180	15HV601-520A DLX	15-4HV	B-15-3HV	3690-0	36-2HV	5090-1 5090-3	601-80-540A	601-15-520A	<ul style="list-style-type: none"> <li>Goggles</li> <li>Striker</li> <li>3/16" x 12.5" A to A Hose</li> </ul>

# PAT

MODEL

## HVAC PORT-A-TORCH®

MODEL SHOWN:  
15HV601-200A DLX

### 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</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</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>



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OXY FUEL EQUIPMENT



# 15-4HV

MODEL  
1YR WARRANTY

## LIGHT WEIGHT BRAZING HANDLE

MODEL SHOWN:  
15-4HV

### 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 them 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	J-64-1	5090-(1-5)

# 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 - 3/16" - 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

\*Oxygen SCFH is equal to 1.1 times acetylene for neutral flame.  
 \*\*Hose sizes are suitable for hoses up to 25'. For longer hoses, higher pressures should be used.  
 Observe 1/3 acetylene rule when determining gas supply.



# 3690

MODEL

1YR  
WARRANTY

## GENERAL PREHEAT SINGLE-PIECE HAND CUTTING TIPS

MODEL SHOWN:  
3690

### 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

# 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	J-15	15-4HV	B-15-3HV

# 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:** 7½"/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

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ACETYLENE,  
DISSOLVED  
UN1001

PORT-A-TORCH  
HVAC



# PAT

MODEL

## HVAC PORT-A-TORCH® ACETYLENE

MODEL SHOWN:  
15HV601-200A DLX

### DESCRIPTION

The Harris HVAC Port-A-Torch® contains all the quality equipment needed for brazing. Packaged in a rugged, molded plastic carrying case, the 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:** Medium

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

**Mixer Type:** Equal pressure

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

**Related Items:** FlashGuard® Check Valves



PART NO.	MODEL NO.	TORCH HANDLE	MIXER	CUTTING TIP	CUTTING ATTACHMENT	WELDING/ BRAZING TIPS	REGULATORS		ACCESSORIES
							OXYGEN	FUEL	
4400155	19601-200A	19-6A	H-16-2E	-	-	23A90-1, 23A90-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>• Goggles</li> <li>• Striker</li> <li>• 3/16" x12" Hose</li> </ul>
4400156	19601-200A DLX	19-6A	H-16-2E	3690-OAC	36-2	23A90-1, 23A90-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>• Goggles</li> <li>• Striker</li> <li>• 3/16" x12" Hose</li> </ul>
4400157	19601-520A	19-6A	H-16-2E	-	-	23A90-1, 23A90-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>• Goggles</li> <li>• Striker</li> <li>• 3/16" x12" Hose</li> </ul>
4400158	19601-520A DLX	19-6A	H-16-2E	3690-OAC	36-2	23A90-1, 23A90-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>• Goggles</li> <li>• Striker</li> <li>• 3/16" x12" Hose</li> <li>• Tote</li> </ul>
4400159	19601-200A PAT	19-6A	H-16-2E	-	-	23A90-1, 23A90-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>• Goggles</li> <li>• Striker</li> <li>• 3/16" x12" Hose</li> <li>• Tote</li> </ul>
4400160	19601-200A PAT DLX	19-6A	H-16-2E	3690-OAC	36-2	23A90-1, 23A90-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>• Goggles</li> <li>• Striker</li> <li>• 3/16" x12" Hose</li> <li>• Tote</li> </ul>
4400161	19601-200A PAT W/CYL	19-6A	H-16-2E	-	-	23A90-1, 23A90-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>• Goggles</li> <li>• Striker</li> <li>• 3/16" x12" Hose</li> <li>• Tote</li> </ul>
4400162	19601-200A PAT DLX W/C	19-6A	H-16-2E	3690-OAC	36-2	23A90-1, 23A90-3	601-80-540A	601-15-200A	<ul style="list-style-type: none"> <li>• Goggles</li> <li>• Striker</li> <li>• 3/16" x12" Hose</li> <li>• Tote</li> </ul>



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# 19-6

MODEL

1YR  
WARRANTY

## COMBINATION HANDLE FOR MEDIUM-DUTY

MODEL SHOWN:  
19-6

### DESCRIPTION

The Models 19-6 and 19-6A are combination handles for medium-duty welding, brazing, heating and cutting. They can be used with oxy-acetylene or any of the alternate fuel gases. The Model 19 features silver brazed twin-tube construction. Both Models 19-6 and 19-6A have front valves for easier adjustment while welding and brazing. The 19-6A features 3/8"-24 class "A" hose fittings.

### DETAILS

**Capacity:** Welds to 5/16"/7.9mm; cuts to 2"/50.8 mm

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

**Weight:** 0.7 lbs./0.32 kg.

**Certification:** UL® listed

**Equipped with:** FlashGuard® check valves

### Inlet connections:

19-6: 3/8" - 18

19-6A: 3/8" - 24



PART NO.	MODEL NO.	MIXERS	TIP TUBE	WELDING/BRAZING TIP STYLE
		COMPATIBLE MIXER(S)	COMPATIBLE TIP TUBE(S)	ACET/H <sub>2</sub> (SIZE)
1401156	19-6	H-16-2E	J-64-1	23A90
1401143	19-6A	H-16-2E	J-64-1	23A90

# H-16-2E

MODEL

1YR  
WARRANTY

## MEDIUM DUTY EQUAL PRESSURE MIXER

MODEL SHOWN:  
H-16-2E

### DESCRIPTION

The Model H-16-2E is an "E" equal or positive pressure mixer for welding, brazing or heating with all fuel gas.

### DETAILS

#### Capacity:

Welds to 1/2"/12.7mm

Heats to 100,000 BTU

**Duty:** Medium to heavy

**Thread size:** Mixer to tip or tip tube 23/64" - 26

**Where Used:** Metal art, maintenance, production brazing

23/64" - 26



PART NO.	MODEL NO.	COMPATIBLE HANDLE(S)	TIP TUBE MODEL NO.	ACETYLENE BRAZING/WELDING TIPS (SIZES)	ALTERNATE FUEL BRAZING TIPS (SIZES)	ACETYLENE HEATING TIPS (SIZES)	ALTERNATE FUEL HEATING TIP (SIZES)
9100787	H-16-2E	50-9	-	23A90 (0-10)	-	J-63 (1&2)	-
		50-10	8593	-	1390-N (2-10)	1390-HA	1390 (B&H)
		19-6 & 6A	8593	1390 (2, 4, 6 & 8)	1390-N (2-10)	1390-HA	1390 (B&H)
		19-6 & 6A	-	23A90 (0-10)	-	J-63 (1&2)	-



# 23A90

MODEL



## ACETYLENE WELDING AND BRAZING TIP

MODEL SHOWN:  
23A90

### DESCRIPTION

Model 23A90 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 0-10, eliminating the expense of using a different mixer for every tip size. All 23A90 tips have a metal-to-metal seat, virtually eliminating possible leaks and the need for thread sealants.



### DETAILS

**Warranty:** 1 year

**Where Used:** Fabricating, maintenance

**Compatible Equipment:**  
C-9 Tip cleaner P/N: 9000156

PART NO.	TIP SIZE NO.	METAL THICKNESS INCHES	EQUAL PRESSURE		ACETYLENE SCFH *	RECOMMENDED HOSE ID **	TIP THREAD
			OXYGEN PSIG	ACETYLENE PSIG			
1600840	0	1/64"	1	1	1 - 3	3/16"	23/64 - 26
1600850	1	1/32"	1	1	2 - 5	3/16"	23/64 - 26
1600860	2	3/64"	2	2	3 - 8	3/16"	23/64 - 26
1600870	3	1/16"	3	3	5 - 11	3/16"	23/64 - 26
1600880	4	3/32"	4	4	6 - 14	3/16"	23/64 - 26
1600890	5	1/8"	5	5	8 - 18	3/16"	23/64 - 26
1600900	6	3/16"	6	6	10 - 20	3/16"	23/64 - 26
1600910	7	1/4"	7	7	13 - 25	3/16"	23/64 - 26
1600920	8	5/16"	8	8	16 - 32	3/16"	23/64 - 26
1600930	9	3/8"	9	9	20 - 37	1/4"	23/64 - 26
1600940	10	1/2"	10	10	24 - 42	1/4"	23/64 - 26
1600960	13	3/4"	13	13	30 - 50	3/8"	1/2 - 25
1600970	15	1"	15	15	35 - 65	3/8"	1/2 - 25

\* Oxygen SCFH is equal to 1.1 times acetylene for neutral flame.

\*\* Hose sizes are suitable for hoses up to 25'; for longer hoses higher pressures should be used. Observe 1/3 acetylene rule when determining gas supply.

# 3690 AC

MODEL



## HEAVY PREHEAT TWO-PIECE HAND CUTTING TIP

MODEL SHOWN:  
3690AC

### DESCRIPTION

Acetylene cutting tips specifically used with Harris Model 36 cutting attachments. Two piece design provides a heavy preheat and is easy to clean.

### DETAILS

**Construction:** Two-piece

**Preheat Type:** Heavy

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

**Compatible Equipment:**  
E-9 Tip cleaner P/N: 9000160



PART NO.	MODEL NO.	DEPTH OF CUT	O <sub>2</sub> PSIG	O <sub>2</sub> FLOW SCFH	FUEL PSIG	FUEL SCFH	DRILL CUT SIZE
36900AC	3690-OAC	1/4" - 1/2"	20-25	70-85	5	10-15	NO. 60
36901AC	3690-1AC	1/2" - 1"	25-45	95-105	5	15-25	NO. 56
36902AC	3690-2AC	1" - 2"	40-60	180-215	5	20-30	NO. 52



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OXY FUEL EQUIPMENT



# 36-2

MODEL

**1YR**  
WARRANTY

## CUTTING ATTACHMENT – FOR USE WITH ALL FUEL GASES

MODEL SHOWN:  
36-2

### DESCRIPTION

The Model 36-2 is a classic design Harris cutting attachment with brazed triangular stainless steel tubes, making it light in weight while still providing exceptional strength and rigidity. 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:** 7½"/190.5mm

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

**Mixer Type:** Equal pressure

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



### TIP STYLES

PART NO.	MODEL NO.	HEAD ANGLE	COMPATIBLE HANDLES	ACETYLENE / H <sub>2</sub>	ALTERNATE* FUEL
1300020	36-2	90°	50-9, 19-6, 19-6A	3690, 3690AC	3690-P

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

HARRIS CUTTING ATTACHMENTS HAVE THE BEST FEATURES IN THE INDUSTRY. ALL HARRIS CUTTING ATTACHMENTS HAVE THE SAME GREAT FEATURES FOR SAFETY, RELIABILITY AND LONG LIFE. SUITABLE FOR INDUSTRIAL USE.

### OVERVIEW

All Harris Cutting Attachments share these great features:

- Brazed triangular tube construction for safety and durability
- Solid forged brass heads for performance and long service life
- Flip-up oxygen cutting lever for convenience and ease of operation
- Captive union nut protects connections from damage
- Ease-on cutting valve for safety and cutting control

### TYPICAL APPLICATIONS

- Metal fabrication
- HVAC/R installation
- Plumbing applications

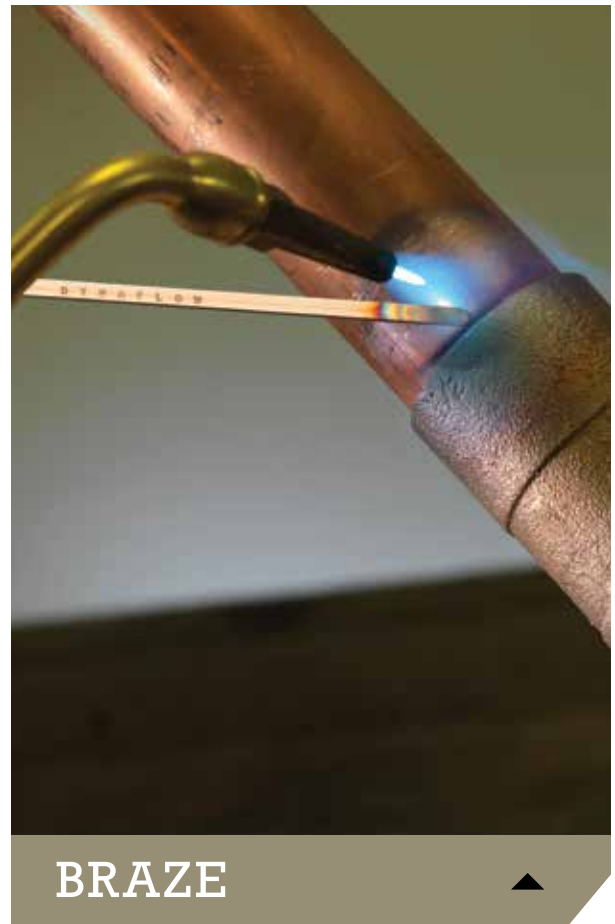
### PRO INFO

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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.



# GAS REGULATION

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## QUICK SELECTION GUIDE

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**MODEL**  
**(25)**  
**GX**

MODEL SHOWN:  
25GX-500-580

## HISTORY

Tradesmen today demand rugged, industrial-grade tools that can stand up to harsh work environments and are engineered to last. The time-proven technology of the Model 25 regulator has made it the workhorse of the Harris regulator offering. Fabricators everywhere depend on it to deliver consistent performance and reliability.

Harris is proud to introduce its newest regulator platform—Generation Next—the Model 25GX.

We've taken everything you've come to trust about the Model 25 performance and made it even better. Whether it's our silky smooth adjusting knob, our large easy-to-read gauges or our new 7-year warranty, we are delivering the next generation of regulation equipment now.

We've been designing the best equipment money can buy for over 100 years—and we are just getting started.

## HARRIS REGULATORS ARE MANUFACTURED TO MEET OR EXCEED ALL RELEVANT INDUSTRY STANDARDS AND GUIDELINES.

### ENCAPSULATED SEAT



- 1 Most regulators eventually fail due to seat contamination. Harris regulators include a 10 micron filter to keep particulate materials from contaminating the valve seat.
- 2 Regulators feature large scale gauges for easy readability (Model 25GX)
- 3 Harris regulators are designed with fewer internal components which translates to fewer failures.
- 4 Only the highest-quality industrial grade materials, such as brass, stainless steel, nickel and chrome are used in the construction of Harris regulators. We avoid the use of lower-cost plastic composites and other materials that will not hold up to every day industrial use.



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GAS REGULATION

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# 601

MODEL

## ECONOMICAL GENERAL PURPOSE

MODEL SHOWN:  
601-15-200A

### DESCRIPTION

This single-stage regulator is designed to be compact and economical, but with features typically available in more expensive regulators. It is used where weight, cost and size are factors.

### DETAILS

**Capacity:** Light duty

**C<sub>v</sub>:** 0.08

**Gauges:** 50mm ABS plastic

**Pressure Regulation:**  
0.4 PSIG/100 PSIG

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

**Certifications:** UL® listed/CGA E-4

**Featured In:** Expert® series kits, air fuel equipment kits, Port-A-Torch®

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



PART NO.	MODEL NO.	GAS	MAX. INLET PSIG	DELIVERY PRESSURE RANGE PSIG	DELIVERY PRESSURE GAUGE PSIG	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3000407	601-15-200A	Acet.	500	0-15	30	400	CGA 200 MC	A 9/16" - 24 (LH)
3000295	601-15-200B	Acet.	500	0-15	30	400	CGA 200 MC	A 3/8" - 24 (LH)
3000409	601-50-510PB	Propane	500	0-50	60	400	CGA 510P LPG	B 9/16" - 18 (LH)
3000408	601-15-520A	Acet.	500	0-15	30	400	CGA 520A	A 3/8" - 24 (LH)
3000411	601-15-520B	Acet.	500	0-15	30	400	CGA 520B	A 3/8" - 24 (LH)
3000412	601-80-540A	Oxygen	3000	0-80	100	400	CGA 540A	A 3/8" - 24 (RH)
3000296	601-80-540B	Oxygen	3000	0-80	100	400	CGA 540B	B 9/16" - 18 (RH)
3002318	601-50-600A	LPG	500	0-50	60	400	CGA 600A	A 3/8" - 24 (LH)

# 25GX

MODEL

## HVAC PURGING

MODEL SHOWN:  
25GX-500-580

### DESCRIPTION

This single-stage nitrogen purging regulator is designed for performance and economy, it is with features typically available in more expensive regulators. Specifically designed for HVAC and other nitrogen pressure testing and blanketing applications. Both the 25GX-250 and 25GX-500 feature a "T" bar for easier adjusting at high pressures.

### DETAILS

**Capacity:** Medium to heavy duty

**Gauges:** 2.5" Steel dual scale

**Pressure Regulation:**  
0.2 PSIG/100 PSIG

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

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

**Weight:** 3.2 lbs./1.45 kg.

**Related Equipment:**  
Flowmeter P/N:5400855



PART NO.	MODEL NO.	GAS	MAX. INLET PSIG	DELIVERY PRESSURE RANGE PSIG	SUPPLY PRESSURE GAUGE PSIG	INLET CONNECTION	OUTLET CONNECTION
3000616	25GX-250-580	Ar, He, N <sub>2</sub>	3000	0 - 250	4000	CGA 580	1/4" 45° Flare SAE
3000606	25GX-500-580	Ar, He, N <sub>2</sub>	3000	0 - 500	4000	CGA 580	1/4" 45° Flare SAE



# 601

MODEL



## HVAC PURGING REGULATOR

MODEL SHOWN:  
601-400-580

### 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

# 31

MODEL



## NITROGEN FLOWMETER

MODEL SHOWN:  
31

### 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 welding 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 N2	N2	0 - 70	50	50	1/4" - SAE FLARE	1/4" - SAE FLARE



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Orders: 1.800.733.4533

# 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

## PACKAGED REPLACEMENTS GAUGES

Harris now offers a complete line of packaged replacement gauges. These gauges replace the previous gauges you purchased and are packaged in convenient point of purchase packaging. If you previously purchased our replacement gauges, please update your system to include our new part numbers.



MODEL SHOWN:  
4300749



MODEL SHOWN:  
4300751



MODEL SHOWN:  
4300754



MODEL SHOWN:  
4300755



MODEL SHOWN:  
4300757

IF YOU PREVIOUSLY PURCHASED PART NUMBER	NOW PURCHASE PART NUMBER	DESCRIPTION	FITS HARRIS REGULATOR MODEL(S)	FITS HARRIS REGULATOR PART NUMBERS
9006257	4300749	601 Fuel Gas Delivery Gauge 0-30 PSI	601-15-200 A&B 601-15-520 A&B 601-50-510P	3000407 3000295 3000408 3000411 3000409
9006256	4300750	601 Fuel Gas Supply Gauge 0-400 PSI	601-15-200 A&B 601-15-520 A&B 601-50-510P	3000412 3000296
9006255	4300751	601 Oxygen Delivery Gauge 0-400 PSI	601-80-540 A&B	3000648 3000649
9006254	4300752	601 Oxygen Supply Gauge 0-4000 PSI	601-80-540 A&B	3000648
9006468	4300753	601 Nitrogen Supply Gauge 0-4600 PSI	601-400-580 601-800-580	3000616 3000606
9006469	4300754	601 Nitrogen Delivery Gauge 0-600 PSI	601-400-580	3000616
9006445	4300758	601 Nitrogen Delivery Gauge 0-800 PSI	601-800-580	3000649
9006130	4300755	25GX Nitrogen Delivery Gauge 0-400 PSI	25GX-250-580	3000616
9006131	4300756	25GX Nitrogen Delivery Gauge 0-1000 PSI	25GX-500-580	3000606
9006135	4300757	25GX Nitrogen Supply Gauge 0-4000 PSI	25GX-250-580 25GX-500-580	3000616 3000606

NOTE: 1/8 BSPP STEM REQUIRES GASKET P/N 9000643 STEM FOR GAS TIGHT SEAL



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## ACCESSORIES

### SINGLE HOSE

#### SINGLE HOSE

PART NO.	DESCRIPTION	FITTING
4300775	3/16" X 12.5' ACETYLENE HOSE	A & A
4300777	3/16" X 25' ACETYLENE HOSE	A & A
4300774	3/16" X 12.5' ACETYLENE HOSE	B & B
4300779	3/16" X 25' ACETYLENE HOSE	B & B



### TWIN HOSE

#### TWIN HOSE

PART NO.	DESCRIPTION	FITTING
4300556	3/16" X 12' TWIN HOSE	B & B
4300557	3/16" X 20' TWIN HOSE	B & B
4300005	3/16" X 12' TWIN HOSE	A & B
4300155	3/16" X 12' TWIN HOSE	A & A
4300583	1/4" X 12' TWIN T-GRADE FOR ALL FUEL GASES	B & B
4300225	3/16" X 12' TWIN T-GRADE FOR ALL FUEL GASES	A X A



### CHECK VALVES

#### CHECK-VALVES

PART NO.	DESCRIPTION	FITTING	PACK	FUEL/OXYGEN
4300389	REGULATOR TYPE - MODEL 88-6CVR (R&L)	B	PAIR	FUEL AND OXYGEN
4300390	TORCH TYPE - MODEL 88-6CVT (R&L)	B	PAIR	FUEL AND OXYGEN
4300835	TORCH TYPE - MODEL 88-6CVTA (R&L) "A"	A	PAIR	FUEL AND OXYGEN



3/8" - 24  
TORCH CV

### CHECK VALVES

#### FLASHBACK ARRESTORS

PART NO.	DESCRIPTION	FITTING
4302202	REGULATOR TYPE - MODEL 88-5FBT (R&L)	B
4302205	TORCH TYPE - MODEL 88-5FBT (R&L)	A
4301651	REGULATOR TYPE - MODEL 88-5FBR (R&L)	B
4300414	HOSE TO MACHINE - IQC F-M	A



9/16" - 18  
TORCH 88-5FBT

## GAS TANKS STANDS

### GAS & TANK STANDS

PART NO.	DESCRIPTION
4300672	MAP-PRO <sup>®</sup> 14.1oz CYL/SOLD IN CASES OF 12
4300675	PROPANE 1 LB CYL/SOLD IN CASES OF 12
4300677	CARRYING STAND, B ACETYLENE TANK
4300678	CARRYING STAND, MC ACETYLENE TANK
8800337	CYLINDER 20CF OXYGEN
8800336	CYLINDER MC
8855032	PLASTIC PAT TOTE



## TOTE

### ACCESSORIES

PART NO.	DESCRIPTION
8855083	DELUXE TOTE



## ADDITIONAL ACCESSORIES

### ACCESSORIES

PART NO.	DESCRIPTION
4300679	FLAME BARRIER 12" X 12"
4300833	TIP CLEANER
4300418	FLINT, 26-L
4300834	SINGLE FLINT STRIKER WITH REPLACEABLE FLINT
LEAK8	LEAK DETECTOR
8808849	MC TO B ADAPTOR
8808851	B TO MC ADAPTOR
4705020	BM-C WRENCH (5)
KH231	WRENCH,#5 CHROME





# BRAZING AND SOLDERING TRAINING

North American Technician Excellence (NATE,) headquartered in Arlington, VA., was founded in 1997 and is the nation's largest non-profit certification organization for heating, ventilation, air conditioning and refrigeration technicians. NATE is the only technician certification organization governed, owned, operated, developed and supported by the HVACR industry.



## OUTLINE FOR HVACR NATE RECOGNIZED PROGRAM

### CREDITS EARNED

The course CEH indicates the approximate number of hours the course should last period.

### 2 CONTINUING EDUCATION HOURS (CEH)

Field training course with lecture/discussion/demonstration  
NATE course number 5272-0004

### 3 CONTINUING EDUCATION HOURS (CEH)

Field training course with lecture/discussion/demonstration  
NATE course number 5272-0002

### 4 CONTINUING EDUCATION HOURS (CEH)

Field training course with lecture/discussion/demonstration and hands on participant brazing  
NATE course number 5272-0003

### 12 CONTINUING EDUCATION HOURS (CEH)

The Harris Products Group two day "Brazing Workshop" is given at Mason, Ohio headquarters.  
Lecture/discussion/demonstrations/hands on participant brazing  
NATE course number 5272-001

### REQUIRED TOPICS IN ALL SESSIONS:

- Brazing and Soldering Basics – capillary action, wetting
- Brazing and Soldering Preparation – cutting, cleaning, reaming, (copper tube)
- Brazing and Soldering Equipment – oxy/acetylene & air-fuel, operation and safety
- Importance of purging with nitrogen during brazing
- Brazing filler metals – phosphorus copper alloys – properties and applications, (copper and copper to brass)
- Brazing filler metals – high silver alloys – properties and applications, (copper, steel, brass, bronze, stainless steel)
- Solder filler metals – properties and applications
- Aluminum solder and brazing products
- Fluxes for soldering and brazing – types, purpose, application, and post-braze/solder cleaning
- Base metals – properties and filler metal selection
- Heating technique and filler metal application

All attendees must sign a NATE Official Recognized Provider Attendance Record.

Harris will provide a certificate of completion to each person.

This course applies to the following NATE course outlines:

### INSTALLER

ACIN Air Conditioning – Air to Air  
HPIN Heating – Reverse Cycle Air to Air  
HGIN Heating Hydronics – Gas  
RLIN Light Commercial Refrigeration  
RCIN Commercial Refrigeration

### SERVICE

ACSV Air Conditioning – Air to Air  
HPSV Heating – Reverse Cycle Air to Air  
RLSV Light Commercial Refrigeration  
RCSV Commercial Refrigeration

## MERCHANDISING POINT OF PURCHASE

### DISPLAY SETS

- ▶ "STRIKE ZONE" APPROACH TO MERCHANDISING
- ▶ INCREASED MERCHANDISING POWER
- ▶ MULTIPLE PLAN-O-GRAMS TO FIT ANY STORE SIZE
- ▶ EVERYTHING A CUSTOMER NEEDS FOR CUTTING, WELDING, BRAZING AND SOLDERING
- ▶ HEADER CARDS FOR EASY PRODUCT SELECTION



### PACKAGING

#### EQUIPMENT AND ALLOYS

- ▶ HIGH GRAPHIC PACKAGING
- ▶ TRILINGUAL (ENGLISH, SPANISH, FRENCH)
- ▶ UTILIZES SYMBOLS FOR EASY IDENTIFICATION



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POINT OF PURCHASE

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