Handy & Harman of Canada, Limited
Handy & Harman du Canada, Limitée
290 CARLINGVIEW DR., REXDALE, ONTARIO M9W 5G1
Phone: (416) 675-1860 · (800) 463-1465 Fax: (416) 675-1956 · (800) 426-3907

TECHNICAL DATA SHEET

EASY-FLO 3

Nominal Composition:

Silver:	50.0% ± 1.0%
Copper:	15.5% ± 1.0%
Zinc:	15.5% ± 2.0%
Cadmium:	16.0% ± 1.0%
Nickel:	3.0% ± 0.5%
All Others:	0.15% maximum

Physical Properties:

Colour:	Light Yellow
Solidus (Melting Point):	630°C (1170°F)
Liquidus (Flow Point)	690°C (1270°F)
Specific Gravity	9.52
Density (Troy oz/cu in)	5.02
Electrical Conductivity (%IACS)	18.0
Electrical Resistivity (Microohm-cm)	9.58

Uses:

Easy-Flo 3 is recommended for use on stainless steels subject to chloride corrosion, such as marine hardware, fishing tackle, and some dairy equipment cleaned with bleaching solutions and other equipment exposed to chlorinated water.

While Easy-Flo 3 is used successfully on many stainless steel assemblies where corrosion in service is not severe, it is better and safer to use Easy-Flo 3 for all stainless steel joints where the end use is not known. Easy-Flo 3 should not be used where the joints are exposed to direct contact with food, because of the cadmium content.

Easy-Flo 3 is used extensively in brazing tungsten carbide inserts for metal cutting and mining tools.

Easy-Flo 3 is recommended for the brazing of aluminum bronze to steel as the nickel content offsets the harmful effect of diffusion of aluminum into the brazing alloy.

Brazing Characteristics:

Easy-Flo 3 differs from most other silver brazing alloys in that it is rather sluggish even at temperatures above its flow point. For this reason it will fill larger gaps than more fluid alloys and may be used where clearances between joint surfaces cannot be kept within the tolerances normally recommended. This characteristic of Easy-Flo 3 also makes it easier to produce larger fillets where fillets are required for appearance or for affecting the distribution of stresses in an assembly.

Easy-Flo 3 has a tendency to liquate (i.e. separate into low and high melting constituents) and is preferably used where the assembly is to be heated rapidly through the melting range of the filler metal. It is not a good alloy for furnace brazing where it has to be preplaced externally on the assembly; but may be used successfully for furnace brazing where it can be preplaced internally in the joint area in the form of shims or rings.

Handy Flux is normally used with Easy-Flo 3, but on some of the more refractory alloys, such as some stainless steels, Handy Flux Type B-1 will assist in producing better wetting of the joint surfaces.

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Properties of Brazed Joints:

The strength of butt joints made with Easy-Flo 3 is comparable to that obtained with Easy-Flo. Butt joints on copper have tensile strengths of 30,000 to 35000 psi; on brass 35,000 to 45,000 psi; on steels 50,000 to 100,000 psi depending on the strength of the steel and thickness of the filler metal layer.
The shear strength of joints on steel varies from 25,000 to 50,000 psi. For design purposes, it is safer to use the lower figure because of variables in brazing procedures. Shear strength on tungsten carbide is also approximately 25,000 psi.
Above 205°C (400°F) the strength of Easy-Flo 3 joints falls off rapidly and at 315°C (600°F) the strength in short time tensile tests is approximately 50% of the strength at room temperature.

Safety Precaution:

Easy-Flo 3 alloy contains cadmium, and cadmium fumes are poisonous. These alloys should be used only in well-ventilated spaces with air movement such as to carry brazing fumes away from the operators face. Refer to ANSI Z49.1 entitled “Safety in Welding and Cutting”.

Corrosion Resistance:

A valuable property of Easy-Flo 3 joints made on the 300 Series stainless steels is the excellent corrosion resistance of the joints to compounds containing chlorine as compared to the corrosion resistance of joints made with nickel-free brazing alloys. For instance, 300 Series stainless steel joints made with Easy-Flo 3, and subjected to two weeks exposure in 20% salt spray, showed little loss of strength; while similar joints made with Easy-Flo failed completely. One exception to the use of Easy-Flo 3 is on cupro-nickel joints exposed to salt water at elevated temperatures. In such a case failure will occur by dezincification of the filler metal and a zinc-free brazing alloy should be used. Dezincification of Easy-Flo 3 will not occur at normal ambient temperatures in marine use.
On 400 Series stainless steels Easy-Flo 3 inhibits, but does not completely stop, crevice corrosion in brazed joints. Braze 630 should be used with ferritic stainless steels where maximum resistance to interface corrosion is desired.

Specifications:

This alloy conforms to the following specifications:

AWS A5.8-04	BAg-3
SAE-AMS	4771
QQ-B-654A	Grade V

Available Forms:

Strip, wire, powder and performs to specification.

Comments:

Handy & Harman of Canada, Limited believes the information contained herein to be reliable. However, the technical information is given by Handy & Harman of Canada, Limited without charge and the user shall employ such information at its own discretion and risk, and Handy & Harman of Canada, Limited assumes no responsibility for results obtained or damages incurred from the use of such information in whole or in part.

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