Technical Bulletin
JOHNSON MANUFACTURING COMPANY
Princeton, Iowa 52768-0096

JOHNSON'S NO 523 LEAD-FREE BODY SOLDER
A Unique Semi-Solid, Thixotropic Alloy

DESCRIPTION:

This unique Tin/Copper/Zinc ternary alloy was specifically developed for use by major auto makers in the late 70's as an alternative for the Tin/Lead and Tin/Lead/Antimony solders used on the assembly line. This solder is safer because it contains no lead to cause harmful effects in the workplace or environment. Johnson's exclusive vacuum casting process, combined with our unique extrusion process, virtually eliminates all forms of oxides and segregation within the alloy.

Johnson's No. 523 is a semi-solid (thixotropic) solder that is much stronger than body solders that contain lead. Its wide plastic range (approx. 500℉) and increased stiffness, make it ideal for shaping sculpture lines, hiding seams, filling dings in both galvanized or bare steel surfaces, and filling pits in welded or silicon/bronze seams. Use Johnson's No. 523 Body Tinning Paste (Part No. 21-00 Series) or Johnson's E-127 Flux-'N-Solder with Pure Tin (Part No. 16-00 Series) as companion tinning products, for best results. Also ask about Johnson's new Body Tinning Flux with Stannous Chloride.

PHYSICAL DATA:

Density	**7.32 Grams/Cm³**
Melting Range	**428 to 932℉ (220 to 505℃)**
Best Working Range	**535 to 660℉ (280 to 350℃)**
Crossection	**.250" Dia. x 22" Rods, 65 Lbs./Ctn.**

USAGE:

Identify area to be tinned, approximately 2 inches in diameter larger than area to be filled. As heat is applied, apply a liberal quantity of Johnson's No. 523 Body Tinning Paste or Johnson's E-127 Flux-'N Solder with Pure Tin, (both are excellent tinning products) using a flame-resistant, fiberglass acid brush. Continue heating until flux darkens and metal particles turn a bright, shiny silver color. Scrub lightly with the brush if nessary to tin tough spots. When tinning is complete, proceed immediately without removing residues or allowing the area to cool. Apply flame to the tip of the Johnson's No. 523 Lead-Free Body Solder rod, as it is being fed into the molten tin surface, allowing the spill-over flame to maintain proper temperature of the workpiece. When a sufficient amount of solder has been added to fill the cup, and the edges of the solder have somewhat leveled into the freshly tinned surface, remove all heat. Avoid overheating to prevent warpage of the sheet metal, or to prevent the solder from becoming too fluid.

While the solder is still in a semi-solid (plastic) state, gently push it into the desired conforming shape using a hardwood paddle, coated with bee's wax to prevent charring. Avoid folding, kneading or wiping the solder to minimize the entrapment of surface contaminates, oxides and residues, which may show up as "nits" during final sanding. Allow area to cool naturally, without quenching, until solder has completely solidified. While still warm, remove all excess flux and residues with a wet rag or scrub brush and water, then towel dry. Area may also be cleaned with Johnson's Metal Cleaner (diluted, one part cleaner

with two parts of clean water) to aid in inerting the zinc ions and removing all traces of chloride residues. Follow immediately with a clean water rinse, and towel to dry again. File, grind and/or sand to the desired contour, while feathering all edges.

HANDLING:

Wear protective clothing and eye wear when handling this flux. Maintain proper ventilation and always read the *OSHA Material Safety Data Sheets* for all chemical products prior to use. Store, mix and use in non-metallic containers only.

WASTE DISPOSAL:

Since local laws vary, we cannot make specific recommendations.