DeWeyl Tools

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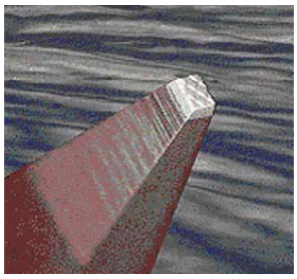
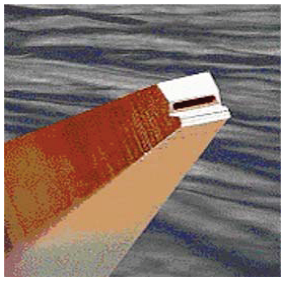
DeWeyl Tool Company Inc.

DeWeyl manufactures the finest quality bonding wedges for the microelectronic industry. These wedges are designed for placing and bonding fine aluminum and gold wires for the assembly of semiconductor components. DeWeyl tools have been used throughout the semiconductor, micro-wave, disk drive and hybrid electronic industries since 1969. See the selection of tools in the pictures at the right hand side.



Tool for TAB bonding



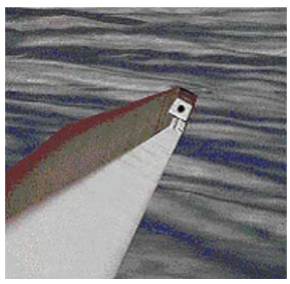
Tool for ribbon bonding

DeWeyl special features

DeWeyl offers two unmatched features: ceramic tip with unique surface texture, and improved wire loop control when deep access bonding by option A8D.

The surface texture of DeWeyl's ceramic tip offers optimum ultrasonic coupling with the wire. This results in a superb tool-to-wire interface and thus efficient ultrasonic energy transfer. The DeWeyl ceramic tip offers impressive benefits for bonding gold wire and gold ribbon ultrasonic applications. In the case of aluminum wire ultrasonic applications, the DeWeyl ceramic tip reduces the build-up of aluminum, and thus increases the tool lifetime.

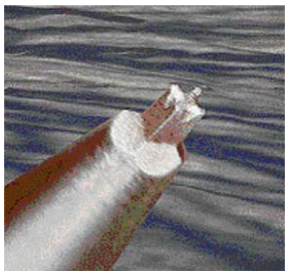
The option A8D (lower left photograph) shortens for deep access tools the free wire loop from the vertical hole to the inclined feeding hole. In addition, it better defines the length of this free wire loop. Significant better loop control is the result.



Tool for standard feed thin-wire bonding.

Tool for thick-wire bonding.

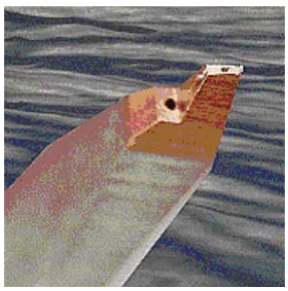
Tool for bonding insulated wire.



Tool for bonding the µBGA leads.

Tool delivery

DeWeyl tools are usually made on custom order, with delivery time related to the factory load. Subsequently, due of the large variety of tools we manufacture, very few tool types can actually be delivered from stock and then are only available in small quantities. Our catalog includes over a million different tools as a result of the precise shaping that is necessary to meet the needs of various bonding processes. Other differences stem from machine related aspects. Feel free to contact us if you do not find your tool specification in the catalog.



Deep access bonding tool with ceramic tip (especially for bonding gold wire).

Specially shaped tool (many options are available).

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WWW.DEWEYL.COM EMAIL: INFO@DEWEYL.COM

DEWEYL TOOL COMPANY INC.

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Gold thin-wire recommended Tools

In order of ordering specification

Always use gold wire with an elongation tolerance equal to, or smaller than 0.5

Material:	M (= Ceramic) T (=Titanium) is equally good for thermo-compression bonding only
Tip styles:	CS (for manual bonders) CL (for automatic bonders)
Wire feed:	O for standard feed angle, V for vertical feed (deep access)
Front/Back radius:	See "Radius Option" in the table below
Shank diameter:	Depends on bonder (standard dimensions are: 1/16, 5/64)
Tool length:	Depends on bonder for standard feed angle Depends on application for vertical feed (check allowed lengths for your machine and transducer) (S =.437, .500, .625, .750) (L=.828, 1.00)
Hole angle:	Standard feed depends on bonder (30º, 38º, 45º, 55º and 60º) Vertical feed with option A8D (45º and 52º)
Foot type:	See "Foot type" in the table below (F = Flat Face, CG = Cross Groove, for better grip of the tool on the wire)
Foot dimensions:	See "Tool size" in the table below
Foot finish:	M (= Matte finish)
Options:	For vertical feed always use the A8D option (see lower left photograph first page) All other options are application dependant (contact us for advice)

Bond foot dimensions gold wire wedge bonding

Wire Diameter	Radius option	Tool size	Foot type	
			Thick film	Thin film
13 ñ 15 µm	B	1213	F	F
16 ñ 19 µm	D	1515	F	F
20 ñ 23 µm	D	2020	CG	F or CG
24 ñ 25 µm	D	2025	CG	F or CG
26 ñ 30 µm	D	2525	CG	F or CG
31 ñ 35 µm	D	2530	CG	F or CG
36 ñ 40 µm	D	3035	CG	F or CG
41 ñ 45 µm	G	3040	CG	F or CG
46 ñ 50 µm	G	3545	CG	F or CG
51 ñ 55 µm	G	3550	CG	F or CG

Example for 25 µm gold wire, deep access, on thick film: M-CS-V-D-1/16-.750-45-CG-2025-M-A8D

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Aluminum thin-wire recommended Tools

In order of ordering specification

- Use aluminum wire with a maximum elongation lower than 4%
- Use gold wire tools for aluminum wire with an elongation larger than 5%

Material:	C (= Tungsten carbide)
Tip styles:	CS (for manual bonders) CL (for automatic bonders)
Wire feed:	O for standard feed angle V for vertical feed (deep access)
Front/Back radius:	O (= standard chart)
Shank diameter:	Depends on bonder (standard dimensions are: 1/16, 5/64)
Tool length:	Depends on bonder for standard feed angle Depends on application for vertical feed (check allowed length for your machine and transducer) (S = .437, .500, .625, .750) (L = .828, 1.00)
Hole angle:	Standard feed depends on bonder (30º, 38º, 45º, 55º and 60º) Vertical feed with option A8D (45º and 52º)
Foot type:	C (= Concave to improve the heel strength first bond)
Tool size:	See table below "Bond foot dimensions aluminum wire wedge bonding"
Foot finish:	MP (= Matte finish of bond flat, and polished front and back radii)
Options:	For vertical feed always use the A8D option (see lower left photograph first page) All other options are application dependant (contact us for advice)

Bond foot dimensions aluminum wire wedge bonding

Wire Diameter	Tool size
13 ñ 15 µm	1213
16 ñ 19 µm	1515
20 ñ 23 µm	2020
24 ñ 25 µm	2025
26 ñ 30 µm	2525
31 ñ 35 µm	2530
36 ñ 40 µm	3035
41 ñ 45 µm	3040
46 ñ 50 µm	3545
51 ñ 55 µm	3550

When using different tools?

There may be good reasons to choose different tools than recommended on this sheet.

Sometimes, different tools will bond equally as well as the recommended tools. For example, if your machine requires a slightly different tool style.

However, in other occasions you may have good reasons to select tools that lead to narrowed process windows. For example, if the recommended tool is too large for your bond pads.

If you wish to bond very soft aluminum wire, with elongation 5% or more, you should use gold wire tools. This reduces the pull strength, but prevents tailing.

Never hesitate to contact us for additional advice.

Example for 38 µm aluminum wire, standard feed: C-CS-O-O-1/16-.750-45-C-3325-MP

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