Heraeus

Technical Data Sheet

Ball Attach Paste – BD41

Water Clean Ball Dipping Solder Paste

1. Description

BD41 Series paste allows BGA manufacturers the ability to utilize SOP (solder on pad) substrates or large high density BGA packages with significant warpage, while maintaining outstanding yields. The traditional flux and drop process is not compatible with SOP or warped packages due to the irregular surface causing ball movement during reflow. BD41 Series pastes allow the balls to be dipped in solder before placement which prevents ball movement and eliminates the need for printing of solder paste or flux. BD41 pastes are based on the outstanding ball attach flux TFP41 which is formulated with nonionic surfactants, tackifying agents, rheology modifiers and a blend of halide and non-halide containing activators. BD41 series pastes feature Type 5 or Type 6 highly spherical solder powder and is available in both Pb based and Pb Free material sets. BD41 solder pastes exhibit easy cleaning in low standoff applications, resulting in high reliability in a variety of processes

Key Benefits

- Water Soluble
- For SOP substrates
- Available in type 5 & 6
- Excellent Cleaning
- Ball Dip process provides outstanding yields.

2. Product Indication

Indication:	BD41
Alloy:	A = Sn63/Pb37 B = Sn95.5/Ag4/Cu0.5 C = Sn96.5/Ag3/Cu0.5
Part Numbering System	BD41-A5-80 BD41-B5-80 BD41-C5-80 Where: BD = Ball Dip Application 41 = Flux System A = Sn63/Pb37 B = Sn95.5/Ag4/Cu0.5 C = Sn96.5/Ag3/Cu0.5

3. Physical Properties

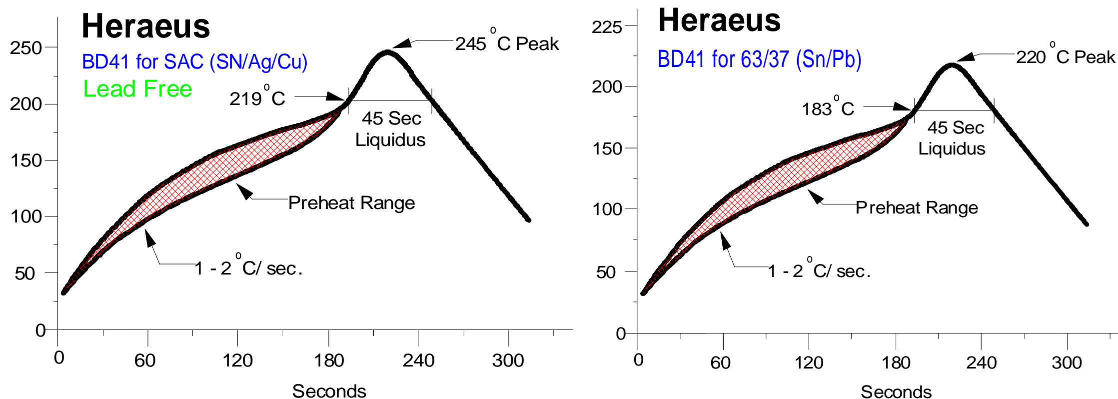
Metal powder:

Particle size:	Type 5 – 25 – 15 Microns, -500 +625 Mesh Type 6 – 15 – 5 Microns, -625 +1250 Mesh
Shape:	Spherical
Melting Point:	Sn63/Pb37 = 183°C Sn95.5/Ag4/Cu0.5 = 217°C Sn96.5/Ag3/Cu0.5 = 217°C

Composition:	Sn63/Pb37 Sn95.5/Ag4/Cu0.5 Sn96.5/Ag3/Cu0.5 Other lead free alloys upon request.
Solder Paste:	
Metal Content: Flux Content:	80% ± 1% 20 ± 1%
Viscosity Range:	350 ± 75 Kcps Brookfield T-F @ 5rpm
Peak Tack Force: IPC TM-650-2.4.44	>2 g/mm^2
Wetting Ability:	Excellent on Sn, Sn/Pb, Pb Free and oxidized Cu
SIR: IPC J-STD-004	>1x10^8 Ohms (after cleaning)
Acid Number:	20 +/- 2

4. Reflow Parameters (recommendation)

Most conventional reflow equipment can be utilized with an inert atmosphere < 200ppm O_2. A standard reflow profile for bulk soldering is adequate, with preheats that promote even temperature distribution across the substrate or component. Temperatures at least 20°C above liquidus should be achieved with the time above liquidus being maintained for 30 to 60 seconds.



5. Recommended Processing Guidelines

Dip Application:
Depending on the application, dip depth of the ball into the reservoir should provide 25-30% coverage of the ball surface as illustrated above. Material in the reservoir can be replenished due to depletion for up to 8 hours of use.
It is recommended to replace the material in the reservoir after 8 hours of use with fresh material.
IPA is a suitable solvent for cleanup.

Cleaning:

- Clean reflowed residues with hot deionized water at a minimum temperature of 40°C.
- If pressurized cleaners are used a minimum pressure of 40 psi should be maintained.
- If cosolvents or saponifiers are used with ultrasonic cleaners then a minimum of two deionized rinse baths should be used to insure complete removal of the residues and cleaning solvents.
- For optimal results clean parts as soon after reflow as [possible.

- To clean wet paste prior to reflow use isopropyl alcohol or similar solvents.

6. Storage and Shelf life

Six months shelf life is guaranteed if material is stored in its original sealed container in a dry environment with temperatures between 5 and 10°C to insure that minimal separation takes place in the container. Syringes should be stored tip down. To avoid contamination and shelf life issues, used material should not be returned to its original container.

CBK1007.3

The descriptions and engineering data shown here have been compiled by Heraeus using commonly-accepted procedures, in conjunction with modern testing equipment, and have been compiled as according to the latest factual knowledge in our possession. The information was up-to date on the date this document was printed (latest versions can always be supplied upon request). Although the data is considered accurate, we cannot guarantee accuracy, the results obtained from its use, or any patent infringement resulting from its use (unless this is contractually and explicitly agreed in writing, in advance). The data is supplied on the condition that the user shall conduct tests to determine materials suitability for a particular application.

Europe

W. C. Heraeus GmbH
Circuit Materials Division
Heraeusstr. 12 – 14
63450 Hanau
Germany
Phone: +49 (0) 6181 35 – 5265
E-Mail: cmdinfo@heraeus.com
Internet: www.4cmd.com

North America

Heraeus Incorporated
Circuit Materials Division
24 Union Hill Road
West Conshohocken, PA 19428
USA
Phone: +1 (610) 825 – 6050
E-Mail: techservice@4cmd.com
Internet: www.4cmd.com

Asia

Heraeus Ltd.
Heraeus Technology Centre
30 On Chuen Street,
On Lok Tsuen, Fanling, N.T.
Hong Kong
Phone: +852 (2675) 1200
E-Mail: cmdinfo@heraeus.com.hk
Internet: www.4cmd.com