Soldering Materials for System-in-Package (SiP)

Wafer Bumping (Bump Fusion) Flux
- Water-soluble
- Spin-on and jetting
- Halogen-free

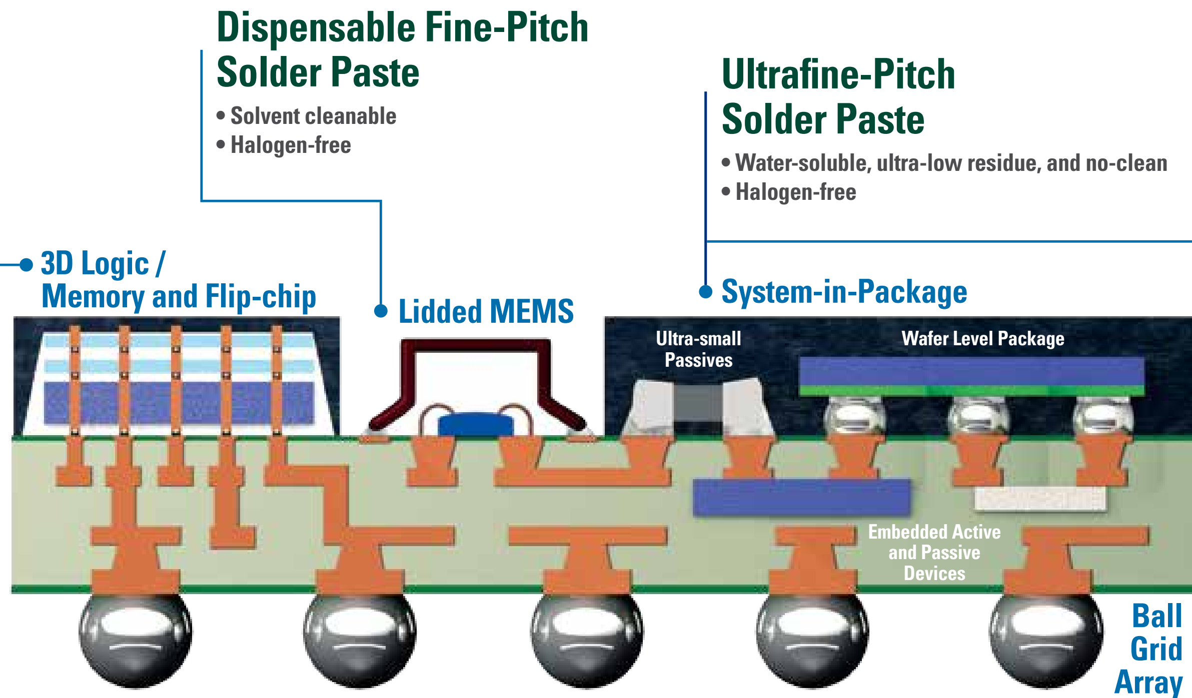
Flip-Chip Flux
- Water-soluble, ultra-low residue, and no-clean
- Dipping, spraying, and jetting
- Halogen-free and halogenated

Dispensable Fine-Pitch Solder Paste
- Solvent cleanable
- Halogen-free

Ultrafine-Pitch Solder Paste
- Water-soluble, ultra-low residue, and no-clean
- Halogen-free

Wafer Level Ball-Attach Flux
- Water-soluble
- Halogen-free

Ball-Attach Flux
- Water-soluble
- Pin transfer and printing
- Halogen-free



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Recommended Semiconductor Fluxes and Solder Pastes

Material Group	Material Type	Material Name	Flux Type	Halogen-Free	Application	Comments
FLUX	Wafer Bumping Flux	WS-3543	Water wash	Yes	Spin coating	High viscosity for taller copper pillars and larger bumps (>40 microns)
		WS-3401	Water wash	Yes	Spin coating	Low viscosity for smaller pillars and bumps
	Flip-Chip Flux	WS-446	Water wash	No	Dipping	Best flux for poor solderability
		WS-688	Water wash	Yes	Dipping (can be sprayed at 60°C)	Minimizes voiding
		WS-580	Water wash	Compliant	Dipping	Best all-around halogen-free flip-chip flux Easily cleaned
		NC-26-A	No-clean	Yes	Dipping	Ultra-low residue no-clean Best compatibility with CUF/MUF
		NC-26S	No-clean	Yes	Dipping	Avoids capillary flow up to die surface for fine-pitch devices
	Ball-Attach Flux	WS-446-AL	Water wash	No	Pin transfer	Best flux for poor solderability
		WS-575-C-RT	Water wash	Compliant	Pin transfer	Best ball-attach flux for missing ball Eliminates the prefluxing step for OSP

Material Group	Material Type	Material Name	Flux Type	Halogen-Free	Alloy	Comments
SOLDER PASTE	Die-Attach Solder Paste	SMQ®75	No-clean ("Power-Safe")	Yes	All high-Pb and Sb-containing alloys	Ultra-low residue "Power-Safe" (no-clean) paste suitable for clip-bonded devices
		SMQ®51-SC	Solvent clean	No		Best all-around cleanable die-attach paste
		BiAgX®	Solvent clean	Yes	BiAgX® mixed alloy system	High-temperature Pb-free solder paste
	SiP Solder Paste	Indium3.2HF	Water wash	Yes	SAC305 and other Pb-free alloys	Type 6-SG solder paste suitable for ultrafine-pitch printing Designed for 01005 and smaller discrete devices