

**Honeywell
ACCUFLO® T-27
Sacrificial Fill Material**

Honeywell ACCUFLO® T-27 Sacrificial Fill Material

A FAMILY OF ORGANIC POLYMERS FOR FILL AND PLANARIZATION OF AGGRES- SIVE TOPOGRAPHIES

BENEFITS

- Reduced viscosity and surface tension to enhance coating
- Superior melt reflow for planarization and feature fill
- Room temperature storage
- Industry accepted safe solvent with high flash point
- Industry proven technology
- Ease of integration — uses known technology and current tool sets
- Excellent cost of ownership

OVERVIEW

The patented* ACCUFLO T-27 Series is a family of organic polymers formulated in an environmental friendly solvent system designed to fill and planarize a wide spectrum of aggressive topographies. Commercially available since 1995, the ACCUFLO Series: ACCUFLO T-13EL, ACCUFLO T-25 and now ACCUFLO T-27 are currently being used in numerous manufacturing locations worldwide.

The ACCUFLO T-27 Series offers excellent void-free fill capability and superior local, regional and global planarization of ultra deep sub-micron features with an aspect ratio exceeding 60:1. The performance advantages offered by ACCUFLO T-27 films include improved thermal stability, reduced viscosity and reduced inter-facial surface tension to enhance coating properties.

THICKNESS

Product	Thickness Range (1100rpm – 3000rpm)
ACCUFLO 2027	23,400Å - 14,100Å
ACCUFLO 2527	29,200Å - 17,600Å

ACCUFLO T-27 thickness values that are currently not offered can be formulated upon customer request, depending upon quantity requirements.

APPLICATIONS

Total Etch Back Planarization

Transfer local and regional planarity to the underlying film using ACCUFLO T-27 films as the sacrificial planarization film in a total etch back integration process.

Feature Fill and Masking

ACCUFLO T-27 films are applied as a sacrificial fill and planarizing material that is partially etched back exposing the underlying substrate films. Specific processing of the exposed films then occurs with the deeper features masked by ACCUFLO T-27. Upon completion, the remaining ACCUFLO T-27 film is removed using a conventional stripping process.

Film Properties

Thickness Non-uniformity: <0.4% (1 sigma)

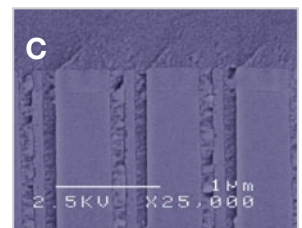
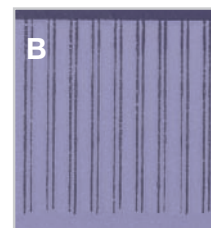
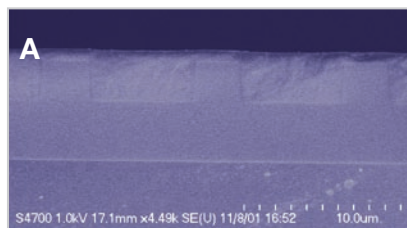
Material Properties

Shelf Life @ 23°C: 12 months
Filtration: 0.05µm
Viscosity (ACCUFLO 2027): 13 cP

ACCUFLO T-27 PLANARIZATION AND FEATURE FILL

LEGEND

- Planarization of 2.54µm high line features.
- Complete fill and planarization of 8µm deep trench features.
- Closeup of the top portion of the trench features.
- Table showing the thickness uniformity of a 2µm thick coat of ACCUFLO T-27 over dense and isolated trench topography. Wafer level planarization (global planarization) of 2% achieved.



D	Film Thickness At Various Locations	Wafer Center, nm	Wafer Midpoint, nm	Wafer Edge, nm
	Thx. Over dense feature center	1910	1810	1810
	Thx. Over dense feature edge	1810	1810	1950
	Thx. Over isolated feature	1790	1860	1910
	Thx. Over non-patterned surface	1860	1910	1950
	Chip-level thx. diff.	120	100	140
	Chip-level max. thx. diff.	140 (1.75% of feature depth)		
	Wafer-level max. thx. diff.	160 (2% of feature depth)		



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