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TECHNICAL INFORMATION

# POSITIVE RESIST PR1-12000A1

## Description

Positive Resist PR1-12000A1 is a positive tone photoresist designed for 365 or 436 nm wavelength exposure, using tools such as wafer steppers, scanning projection aligners, proximity printers
and contact printers. PR1-12000A1 excels in applications when superior adhesion is required. Use of adhesion promoters, such as HMDS is not recommended with PR1-12000A1.

These are the advantages of PR1-12000A1 over other resists:

- superior resolution capability,
- fast photospeed,
- substrate adhesion which is superior to that of any commercial positive resist,
- ease of removal after RIE process,
- shelf life exceeding 1 year at room temperature storage.

The formulation and processing of PR1-12000A1 were designed with regard to occupational and environmental safety. The principal solvent in PR1-12000A1 is 1-methoxy-2-propanol and development is accomplished in a basic water solution.

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## Properties

| | |
|---|---|
| ▪ Solids content (%) | 40 – 45 |
| ▪ Principal solvent | 1-methoxy-2-propanol |
| ▪ Appearance | dark yellow liquid |
| ▪ Coating characteristic | very uniform, striation free |
| ▪ Film thickness after 115°C oven bake for 6 minutes. | |
| <u>Coating spin speed, 40 s spin (rpm):</u> | (nm) |
| 800 | 23500 – 24500 |
| 2300 | 14800 – 15200 |
| 3000 | 11800 – 12200 |
| ▪ Sensitivity (mJ/cm² for 1 µm thick film): | |
| 365 nm exposure wavelength | 70 |
| 436 nm exposure wavelength | 40 |
| ▪ Guaranteed shelf-life at 23°C storage (years) | 1 |
| ▪ Kinematic viscosity at 23°C (cSt)* | 1500 – 1750 |

**For pump selections purposes, kinematic and dynamic viscosities can be considered equivalent because the specific gravity of this product is close to 1 g/cm$^3$.*

## Processing

1. Application of resist by spin coating at selected spin speed for 40 s.
2. Application of Edge Bead Remover EBR1 to bottom and edge of the coated wafer for 10s, until 5 s before completion of spin cycle.
3. 100°C bake in a bake oven for 30 minutes or 120ºC hotplate bake for 180 s.
4. Resist exposure with a tool emitting 365, 406 or 436 nm wavelengths.
5. Resist development in Resist Developer RD6 by spray or immersion.
6. Resist rinse in deionized water until water resistivity reaches prescribed limit.
7. Drying of resist.
8. Removal of resist in Resist Remover RR41.

The above procedure refers to substrates, which are good conductors of heat such as silicon, GaAs etc. Bake times should be increased 3.5 times for substrates that are poor conductors of heat such as glass.

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## Handling Precautions

Positive Resist PR1-12000A1 is a flammable liquid. Handle it with care. Keep it away from heat, sparks and flames. Use adequate ventilation. It may be harmful if swallowed or touched. Avoid contact with liquid, vapor or spray mist. Wear chemical goggles, rubber gloves and protective clothing.