

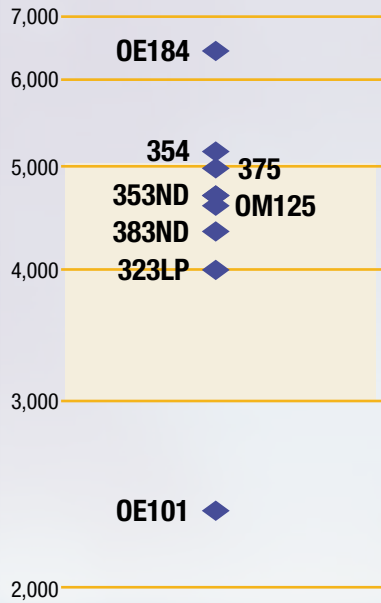
EPO-TEK® 353ND Family of Products Selector Guide

EPO-TEK® 353ND, is a high temperature, electrically and thermally insulating epoxy, known for its performance and reliability in semiconductor, hybrid, fiber optic and medical applications.

| EPO-TEK® | Special Features |
|-----------|--|
| 353ND | Industry standard with high Tg, high strength, superior moisture resistance and excellent reliability. |
| MED-353ND | Medium viscosity, high Tg, high strength (worldwide standard for endoscopes) |
| 323LP | 24 hour pot life version of 353ND |
| 354 | High Tg, 3 day pot life for semiconductor packaging |
| 375 | Lower stress version of 353ND |
| 383ND | 8 hour pot life version of 353ND |
| OE101 | Lower modulus version of 353ND for low stress applications |
| OE184 | Optically clear epoxy for termination of fibers into ferrules and waveguide assembly |
| OM125 | High Tg, optical epoxy for multi-mode fiber optic connectors |

Physical Properties of 353ND Family of Products †

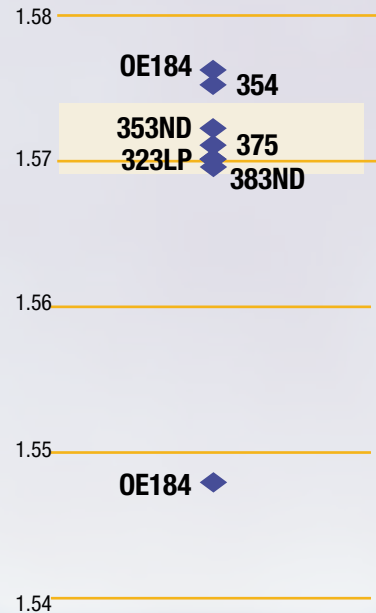
Viscosity (cPs)



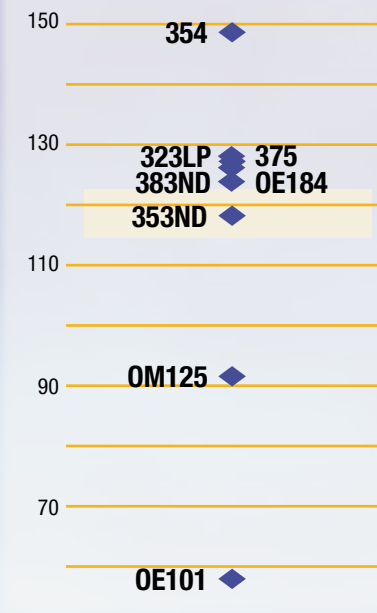
Pot Life (hrs)



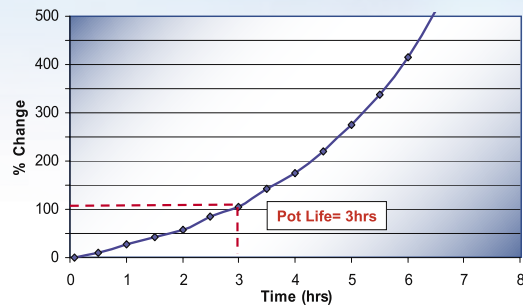
Index of Refraction (uncured @ 589nm)



Tg (°C)



Viscosity Change Over Time



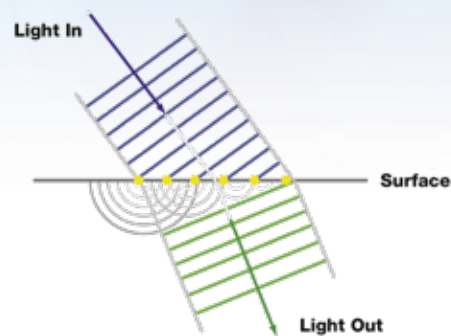
Common Material Viscosities

| Material | Viscosity (cps) |
|-------------|-----------------|
| Water | 1 |
| Motor Oil | 500 |
| Castrol Oil | 1,000 |
| Karo Syrup | 5,000 |
| Honey | 10,000 |
| Chocolate | 25,000 |

Pot Life Definitions

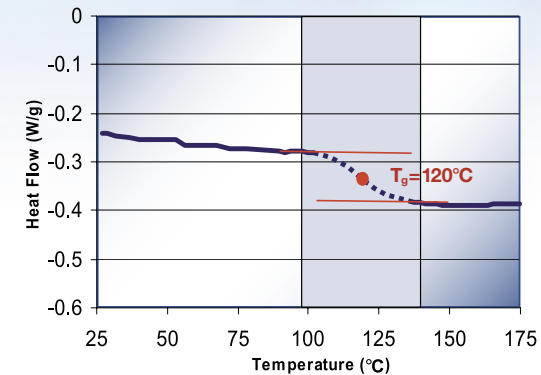
| Definition | Time Range |
|------------|--------------|
| Quick | < 1 hour |
| Short | 1 – 4 hours |
| Medium | 4 – 8 hours |
| Long | 8 – 24 hours |
| Days | > 2 Days |

Refraction of Light

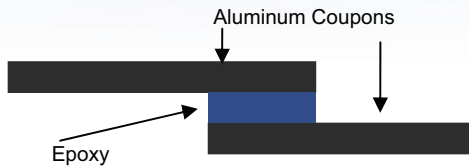
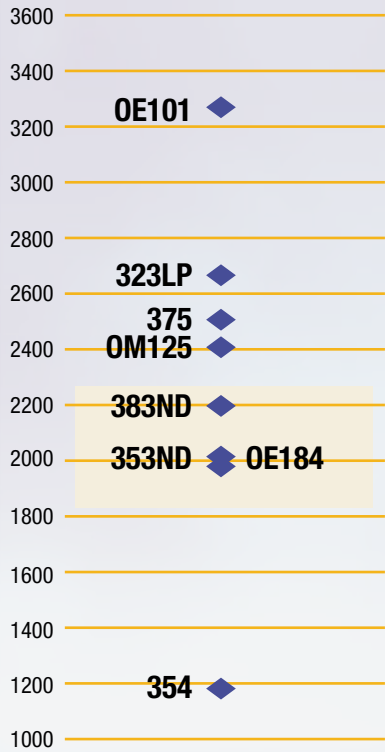


Most epoxies have a refractive index ranging from 1.50 to 1.57

DSC Scan of an Epoxy



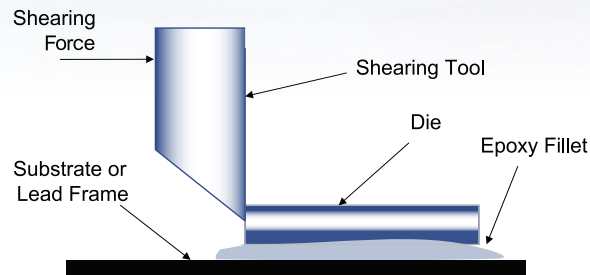
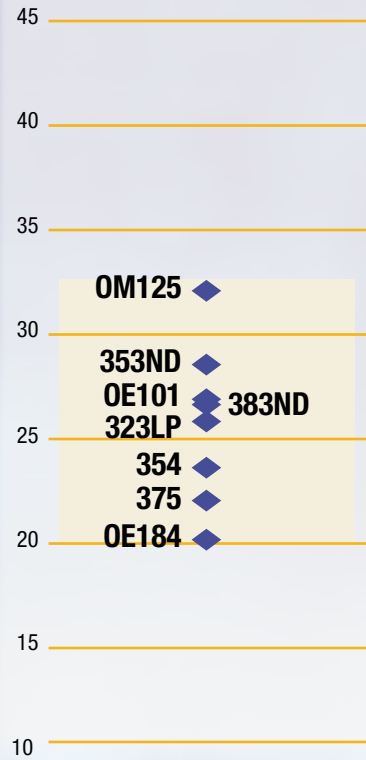
Lap Shear - Al to Al (psi)



Lap Shear Range

| | | |
|-----------------|-------------|-----|
| High: | 2500 – 4000 | psi |
| Average: | 1200 – 1900 | psi |
| Low: | < 800 | psi |

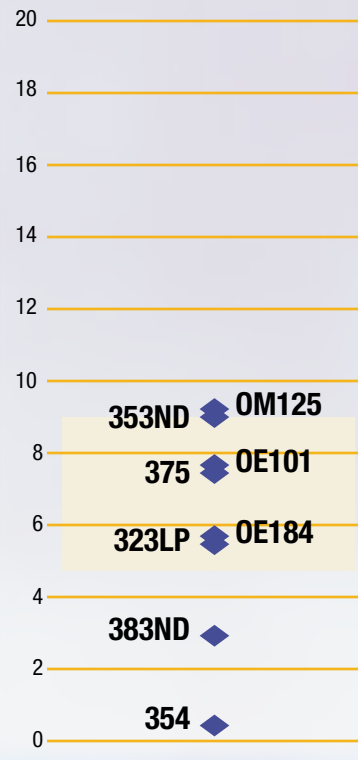
Initial Die Shear - Au to Au (kg)



Die Shear Range

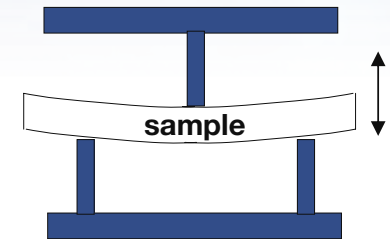
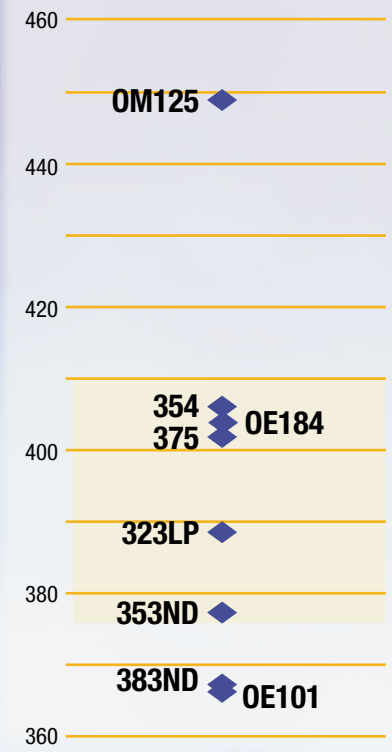
| | | |
|--------------|-------------------------|-----|
| High: | > 10 kg / 3400 | psi |
| Med: | 5 – 10 kg / 1700 – 3400 | psi |
| Low: | < 2 – 5 kg / < 1000 | psi |

21 days @ (85°C/85%RH*)



*Relative Humidity

Storage Modulus (kpsi)



Three Point Bend Test

EPO-TEK® Next Generation Epoxy/UV Hybrid Adhesives



Hybrid Adhesive Benefits

- Overall process improvement
- Higher thru-put
- Easier handling
- Fast tacking in 10-20 seconds
- 85°C/85%RH resistance, comparable to 353ND

| | HYB-353ND-LV | HYB-353ND | HYB-353ND-HV | HYB-353ND-TX2 | HYB-353ND-TX3 |
|--|---|---|---|---|---|
| Description | Low viscosity, fast tack | Viscosity match of 353ND | Higher viscosity version | Thixo version TI = 1.6 | Thixo version TI = 1.3 |
| Viscosity (@10 rpm) | 800 - 2,000 cPs | 3,000 - 7,000 cPs | 9,000 - 20,000 cPs | 20,000 - 30,000 cPs | 25,000 - 41,000 cPs |
| Pot Life | <20 hrs | <2 hrs | 2 hrs | <2 days | <3 days |
| Tg (°C) | ≥80 | ≥100 | ≥100 | ≥90 | ≥80 |
| Cure Condition | UV 10 sec @ 100mW/cm ² +150°C/30min | UV 20 sec @ 100mW/cm ² +150°C/30min | UV 10 sec @ 100mW/cm ² +150°C/30min | UV 10 sec @ 100mW/cm ² +150°C/30min | UV 10 sec @ 100mW/cm ² +150°C/30min |
| Lower temperature cures, (≥80°C) are possible depending upon application | | | | | |
| Degradation Temp (°C) | 400 | 400 | 388 | 410 | 399 |
| Weight Loss | 0.08% | 0.06% | 0.03% | 0.05% | 0.19% |
| Die Shear | ≥15kg / 5,334psi | ≥20kg / 7,112psi | ≥25kg / 8,890psi | ≥15kg / 5,334psi | ≥15kg / 5,334psi |
| Spectral Transmission | ≥95% @ 1100-1600nm ≥98% @ 800-1000nm | ≥95% @ 1100-1600nm ≥98% @ 800-1000nm | ≥95% @ 1100-1600nm ≥98% @ 800-1000nm | ≥95% @ 1100-1600nm ≥98% @ 800-1000nm | ≥95% @ 1100-1600nm ≥98% @ 800-1000nm |
| *Index of Refraction | 1.5215 | 1.5259 | 1.5545 | †N/M | †N/M |

*uncured@589nm

Please consult our Application Experts to find the most suitable adhesives for your specific technical challenges at: techserv@epotek.com.



EPOXY TECHNOLOGY

Innovative Epoxy Adhesive Solutions for Over 45 Years

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