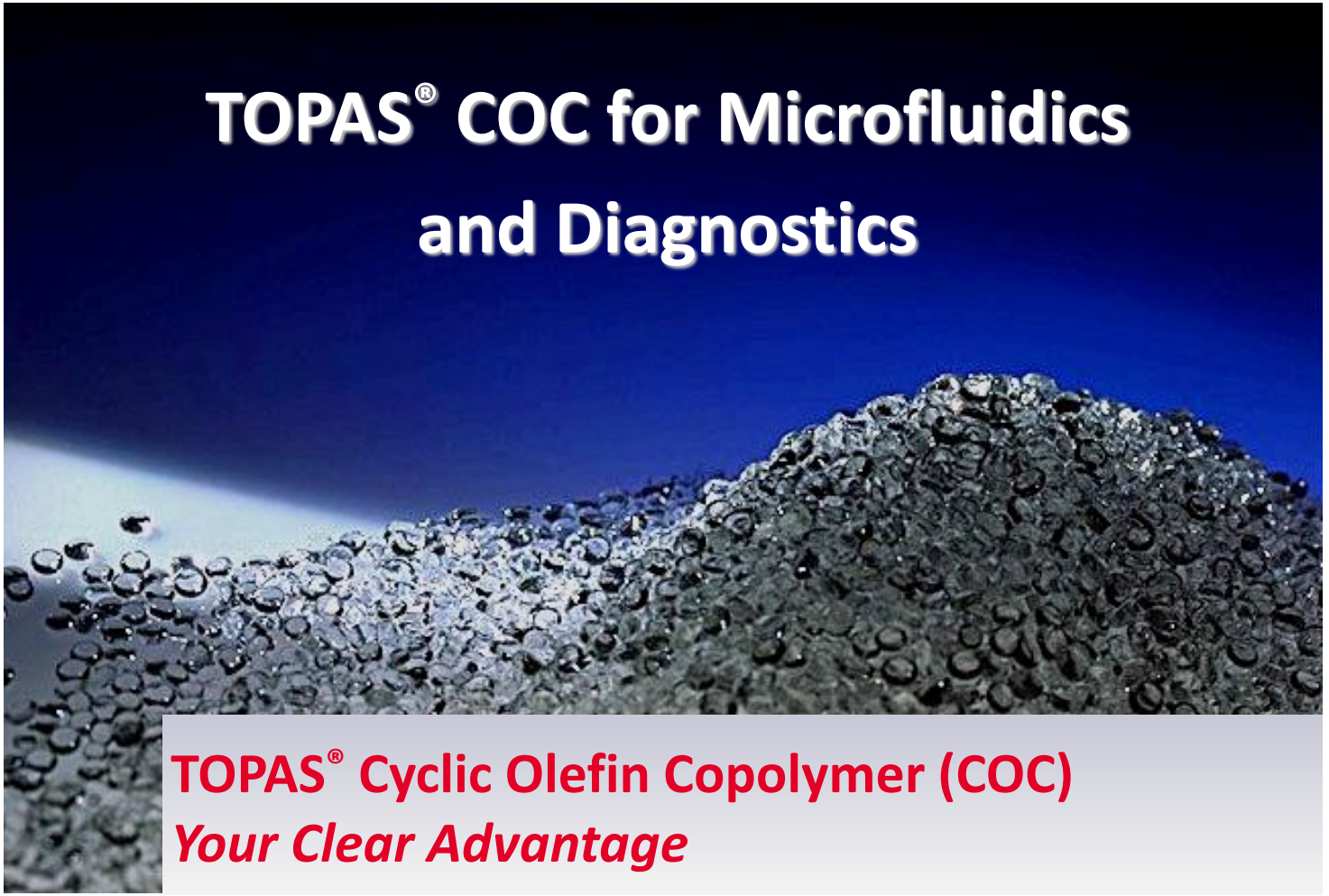
TOPAS
Advanced Polymers

TOPAS® COC for Microfluidics and Diagnostics



TOPAS® Cyclic Olefin Copolymer (COC)

Your Clear Advantage

Introduction

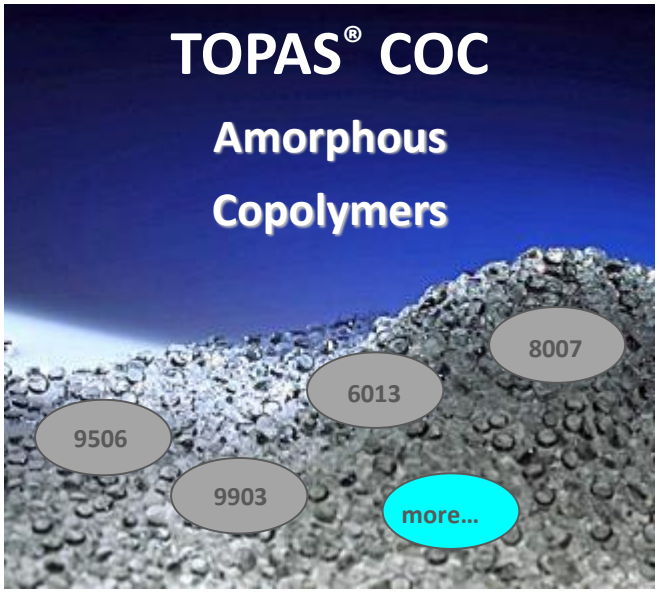
Microfluidics & TOPAS COC

- TOPAS® COC:
  - What is TOPAS
  - Major application areas
  - Value in microfluidics
- TOPAS® Polymer and Microfluidic Performance
  - Flow
  - Optics
  - Replication
- TOPAS® COC Diagnostic Applications
  - Various diagnostic, point of care, and lab devices

TOPAS® COC
High Performance Polymer for Microfluidics

Resin Design → Products → Value

- Ethylene copolymer
- Molecular weight
- Comonomer level
- Stereochemistry



- Purity
- Clarity
- Chemical Resistance
- Barrier – H_2O, ROH, more
- Heat Resistance
- Superb detail precision
- UV transmission

Unique Resin → Unique Benefits

TOPAS Advanced Polymers – Corporate Info

Business mission

- Production and sale of TOPAS® cyclic olefin copolymers (COC)

Key markets and applications

- Optics
  - Displays (light distribution, reflection, touch screen); lenses
- Healthcare
  - API / drug delivery systems; surgical instruments; diagnostics
- Packaging
  - Protective, shrink, twist, thermoforming, easy tear films

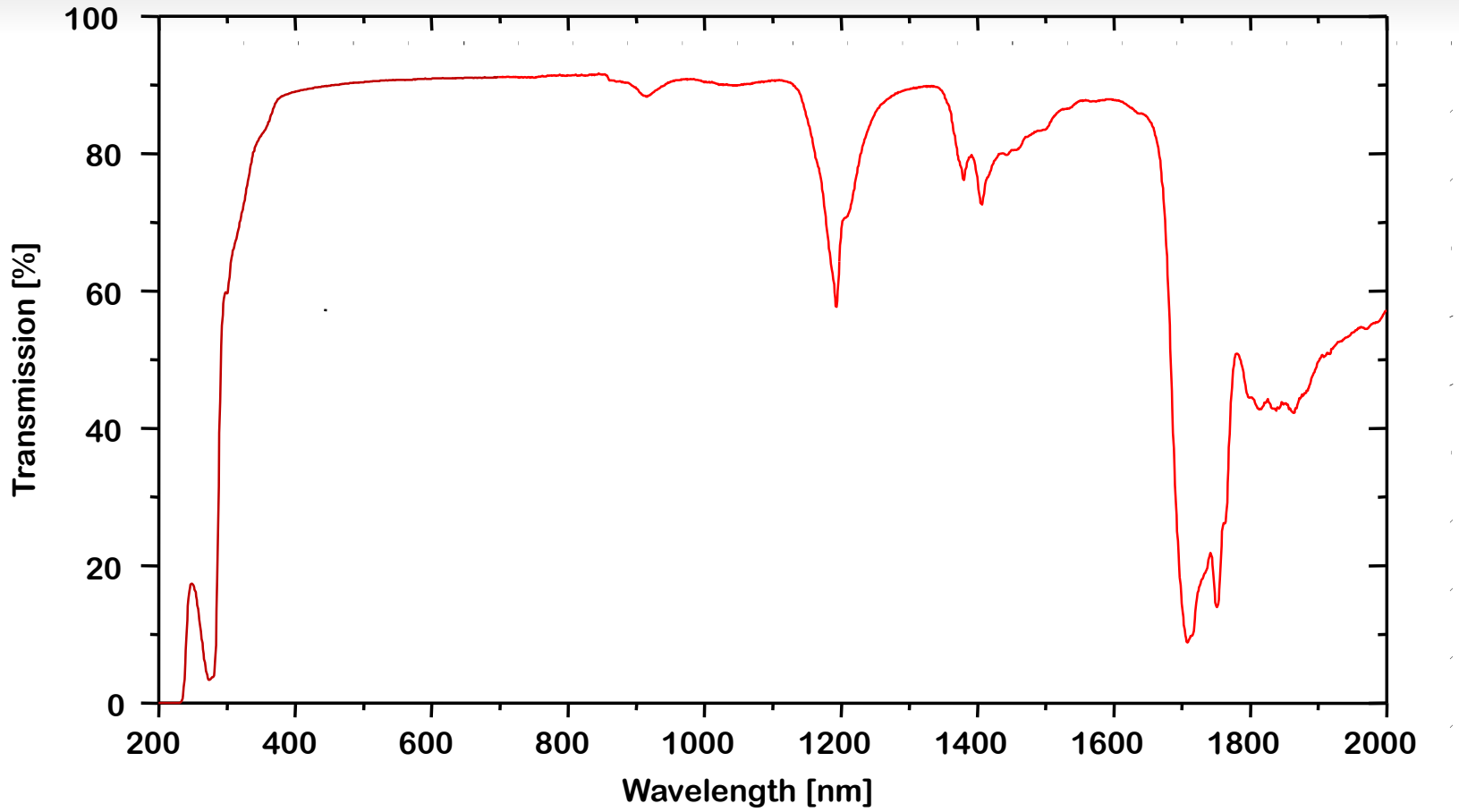
Why TOPAS® for Microfluidics?

- Excellent light transmission → both in visible and UV regions
- Exceptional purity and low autofluorescence
- Good chemical resistance to polar solvents → alcohols, DMSO and more
- High flow resins → ease of processing complex designs
- Excellent surface reproduction → down to submicron size (100 nm wide by 100 nm deep)

TOPAS® COC Value in Diagnostics

- High flow with submicron surface replication
- Outstanding optics, transparency, and clarity
- Best UV transmission of any polymer
- Chemical resistant – DMSO, alcohols, acids, more
- Low autofluorescence
- High purity, non-reactive, with extremely low extractables
- Proven solution from the industry leader
- Surface treatable
- Broad global regulatory clearance
- High dimensional stability
- Heat resistant grades for PCR, sterilization, etc.
- 3D prototyping to accelerate design process

TOPAS® COC - Excellent Light Transmission



The high transparency of TOPAS in the visible and near ultraviolet range is attractive for optical components

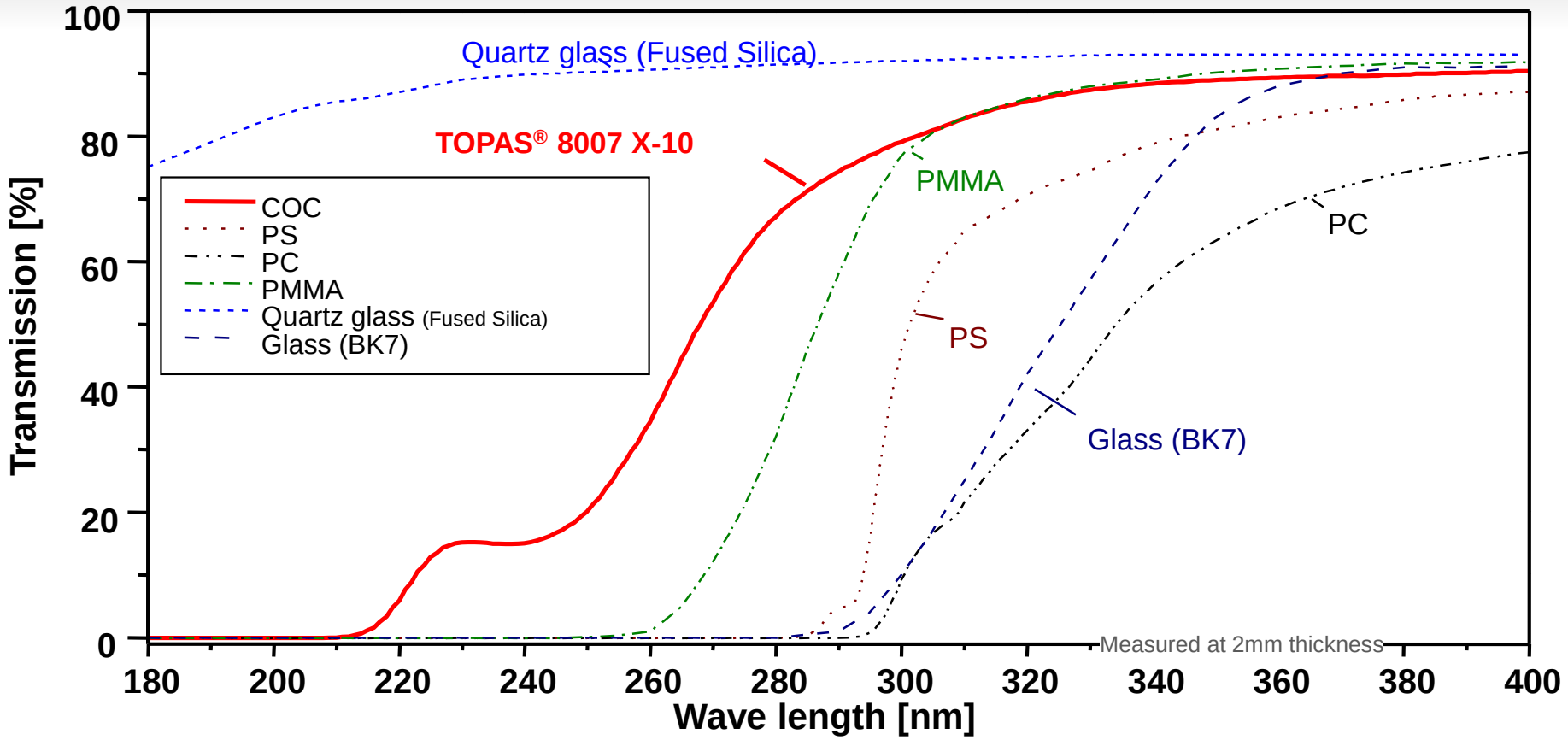
Flow: MVR of TOPAS

Grade	MVR[(a)] (cm^3/10 min)
8007S-04	32
5013L-10	48
6013M-07	14
6015S-04	4
6017S-04	1.5

High Flow Grades

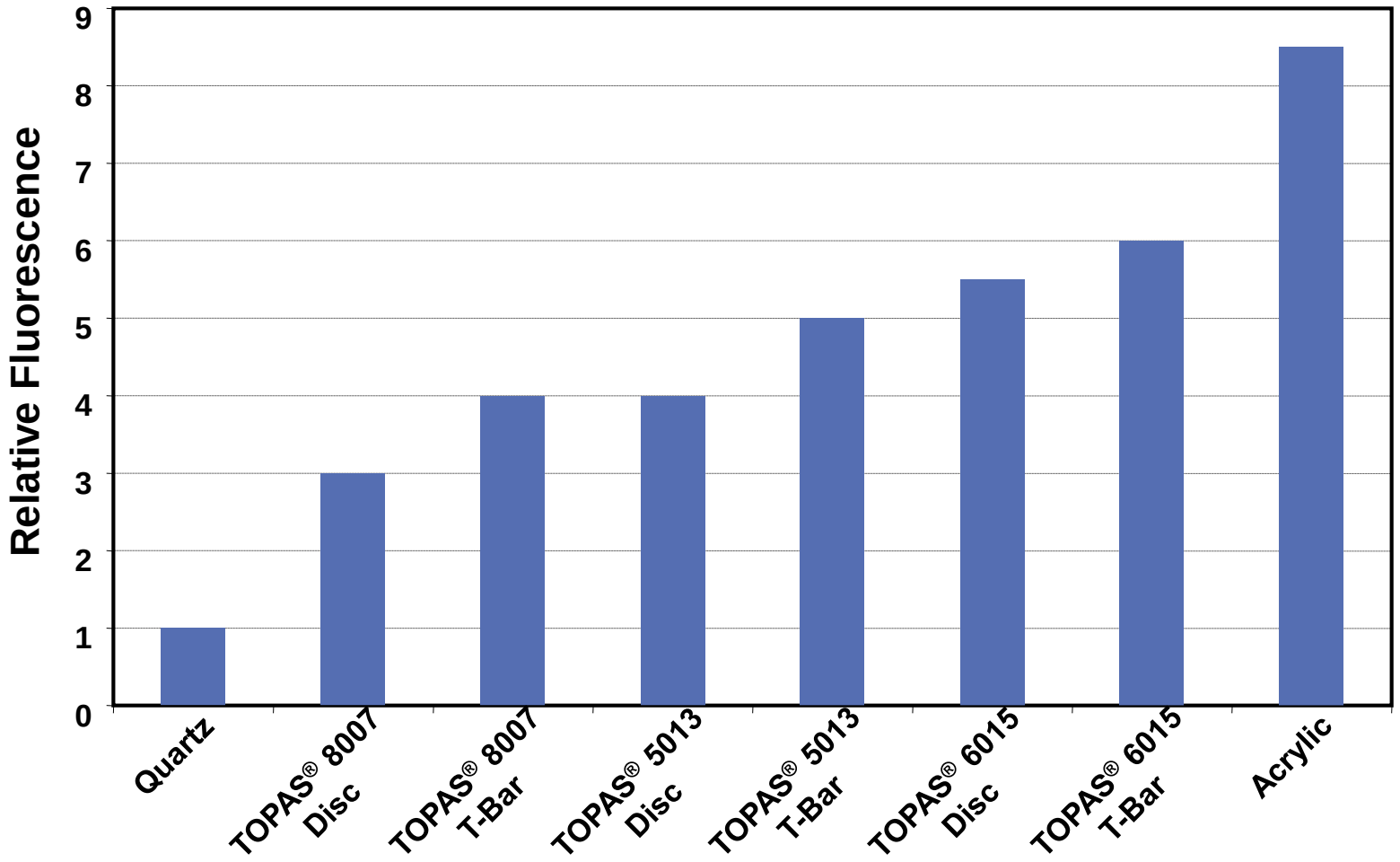
(a) MVR measured at 260°C, 2.16 kg load

Optics: TOPAS 8007X10 near-UV transmission



TOPAS COC is best where light transmision at <300 nm is required

Optics: TOPAS® COC delivers Low Fluorescence



Diagnostic Applications

Description:

- Microtiter Plates for High Throughput Screening

Value Proposition:

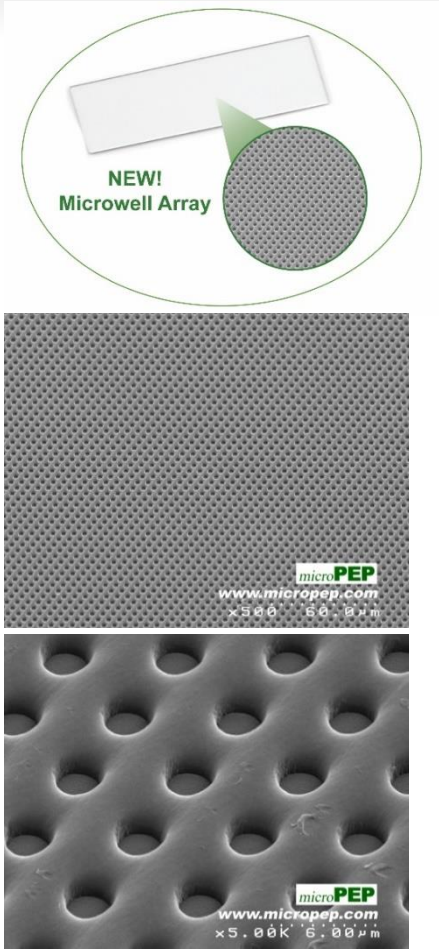
- High transparency in the near UV range
- Specific chemical resistance (e.g. DMSO)
- High flow and precision molding
- Temperature resistance
- Dimensional stability
- Cost reduction

TOPAS Grades:

- 8007X10, 8007S-04
- 5013S-04, 5013L-10

Well density increasing; 1536 well plates now routinely available

Diagnostic Application: Microwell Array



Application:

- Diagnostic Microwell Array Slides

Value Proposition:

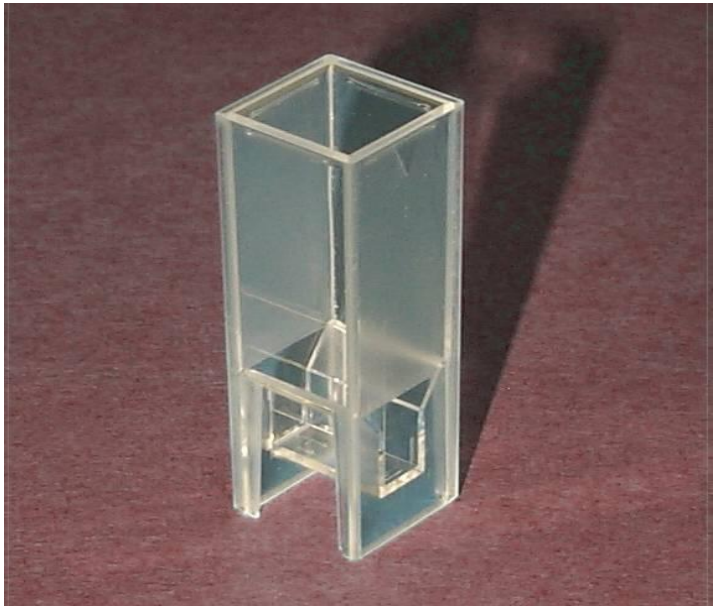
- Chemical resistance (e.g. alcohols, DMSO)
- Very good replication of microstructures
- High transparency in the near UV range
- Low autofluorescence
- Low birefringence
- Temperature resistance
- Biocompatibility

Material:

- 8007X10, 8007S-04
- 5013L-10, 5013S-04

3µ wells on 6.5µ centers

UV Application: Cuvettes



Description:

- UV Cuvettes

Value Proposition:

- High transparency in the near UV range
- Excellent optics
- High flow and precision molding
- Dimensional stability

TOPAS Grades:

- 8007X10, 8007X4

Microfluidic Application: Lab diagnostics

Application:

- Lab CDs and Biochips

Value Proposition:

- Low autofluorescence
- High transparency in the near UV range
- Chemical Resistance
- Good processing
- Very good flow
- Accurate reproduction of mold details

Material:

- 8007S-04

Microfluidic Application: Development Tool

Application:

- Microfluidic Construction Kit

Value Proposition:

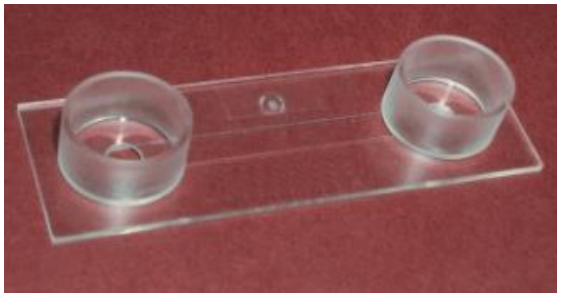
- Optical properties
- High transparency in the near UV range
- Biocompatibility
- Chemical resistance (e.g. alcohols, DMSO)
- Very good flow
- Accurate reproduction of mold details
- Low autofluorescence

Material:

- 8007, 5013

Customer: thinXXS

Microfluidic Application: Diagnostic Slides



Application:

- Diagnostic Slides

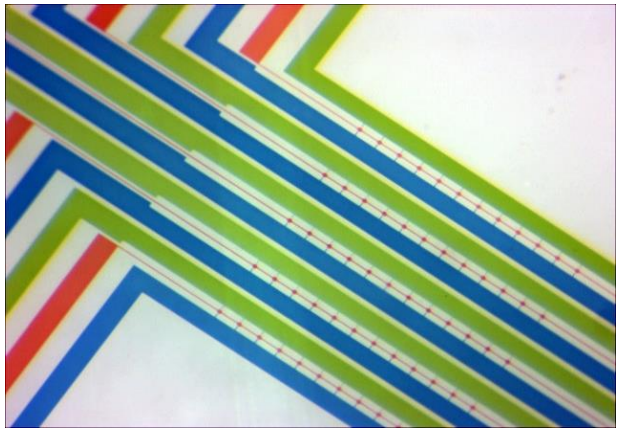
Value Proposition:

- Chemical resistance (e.g. alcohols, DMSO)
- Very good replication of microstructures
- High transparency in the near UV range
- Low autofluorescence
- Low birefringence
- Temperature resistance
- Biocompatibility

Material:

- 8007X10, 8007 X4, 8007S-04
- 5013L-10, 5013S-04

Diagnostics: Point-of-Care Testing



Description:

- Portable, compact analyzers for lab, office or home testing

Value Proposition:

- Credit card size chip, nanoscale
- Low leachables & extractables
- Microchannel precision molding
- Broad chemical resistance
- Breakage resistant, good optics
- Lightweight and portable

TOPAS Grades:

- 8007S-04, 5013L-10

Diagnostic Application: POC Cartridge

Description:

- Afinion Point-of-Care System for HbA1c test

Value Proposition:

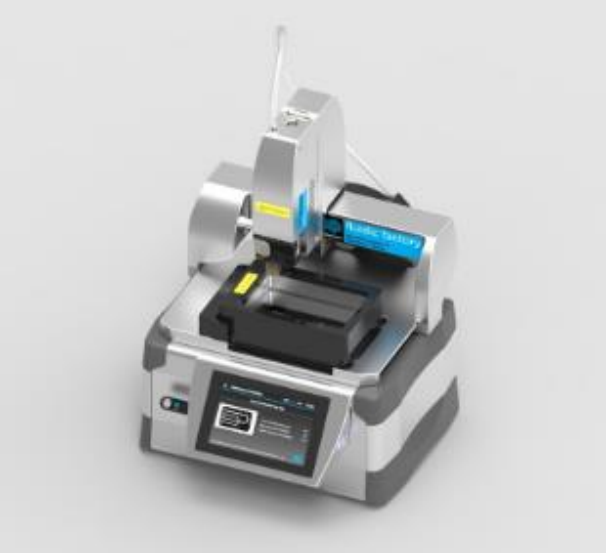
- Optical properties
- Very good light transmission
- Excellent water vapor transmission rate
- Biocompatible
- Chemical resistance (e.g. alcohols, DMSO)
- Low autofluorescence

Material:

- 8007S-04

Customer: Axis-Shield

3D Prototyping of COC Microfluidic Devices



Application:

- Dolomite Fluidic Factory 3D Printer

Value Proposition:

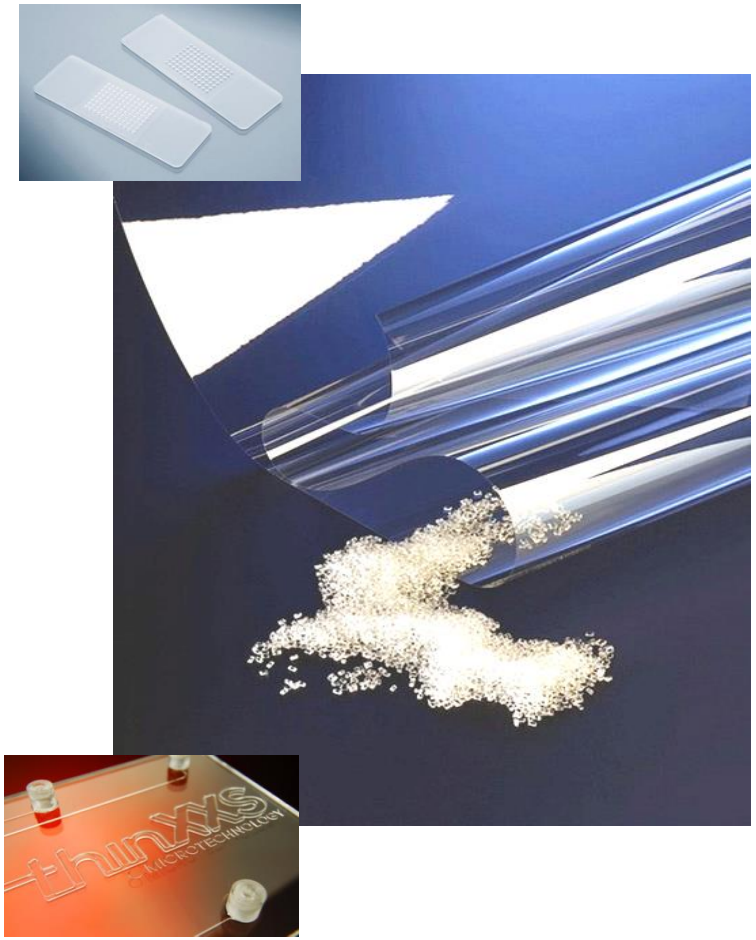
- Immediate prototyping of microfluidic designs
- Uses industry standard TOPAS 8007S-04
- Easy to use
- Inexpensive
- Channels as small as 300µm

Material:

- 8007S-04

Customer: Dolomite Microfluidics
www.dolomite-microfluidics.com

TOPAS® 8007 film for diagnostic applications



Description:

- TOPAS films for diagnostic applications

- **Value Proposition:**
- Excellent optical properties
- High transparency in the near UV range
- Low autofluorescence
- High purity, low extractables
- Very low water uptake
- Design flexibility: embossable, formable

- **TOPAS Grade:**
- 8007X10, 8007X4

Film producers: Contact us

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