Welcome at 3D Systems GmbH

Höher – Weiter – Schneller

Neue Generation SLA 3D Drucker

F. Cremer – 3D Systems GmbH **06.02.2024, Coachulting 2024**

Frank Cremer – Direct Sales Manager DACH

frank.cremer@3dsystems.com

+49 (0) 152 08347470

CIC Customer Innovation Center – Mörfelden-Walldorf

3D Systems Portfolio der AM Technologien

Direct metal printing

Extrusion printing

Stereolithography

Bioprinters

Selective laser sintering

Figure 4

MultiJet printing

ColorJet printing

SLA

3D Systems SLA Line

	ProJet 6000 HD	ProJet 7000 HD	ProX 800	ProX 950
Maximum Build Volume	10 x 10 x 10 in (250 x 250 x 250 mm)	15 x 15 x 10 in (380 x 380 x 250 mm)	26 x 30 x 22 in (650 x 750 x 550 mm)	59 x 30 x 22 in (1500 x 750 x 550 mm)
Accuracy	0.001-0.002 inch (0.025-0.05 mm) per inch of part dimension			
Maximum Resolution	4000 x 4000 x 1000 DPI 0.001 in (0.025 mm) minimum layer thickness		4000 x 4000 x 500 DPI 0.002 in (0.050 mm) minimum layer thickness	
Smallest Features	0.002 in (0.050 mm) wall thickness 0.02 in (0.5 mm) square hole		0.005 in (0.125 mm) pin diameter 0.02 in (0.5 mm) square hole	
Productivity example 	10 parts in 3h 48m (22m per part) <$4/part material cost	24 parts in 10h 27m (26m per part) <$4/part material cost	90 parts in 14h 52m (10m per part) <$3/part material cost	180 parts in 14h 52m (5m per part) <$3/part material cost

SLA 750 &
SLA 750 Dual

SLA 750 AM Platform

Fastest SLA Printing System

4-watt Laser, Configurable Beam Sizes
Highest laser power & largest beam size-range (0.125-1 mm beam size)

Scan Systems
1 or 2 laser scanning systems based on throughput needs

Hyper-Scan™ Vector Technology
Fastest additive vector scanning process

Large Build Volume
+15% Build volume on a smaller hardware foot-print

AMX Materials
Best in class production grade materials

Self-Calibrating Recoater
User capable, 10 min recoater blade calibrations

In Vat Material Mixing
Maintain material property over time

Removable Vat
User capable, fast material change

Operator Configurable Hardware
Simple, easily trainable design for factory operators

Automatic Material Feed
Glove free automatic material refill, bulk feed capable

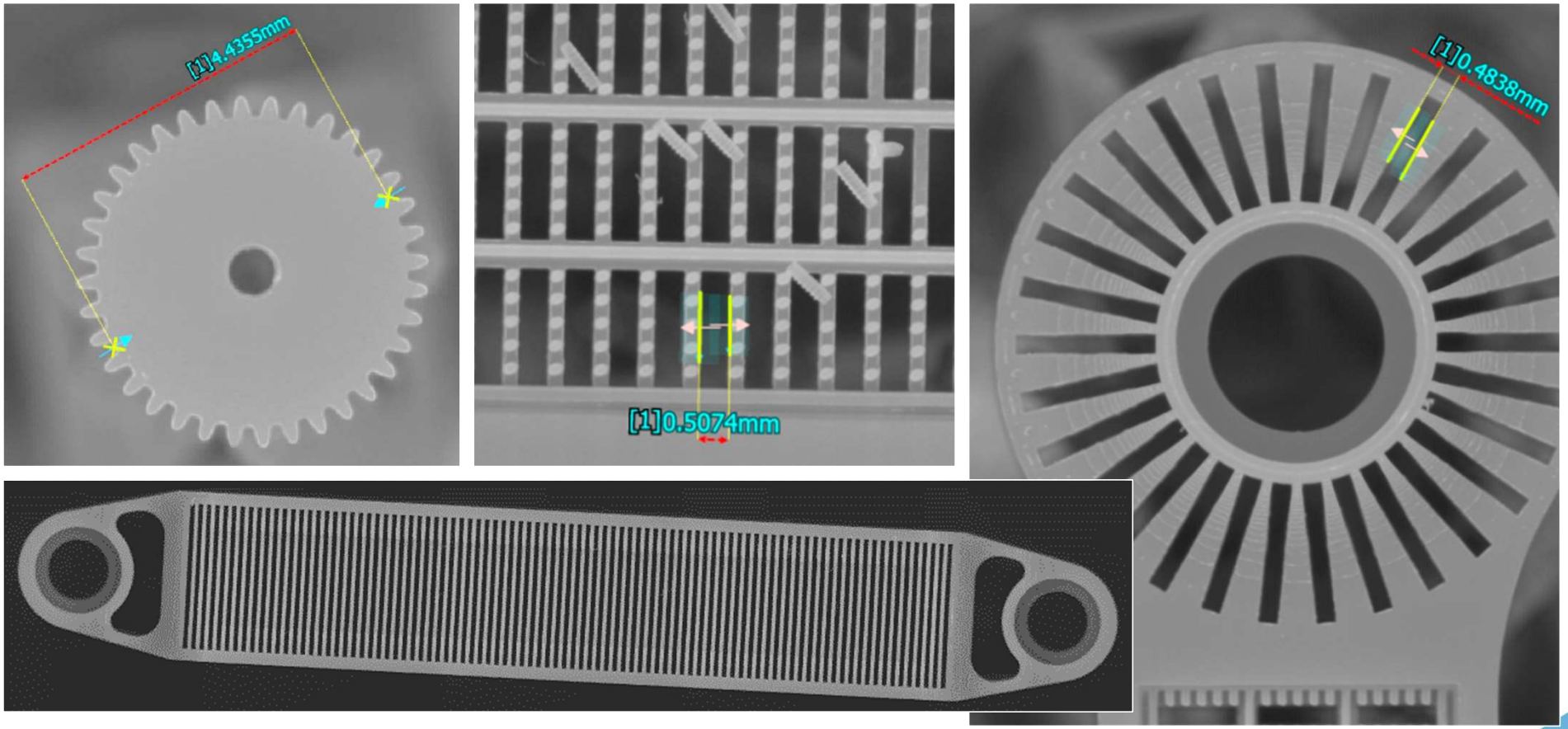
User Experience
Designed around real operator needs

Remote Monitoring
View and control remotely

Built to last
Built for industrial production environments

Automation Ready
Design for production workflow

Print Examples: Small Features *(SLA 750 using Accura Xtreme)*



SLA 750 vs. ProX800/iPro8000

Identical Build Comparison

Accura® Xtreme™

Tough/Durable Class
Stereolithography (SLA)

Ultra-tough grey plastic with outstanding durability, accuracy and aesthetics to replace CNC-machined polypropylene and ABS articles.

GET EXTREME PERFORMANCE AND DURABILITY

Fast and easy to process, the Accura Xtreme material offers physical properties that are close enough to durable end-use plastics like ABS and Polypropylene to make it ideal for functioning prototypes in demanding applications, as well as for short-run production projects.

Accura Xtreme is a grey plastic with the appearance of a final production part with outstanding durability, impact resistance, accuracy and a thermal resistance over 60 °C.

APPLICATIONS

- Form, fit and function prototypes
- Durable and challenging assemblies
  - Snap fit assemblies
  - Tough enclosures
  - Consumer electronic components
- General purpose prototyping
- Master patterns for RTV/silicone molding
- Replace CNC machining of Polypropylene and ABS

BENEFITS

- Robust parts resisting breakage
- Handles challenging functional assemblies
- Withstands modest temperatures without distortion
- Increased application opportunities
- Aesthetics of molded parts
- Ease-of-use and fast processing

FEATURES

- Outstanding durability and impact resistance
- Look and feel of a durable molded plastic
- Excellent accuracy
- Good moisture and thermal resistance
- Low viscosity formulation

Liquid Material

MEASUREMENT	CONDITION	VALUE
Viscosity	@ 30 °C (86 °F)	250-300 cps
Penetration Depth (Dp)		4.1 mils
Critical Exposure (Ec)		11.7 mJ/cm²
Color		Grey
Liquid Density	@ 25 °C (77 °F)	1.13 g/cm³ | 0.04 lbs/in³

Printer Compatibility/Packaging:

Projet® 6000/7000 SLA printers:	2L cartridge
ProX® 800/950, iPro™ 8000/9000 SLA printers:	10 kg cartridge
Viper si2™, SLA 5000 and SLA 7000 printers:	10 kg standard bottle

3D SYSTEMS

SLA 750 vs. ProX800 Accura Xtreme

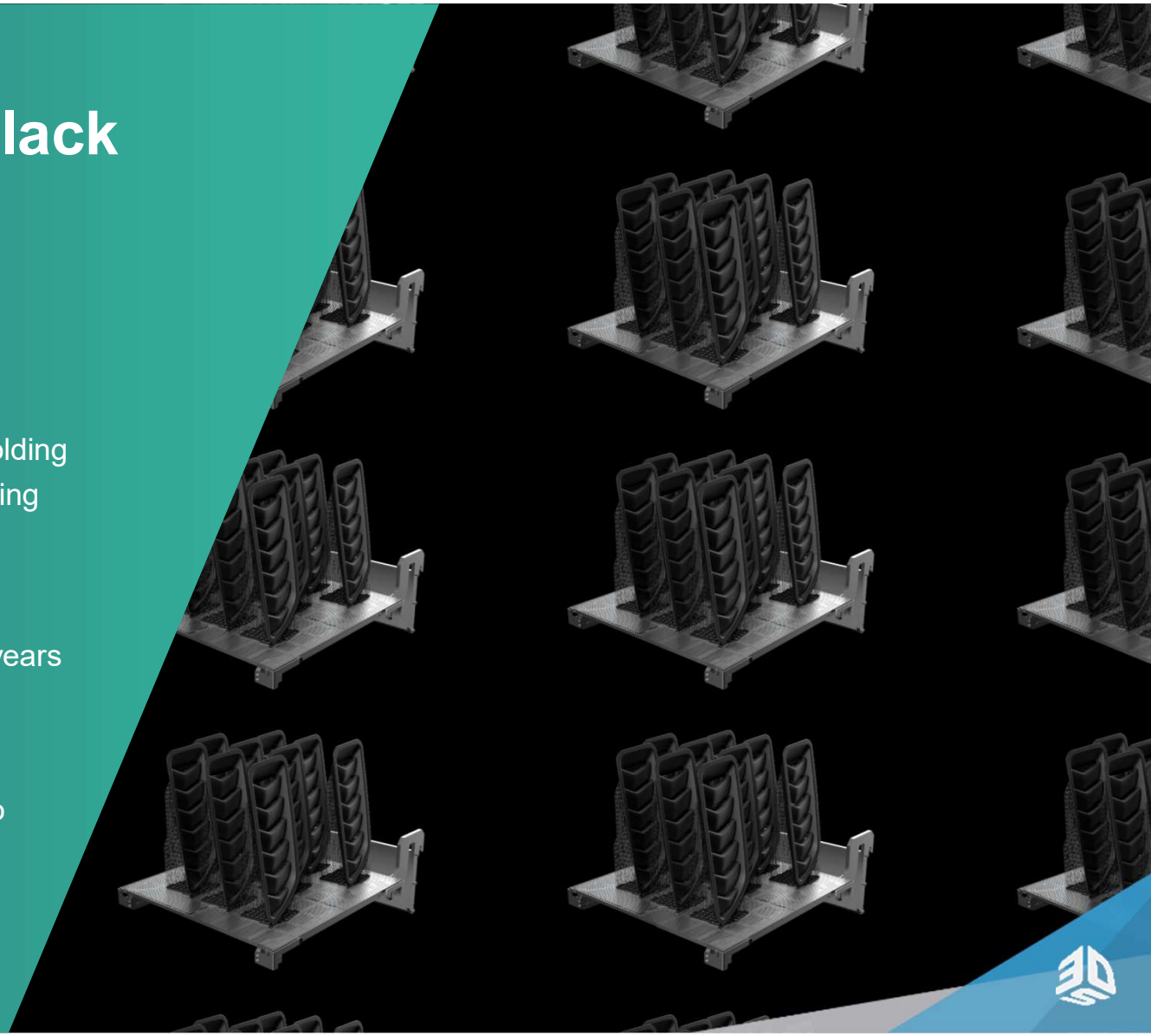
Production-Grade Materials Spotlight

Accura AMX Rigid Black

SLA 750 Materials

Production-grade SLA resin

- Rigid strong material for repeatable, high mechanical loads and structural parts
- Surface finish comparable to injection molding
- Ideal for a wide range of industries requiring end-use parts, manufacturing aids and functional prototypes
- Long-lasting mechanical performance
  - Tested up to 8 years indoor and 1.5 years outdoor mechanical performance per ASTM, and no visible color change after 3 years accelerated aging!
- Superior isotropic properties compared to AM parts of FDM, Jetting, and SLS

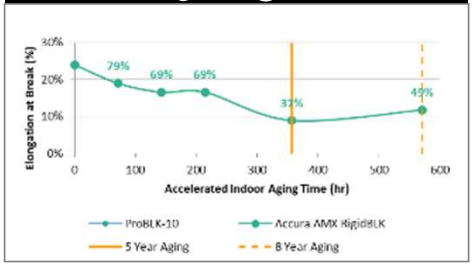


Long Term Stability: Indoor Performance

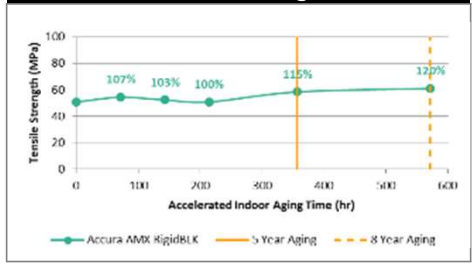
Accura AMX Rigid Black

AMX Rigid Black improves on key SLA environmental metrics vs typical SLA resin

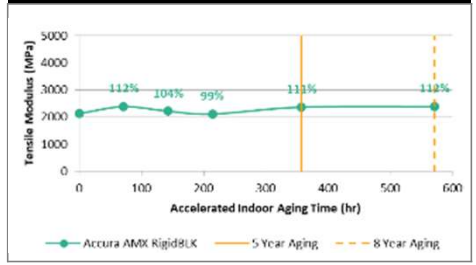
Elongation @ Break



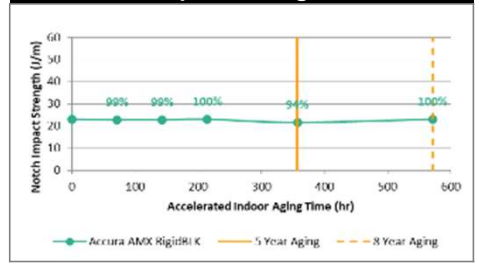
Tensile Strength



Tensile Modulus

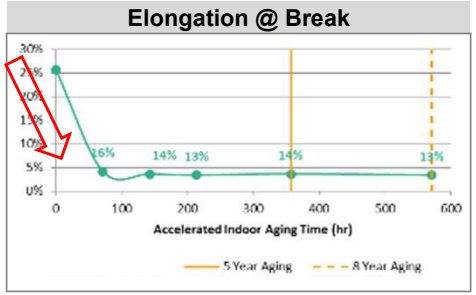


Impact Strength

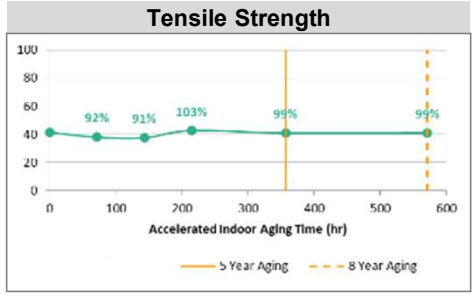


TYPICAL SLA

Elongation @ Break



Tensile Strength



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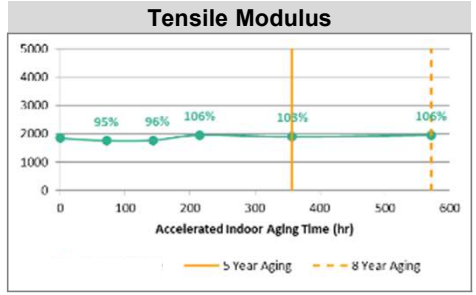

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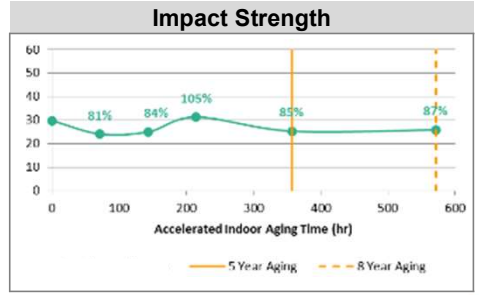
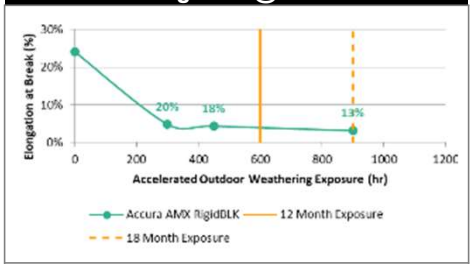
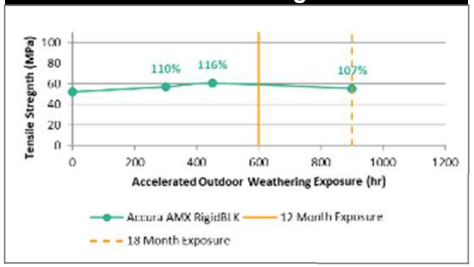


Long Term Stability: Outdoor Performance

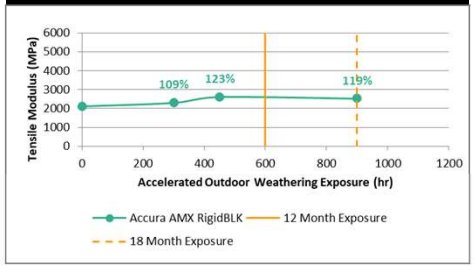
Elongation @ Break



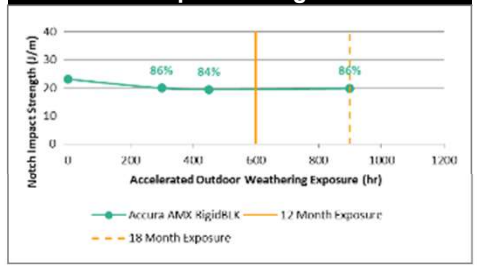
Tensile Strength



Tensile Modulus



Impact Strength



- Very balanced properties for tensile strength, elongation @ break, notch impact, and HDT. ABS like material
- 24% elongation @ break w/thermoplastic type failure
- 2300 MPa flexural modulus shows rigidity
- 64°C HDT @ 0.455MPA is good for many application
- Insulative material per volume resistivity

AUTOMOTIVE AIR INTAKE SCREEN

BWT Alpine F1™ Team

“The SLA 750 increases our productivity and efficiency, allowing us to deliver superior quality production parts faster than ever.”

-Matt Harman, Technical Director, BWT Alpine F1

BWT ALPINE F1® TEAM | 3D SYSTEMS

3D MANUFACTURING SUPPLIER

Specifications

SLA 750 Platform

	ProX 800	SLA 750	SLA 750 Dual
Imaging Systems	1	1	2
Laser Power (watts per laser)	1	3	
Beam Size (mm)	0.125 and 0.75	0.125 to 1.0	
Build Area (mm)	650 x 750 x 550	750 x 750 x 550	
Automation Ready	No	Yes	
Remote Control	No	Yes	
User Interface	10” tablet	15” touch screen & HMI (human interface buttons)	
In Chamber Video Feed	No	Yes	
Interchangeable MDMs (vats)	Yes	Yes	
Leveling	Pump	Displacement	
Material Refill	Automatic Bottle Pump	Anytime automatic bottle & bulk feed, Simple gravity fill	
Recoating With Auto Calibration	Cantilever Arm	Dual rail	
Certifications	CE, NRTL, RMC, EAC	NRTL, SCC, CE, UKCA, EAC, KC & RCM	
Language Support	English	English, German, French, Italian, Spanish, Portuguese, Russian, Japanese, Korean, Simplified Chinese	

Accessories & Post Processing

Manual Unload Cart

Optional Accessory

- Easily offload and transfer platforms with wights up to 114 kg (250 lbs)
- Full coverage catch tray ensures no material drips
- Toolless catch tray removal for easy cleaning
- Adjustable height design
  - Compatibility with entire workflow from printer, to cleaning to PostCure 1050

Cleaning Accessories

Ramco Parts Washers by Ramkleen /KrummTec Marlon 2900

- Automated multistage systems for high scale production
- Automation ready
- System configurable for aqueous or flammable liquids
- In process compatible design
- Includes Dynamic Flow Combination feature
- Compatible with SLA 750 platforms and transfer cart
- Platform adapter kits for current RAMCO ProX 800 users

lautom

SLA 750 Post Process Operator Experience

Krumm Marlon 2900 Reinigungsanlage, vollautomatisch

Print → Transport → Clean → Dry & Cure

Materials Available at Launch

SLA 750 Materials

Accura AMX Rigid Black

- **Rigid, tough**, production-grade
- **High mechanical loads**, structural use
- Features long-term **stable** mechanical properties with exceptional surface.
- Ideal for automotive, consumer durables, service suppliers requiring large **end-use parts,** functional prototypes

Accura AMX Durable Natural

- **Toughest** SLA
- **Production-grade**
- Unique combo of impact resistance, **tear-strength and elongation at break.**
- Long-term **stable** mechanical prop.
- For repeatable mechanical loads and structural parts
- **For mandrel tooling**, motorsport, aero, consumer durables, manufacturing

Accura Composite PIV

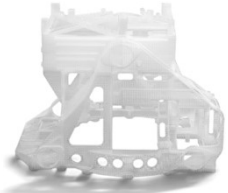
- **Wind-tunnel** testing
- Purple color chosen to provide maximum effectiveness with **laser measuring**
- **Electrically insulating**, jigs, fixtures, tooling, **abrasion-resistance**
- 100˚C HDT
- **Rigid, strong, stiff**: 72 MPa tens. strength
  10200 MPa flex mod.
  9500 MPa tens. mod.

Accura Xtreme

- **Ultra-tough** gray plastic that resists breakage and handles challenging **functional assemblies**.
- **Replaces CNC-**machined polypropylene and ABS.
- Ideal for master patterns for **vacuum casting**.

Accura 25

- **White and Flexible**
- Ideal for **snap fit** assemblies
- Durable functional prototypes with the aesthetics of **molded PP**
- Automotive styling and fascia
- Masters for **urethane casting**
- Parts normally machined from PP or ABS



Accura CastPro

- **Clear, castable**
- Optimized for **quickcast**
- PC-like
- **Highly accurate** material for stable, high-quality investment casting patterns

Accura Fidelity

- **Clear, Castable**
- Optimized for **Quickcast**
- **Antimony-free**
- **Clean burnout**, ultra-low ash <0.01%
- **Ultra-low viscosity**, fast and effective draining, designed to **eliminate bubbles**
- Ultra-low CTE
- Excellent moisture resistance

Expanded Materials – July & August

SLA 750 Materials






Accura 55	Accura 60	Accura HPC	Accura ClearVue	Accura Xtreme White 200	Accura Ortho White
• **White, rigid, strong and accurate** • For functional assemblies, short-run production parts • Ideal for master patterns for **urethane casting** • **Replaces** CNC-machined polypropylene / **PP or ABS** • Aesthetics of molded ABS	• **Transparent**, PC-like • **General-purpose** • Clear plastic for rigid and strong parts • Aesthetics of molded **polycarbonate** (pc). • Suitable for investment casting patterns • **Orthodontic tooling dental models**	• **White ceramic-filled composite** resin • High speeds with **exceptional stiffness and rigidity** • Auto and aero, wind tunnel models, **abrasion-resistance**, jigs, fixtures, tooling, electrically insulating • **High temp. resistance, HDT up to 250°C**	• **Clear, polycarbonate-like**, excellent humidity and moisture resistance • **High optical clarity** Ideal for headlamps, complex assemblies, fluid flow. • Capable of meeting **USP Class VI bio-compatible** including dental	• **Ultra-tough white** plastic • **Resists breakage** and handles challenging functional assemblies. • Replaces CNC-machined polypropylene and ABS. • Ideal for master patterns for **vacuum casting**.	• **White, Rigid**, resin • **Orthodontic tooling dental models** • **High Throughput** for producing as many as 1000 arches per day • **High accuracy and repeatable** results

Additional Materials Available on Request

SLA 750 Materials

Accura ABS Black

- Rigid and tough material that allows users to build black parts without painting.
- Simulates and replaces CNC-machined ABS
- For functional assemblies and short-run production parts.

Accura ABS White

- Rigid and tough material that allows users to build white parts without painting.
- Simulates and replaces CNC-machined ABS
- For functional assemblies and short-run production parts.

Accura PP White

- Flexible and tough
- Replace CNC-machined white polypropylene.
- Used for snap fit assemblies,
- Durable functional prototypes and master patterns for vacuum casting.

Accura ClearVue Free

- High clarity plastic
- General purpose prototyping
- Headlamps and lenses
- Fluid flow and visualization models
- Snapfits and complex assemblies
- Medical models and medical devices

Accura 48 HTR

- Transparent, polycarbonate-like
- High temperature
- Rigid and stiff plastic material for applications that require high-heat resistance.
- For visualization of internal structures in assemblies.
- HDT up to 130°C

Accura Phoenix

- High temperature
- Exceptional clarity
- Hot fluid flow in complex automotive parts as well as viewing of internal structures in assembly work.
- HDT up to 137°C

Accura 5530

- High temperature
- Transparent polycarbonate-like
- Stands up to humidity, water and solvents, including automotive solvents.
- HDT up to 250°C

Accura Bluestone

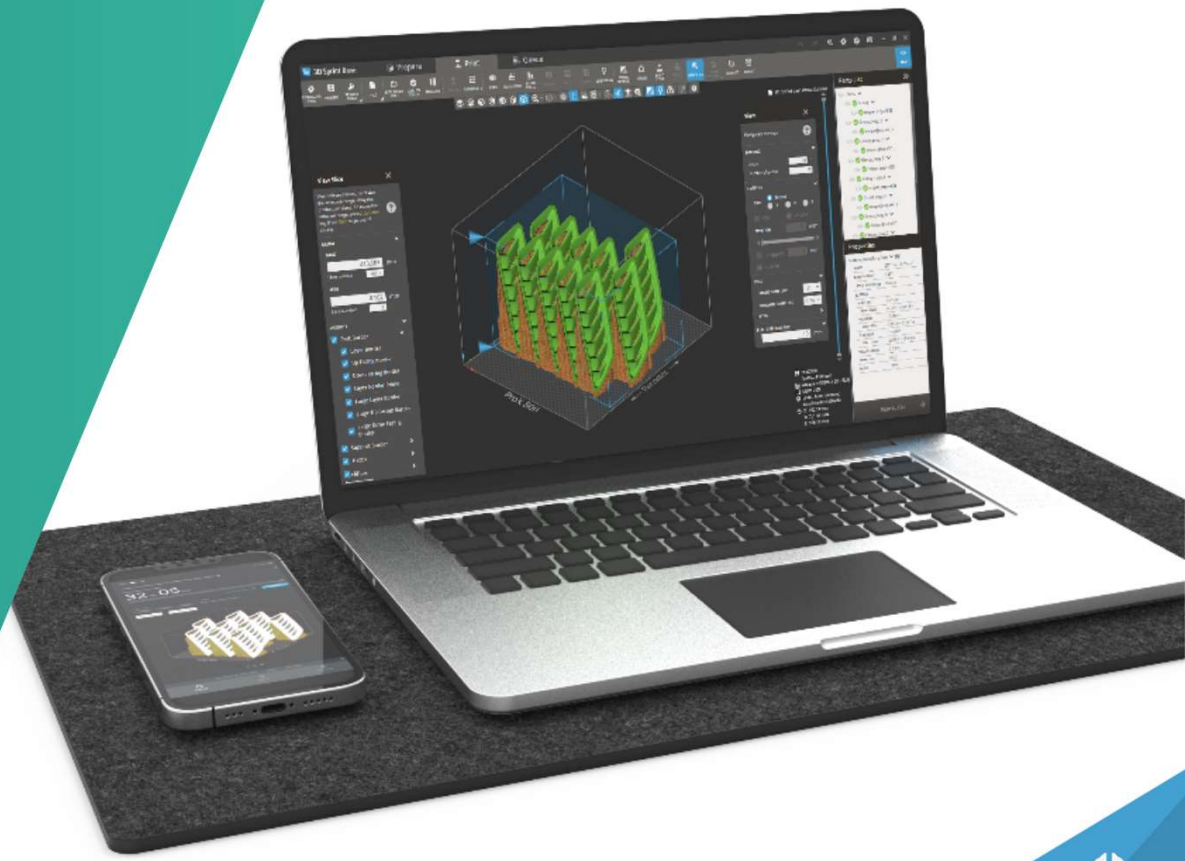
- Engineered nano-composite resin
- Stable, stiff, blue
- For high stiffness parts, wind-tunnel test models, fixtures, jigs and tools, lighting components, under-hood rigid automotive
- High temp with HDT up to 284°C

End-to-End Software
3D Sprint & Oqton

3D Sprint Prepare & Slice Files

Includes 2 licenses. Key features include:

- Printability analysis
- Part and feature measurements
- Part copies and scaling
- Automatic and manual part orientation
- Part labeling (embedded and/or extruded)
- Part splitting, cutting and keying
- Part hollowing and creating drain holes
- Automated and optimized support generation
- Part support and handling strut features
- Build parameter optimizations
- Ability to set X and Y offset values separately
- Build time and material consumption estimates
- Print queue management
- Machine status



Summary

The SLA 750 Solutions Delivers

- **Benchmark against which all must be measured**
- **Accuracy**
- **Build Speed**