



## High Performance Chemistry™ For High Performance Products

*CrystalCoat*®

**Exceptional Clarity, Premium Durability**

**Augmented, Virtual, and Mixed Reality Application Case Study**

**SDC's CrystalCoat for smart glasses, headsets, and head-mounted displays (HMD)**

**SDC**  
Technologies

## Executive Summary

### A Digital World Manifesting Unlimited Possibilities

The technology landscape is continually evolving to simplify everyday decisions, creating endless possibilities and solutions. New applications and case uses are constantly emerging from nearly every industry, urging companies to develop their own AR/VR/MR strategy with an implementation, procurement, adoption, and training plan to maximize their investment value. While different, these technologies possess synergies which are becoming increasingly integrated.

### Augmented, Virtual and Mixed Reality Technologies

Augmented Reality (AR) combines both the physical and virtual world, superimposing computer generated image details into the real-world environment. It blends information technology and media within a real-world environment for consumers, businesses, and industrial users.

Virtual Reality (VR) is fully immersive, creating a virtual world for users to interact with. It uses a head mounted display (HMD) or headset to experience a computer-generated world of imagery or sounds to manipulate objects and moves them around using controllers tethered to a console or PC.

Mixed Reality (MR) is a hybrid merging of physical and virtual worlds to produce new environments and visualizations whereby digital objects co-exist and interact in real-time. It allows you to see and immerse yourself in the real world around you, and interact with a virtual environment using your hands, and without removing your headset.

### Growing Application Use

According to a 2020 survey commission by Grid and Raster, 56% of businesses have implemented some form of AR/VR technology. Over half have incorporated automation technologies in manufacturing operations. Applications include labor on production floors, customer visits, product design, engineering, and employee training. These immersive technologies offer numerous applications for multiple industries to remotely collect, and monitor customer experiences whether they be for entertainment, education, training, productivity, and/or efficiency.

### AR/VR Technology Advantages and Benefits

The advantages are accessibility and the ability to create any imaginable environment, with complete control over all the elements; creating a unique experience that may be impossible or impractical to achieve in the real world. The virtual environment benefits are boundless, providing training with little or no risk, in a safe controlled area, saving time and money, simplifying complex problems or situations suited to multiple learning styles (visual, audio, hands-on). It makes distance communication more interactive, innovative, and enjoyable, serving to increase engagement by improving retention and recall.



### Augmented Reality (AR)

Overlaying computer generated objects upon the real world.

### Virtual Reality (VR)

Completely digital, uses computer technology to create a simulated environment.

### Mixed Reality (MR)

Hybrid technology merging of physical and virtual reality into one.



## Industry-Leading Durability & Performance

### Technology Challenges

Lack of application design and development standards, regulations, security, and privacy issues. Limited content and public skepticism. Equipment can get expensive for the masses and the hardware can be heavy and bulky. Few if any proven business models demonstrating technology in use.

### Need for a Solution

Advancements in the development of cheaper, mobile light weight high performing equipment are needed. Eyewear and headset lens made from substrates such as acrylic, polycarbonate, APEL™ (COC) and ZEONEX®(COP) are lighter than glass, they should be coated to improve impact resistance. And while these lens substrates are more bendable and easier to work with, they are prone to chipping and should be coated to prevent scratching and yellowing from UV rays. High-performance protective coatings to prolong the durability and lifespan of expensive smart glasses, headset displays, and electronic devices can also benefit and support industry acceptance and use.

### Customized Coating System Solution

Since 1986, SDC has developed numerous customized coating specification solutions implemented by a global team of highly skilled technical staff. One customer reached out to SDC for industry expertise to create a customized optically clear, scratch resistant,

anti-reflective compatible, index-matched coating. The coating had to meet a host of requirements that included good adhesion to APEL, a substrate selected for its outstanding moisture, chemical, heat resistance, low birefringence, and optical clarity. Combined with prototype testing within an intense and rapid time frame, over an extensively large and diverse organizational environment to match manufacturing facility scale.

#### **Coating System requirements:**

- Anti-Reflective Coating Compatible
- Cost-effective onsite coating line operations and equipment
- Extensive technical support and from prototype to manufacturing implementation
- Low birefringence (no rainbow effect surface distortion)
- Optical clarity
- Mechanical strength and functionality on multiple 2D and 3D part types and shapes
- Multiple coating applications (spin, dip, flow, spin, spray etc.)
- Weatherability to harsh humidity and extreme temperature conditions



## Conclusion

SDC was chosen for their long history of premium abrasion resistant coatings used by the world's most luxurious and respected brands—and developed to meet unique industry demanding specifications. They consistently and rapidly adapt to a multitude of prototype testing, under tight product development time frames. Delivering high-performance durability, and superior coating adhesion, along with a complete line of thermal, UV-cure, solvent and solvent-free spin coating equipment to automate and streamline the coating application process.

## Best-In-Class Coating Solution Features

Coatings trusted by the world's most prestigious brands used in the Olympics to NASA. Multi-purpose and versatile coatings suitable for dip, flow, roll-to-roll, spin, and spray application on acrylic, PMMA, PC, specialty polymers, glass (with primer), and other plastic substrates.

- Thermoformable flexibility qualities for creating complex shapes
- Superior abrasion, chemical, fog, impact, and scratch resistance
- Increased surface smoothness, water repellent
- Easy clean anti-fingerprint/anti-smudge, oleophobic properties
- Exceptional optical clarity, permanent water-washable anti-fog
- Weatherability, improves product durability and shelf-life
- Highly durable UV-resistant coatings will not yellow over time
- Thermal and UV-Cure coating, environmentally sustainable low VOC and water-based primer options
- Lowered production costs, easy to use one coat application, and long service life deliver outstanding value
- Anti-reflective, compatible with AR and metalizing treatments
- Solvent-Free (100% Solids) and Solvent-Based
- Primerless and Index-Matching



## For More Information

Founded in 1986, SDC Technologies, Inc. has a global support and distribution network in the Americas, Asia, and Europe. To find out how CrystalCoat® can improve the performance of your products and enhance your competitive edge visit:

[sdctech.com](http://sdctech.com)

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