

Technical Specification – Comparison Standard

SCRATCH AND DIG SAMPLES

Davidson D-668 and D-668CR

Introduction

The D-668 scratch and dig visibility comparison set made by Davidson Optronics is designed to be used with ANSI/OEOSC OP1.002 visibility method, the American National Standard for surface quality. The scratch visibility grades are certified based on the same procedure that is used by the US Army ARDEC at Picatinny Arsenal for Military procurements, using the same SavvyInspector™ calibration files. The individual scratch and dig samples allow much easier direct comparison for go/nogo decisions during routine inspection of lenses, mirrors, windows and other optical components.

Scratch/Dig Standards Supported

MIL-PRF-13830B

MIL-C-675C

ANSI/OEOSC OP1.002 Visibility Method

Product Description

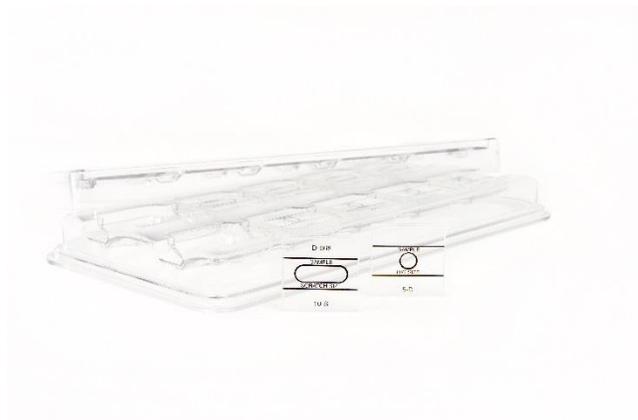
Each D-668 and D-668CR set consists of ten individual samples in a fitted hardwood case or PET-G case. Samples are hermetically sealed, size 1 1/2" x 1 1/2" x 3/8". Scratch values (#80, #60, #40, #20 and #10) are arbitrary and based on limit standard scratches of equivalent brightness at Picatinny Arsenal, as measured using a SavvyInspector™ SIF-4. Dig values (#50, #40, #20, #10, and #5) are in units of tens of microns.



D-668 inspection samples.

Cleanroom packaging

The D-668CR comparison sample set is provided in a 10 slot PET-G box suitable for use in cleanrooms up to ISO Class 4.



Cleanroom packaging of the D-668CR

Scratch and Dig – The world’s surface imperfection visibility standard

Surface quality of optics throughout the world is evaluated based on a visual inspection using comparison samples or paddles. Most optical drawings specify surface quality using MIL-PRF-13830B, a scratch and dig specification standard used by the US Military for more than fifty years. In 2006, ANSI published ANSI/OEOSC OP1.002 visibility method, a voluntary equivalent standard based on the MIL standard. But both these standards require the use of a comparison set issued by US Army ARDEC at Picatinny Arsenal, specifically for Military purchases. The Army standards were manufactured to drawing C7641866, but that drawing requires the use of a SIRA micro-image comparator which is no longer available. Instead, the comparison samples are certified at Picatinny with a SavvyInspector™ SIF-4, using brightness calibration files made from the original limit masters.

In 2012 Davidson Optronics took delivery of their own SavvyInspector™ SIF-4, and re-mastered their own comparison samples. Finally, there is a comparison set available commercially which is certified based on the same equipment and operating procedure that is used by the Army at Picatinny.

Using the D-668 or D-668CR Visibility Comparison Standard

Qualifying optics such as lenses, filters, mirrors and windows is easy with the D-668 Visibility Comparison Standard. The brightness of the scratch (or the apparent size of a dig) on an optical component is visually compared to the comparison samples side-by-side to determine the comparison sample which is “closest but more visible.” The allowed illumination and comparison methods are shown schematically in ANSI/OEOSC OP1.002, and are identical to those described in MIL-PRF-13830B. By using the D-668 comparison samples with a Viewing Fixture like Davidson’s D-667-11, a surface inspection can be performed which is compliant to both MIL-PRF-13830B and ANSI/OEOSC OP1.002 visibility method.

Cleaning

Scratch-Dig samples should be treated like any precision optical component, and cleaned using a methanol drag wipe or similar cleaning procedure. Avoid the use of chemical solvents or acetone to prevent damage to the sample seal.

Re-certification

The D-668 and D-668CR comparison samples are made to last, but brightness is highly dependent on a host of factors, and the samples do age over time. We recommend you recertify your comparison samples at least once every two years using a SavvyInspector™ SIF-4.

Pricing and Availability

Pricing for the comparison set varies depending on region. Delivery is typically six to eight weeks ARO. Call 860-878-0722 or email sales@savvyoptics.com for a detailed quotation. Scratch only sets and individual samples are also available.