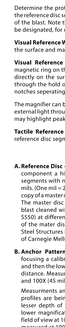
KEANE-TATOR SURFACE PROFILE COMPARATOR for SHOT BLAST cleaned surfaces

A complete comparator kit consists of a reference disc, a 5x (illuminated) magnifier with magnetic disc holder, and a vinyl disc case.

REFERENCE DISC DESCRIPTION



The comparator disc is comprised of five sections, each with a different anchor pattern depth. Each section is marked first giving the nominal anchor pattern depth in mils (one mil = 25.4 microns); next an "SH" indicating a shot abrasive and a "76" indicating the year the master disc was made.

HOW TO USE

Determine the profile of metallic grit blast cleaned steel by choosing the reference disc segment that most closely approaches the roughness of the blast. Note that roughness may lie between two segments and be designated, for example 3.5 SH 76.

Visual Reference Without Magnification — Hold disc directly against the surface and make visual comparisons.

Visual Reference With Magnification — Attach the disc to the magnetic ring on the bottom of the magnifier and hold the entire unit directly on the surface. Either center the disc and make evaluations through the hold or offset it slightly and compare the steel in the "V" notches seperating segments.

The magnifier can be used with its internal light source or by shining an external light through the slot in the magnifier head. The latter method may highlight peaks and make comparisons easier

Tactile Reference — Compare the roughness of the blast and the reference disc segments using a soft wooden stylus or fingertip.

TECHNICAL INFORMATION

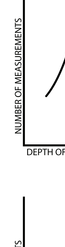
A. Reference Disc — The Keane-Tator shot comparator has as its basic component a high purity nickel reference disc comprised of five segments with nominal anchor patterns of 2.0, 2.5, 3.0, 4.0, and 5.5 mils, (One mil = 25.4 microns.) The reference disc is an electroformed copy of a master disc, duplicated to a maximum tolerance of ±.05 mils. The master disc segments were selected from carbon steel plates blast cleaned with a variety of steel shot operating mixes (S230 to S550) at different distances and angles from the source. Segments of the mater disc and the electroform copy were measured in the Steel Structures Painting Council Laboratory at the Mellon Institute of Carnegie Mellon University, Pittsburgh, Pennsylvania.

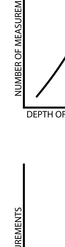
B. Anchor Pattern Measurment — The profile was obtained by focusing a calibrated optical microscope first on the highest peak and then the lowest valley in the field of view, noting the movement distance. Measurements were made at 250X (1.8 mil field diameter) and 100X (4.5 mil field diameter).

Measurments and higher magnifications are preferred when "fine" profiles are being measured because of greater precision due to lesser depth of field. Measurement of "coarse" profiles is done at lower magnification to include more peaks. Because of the larger field of view at 100X, the statistical probability of a larger peak being measured at 100X versus 250X is slightly greater than six times.

Information regarding the "average maximum profile" (hmax) of each segment of the reference disc is provided in the accompanying graphs.

Reference: J.D. Keane, J.A. Bruno, Raymond E. F. Weaver; SURFACE PROFILE FOR ANTI-CORROSION PAINTS; October 25, 1976 by Steel Structures Painting Council





TYPICAL PROFILES PRODUCED BY SOME COMMERCIAL ABRASIVE MEDIA

ABRASIVES	MAXIMUM MESH SIZE	h max
Steel Abrasives		
Shot S-230	20	2.2±0.3
Shot S-280	18	2.5+0.4
Shot S-330	16	2.8+0.5
Shot S-390	14	3.5+0.7
Grit G-50	30	1.6+0.3
Grit G-40	20	2.4+0.5
Grit G-25	16	3.1+0.7
Grit G-14	12	2.1+0.9
Mineral Abrasives		
Flint Shot	Medium-Fine	2.7+0.4
Silica Sand	Medium	2.9+0.4
Boiler Slag	Medium	3.1+0.5
Boiler Slag	Coarse	3.7+0.7
Heavy Mineral Sand	Medium-Fine	2.6+0.4

Profile will vary somewhat with angle and velocity of particle, hardness of surface, amount of recycling, and degree of cleaning.

Reference: Steel Structure Painting Council

OTHER COMPARATOR DISCS

GRIT/SLAG (G/S) - For profile determination of substrates blast cleaned with metallic grit and other non-metallic abrasives.

SHOT (SH) - For profile determination of substrates blast cleaned steel shot.

SAND (S) - For profile determination of substrates blast cleaned sand.

Distributor:
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