



VANGUARD STEEL LTD.

PRODUCT MANUAL

POLISHED DRILLRODS

CARBON AISI W-1
OIL HARDENING AISI O- 1

TYPICAL ANALYSIS

	C.	Mn.	Si.	Cr.	W.	V.	Mo.
W -1	1.00	0.30	0.30				
O - 1	0.90	1.20	0.35	0.50	0.50	0.20	

SUPPLIED IN THE ANNEALED STATE WITH A FINELY GROUND AND POLISHED SURFACE. ITS HIGH ACCURACY TO SIZE, UNIFORM PROPERTIES THAT ARE FREE FROM DEFECTS AND DECARBURIZATION, OPENS A WIDE FIELD OF APPLICATIONS FOR THESE DRILLRODS.

TYPICAL APPLICATIONS

DRILLS, TAPS, DIES, ARBORS, BALANCE STAFFS, CUTTING-OFF TOOLS, CHASERS, ENGRAVERS TOOLS, JEWELERS TOOLS, GAUGES, MACHINERY PARTS, MILLING TOOLS, PINS, PUNCHES, PINIONS, PIVOTS, ROLLER BEARINGS, THREADING DIES ETC; ALSO FOR GUIDE RODS AND ADJUSTING PINS IN TOOL MANUFACTURING AND GENERAL ENGINEERING, EJECTING MANDRELS, SURGICAL INSTRUMENTS, AXLES AND SHAFTS IN PRECISION MECHANICS.

MECHANICAL PROPERTIES - ANNEALED

TENSILE STRENGTH	38-44 TONS/SQ. INCH
BRINELL HARDNESS	174-207

THERMAL TREATMENTS

DEGREES IN CELSIUS

AISI W-1

HOT FORMING

1000-800°

ANNEALING

690-710°

HARDENING

760-780° IN WATER

TEMPERING

AS REQUIRED

OBTAINABLE HARDNESS - HRC

64-66

(CONTINUED)



VANGUARD STEEL LTD.

PRODUCT MANUAL

POLISHED DRILLRODS

CARBON AISI W-1
OIL HARDENING AISI O- 1

THERMAL TREATMENTS

AISI O-1

DEGREES IN CELSIUS

HOT FORMING

1050-850°

ANNEALING

740-760°

HARDENING

790-830° IN OIL

TEMPERING

100-300°

OBTAINABLE HARDNESS - HRC

64-66

TOLERANCES

PLUS OR MINUS

UP TO 0.124"

.0003"

0.125" TO 0.499"

.0005"

0.500" TO 2.000"

.001"

AVAILABLE IN METRIC AND IMPERIAL SIZES.