ALLOY STEELS - 4145 H MODIFIED HTSR

AISI /SAE 4145 (UNS G 41450) MODIFIED HTSR

CHROMIUM-MOLYBDENUM STEEL TO ASTM A 29, A 370, A 434 CLASS BD E 112

TYPICAL ANALYSIS

C.	Mn.	P.	S.	Si.	Cr.	Mo.	Ni.
.42/.49	.75/1.30	.035 MAX.	.040 MAX.	.15/.35	.75/1.20	.15/.45	1.00 MAX.

THIS ALLOY STEEL IS USED PRIMARILY FOR THE MANUFACTURE OF TOOLS IN THE OIL INDUSTRY. SUPPLIED WITH A STRAIGHTNESS TOLERANCE OF 1/8" IN ANY 5 FOOT LENGTH, WITH A GRAIN SIZE OF 6 OR FINER, AS PER ASTM E 112. THIS STEEL IS HEAT TREATED AND HARDENED BY WATER QUENCH, TEMPERED, STRESS RELIEVED AND SUPPLIED IN A ROUGH TURNED CONDITION.
ALL BARS ARE ULTRASONIC TESTED, WITH CHARPY V IMPACT @ 57 DEGREES CELSIUS FT. LBS. WITH MINIMUM AVERAGE VALUE OF 3 READINGS. NO MORE THAN ONE SINGLE VALUE SHALL BE LOWER THAN 5 FT. LBS. BELOW STATED AVERAGE VALUE.
CAN BE SUPPLIED TO COMPLY TO API SPEC. 7 IN THE MANUFACTURE OF DRILL COLLARS IN 31 TO 31-1/2 FOOT BARS.

MECHANICAL PROPERTIES - (LONGITUDINAL, 1" BELOW SURFACE).

THE FOLLOWING ARE AVERAGE VALUES AND MAY BE CONSIDERED AS REPRESENTATIVE:

	UNDER 5"	5" - 7"	7" & OVER
TENSILE STRENGTH, PSI.	**145,000**	**140,000**	**135,000**
YIELD STRENGTH, PSI.	**125,000**	**110,000**	**100,000**
ELONGATION, % IN 2"	**14.0**	**14.0**	**14.0**
REDUCTION IN AREA, MIN. %	**40-54**	**40-54**	**40-54**
HARDNESS - SURFACE BHN	**285-341**	**285-341**	**285-341**
HARDNESS - 1" BELOW SURFACE	**285**	**285**	**285**
CHARPY V-NOTCH FT. LB.	**45**	**45**	**45**

ALL TESTS ARE PERFORMED TO ASTM A 370.

WELDABILITY

4145 IS ON THE BORDER LINE OF WELDABILITY BECAUSE OF ITS RELATIVELY HIGH CARBON CONTENT. IT CAN BE WELDED BY ANY OF THE COMMON WELDING PROCESSES PROVIDING THE SECTION IS PREHEATED AND STRESS RELIEVED AFTER WELDING.
THE GRADE OF WELDING ROD TO BE USED DEPENDS UPON THE THICKNESS OF SECTION, DESIGN, AND SERVICE REQUIREMENTS, ETC.