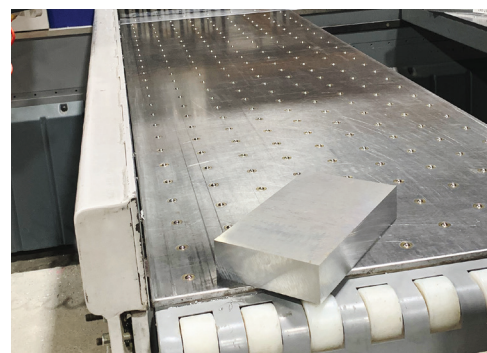




EXELL™ FORGEDIE

Forging Die Steel



ELLWOOD

YOUR METALS PARTNER, FROM MELT TO DISTRIBUTION

ESM-USA-Sales@elwd.com

800.932.2188

EXELL™ FORGEDIE

ExELL™ ForgeDie is a chromium-nickel-molybdenum alloy hot-work steel which has been developed especially for forging die block applications.

ExELL™ ForgeDie is characterized by:

- Good through hardening resulting in uniform hardness distribution in very large sections
- Excellent machinability
- Good hot strength and hot hardness
- Easy repair welding

ExELL™ ForgeDie is manufactured in a fully integrated manufacturing facility for specialty tool steels. The facilities are state-of-the-art with advanced steel making capabilities that include an ultra-high power electric arc furnace with subsequent ladle refining, as well as vacuum degassing for the most complete and modern ladle metallurgy technology. New high powered open die forging presses, heat treat and machining equipment complete the die steel manufacture in ISO 9001 facilities.

ExELL™ ForgeDie is supplied in the prehardened condition with HRC tempers of 33-37, 38-42, and 43-47.

APPLICATIONS

ExELL™ ForgeDie has been developed for forging applications and is recommended for:

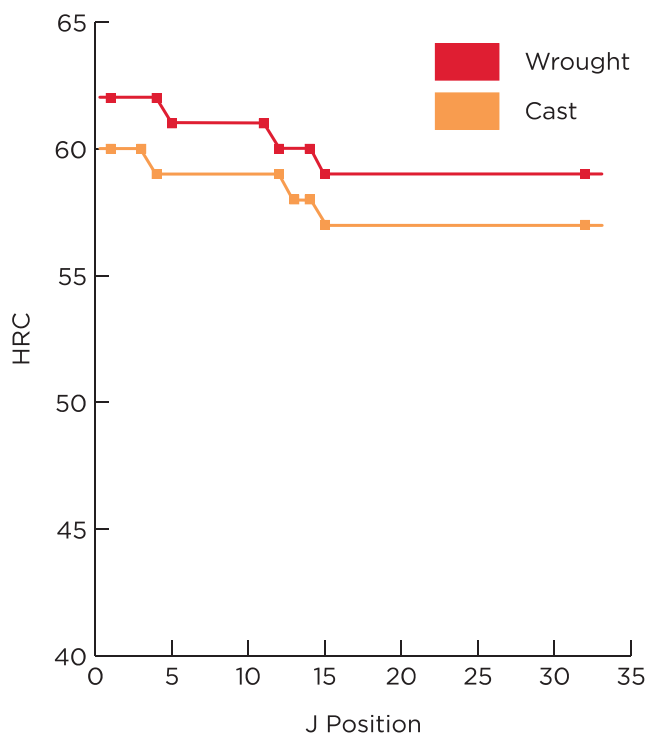
- Die Blocks
- Insert Dies
- Sow Blocks
- Holders
- Bolster Plates
- Trim Dies

TYPICAL ANALYSIS

C	0.45
Si	0.25
Mn	0.95
Ni	0.55
Cr	1.60
Mo	0.30
V	0.10

HARDENABILITY

JOMINY HARDENABILITY OF EXELL™ FORGEDIE



TENSILE DATA HRC 38-42 AT ROOM TEMPERATURE

TEST DIRECTION	Long Transverse	Short Transverse
UTS (KSI)	175	170
YS (KSI)	150	140
% ELONG.	12	11.5
% RA	33	35

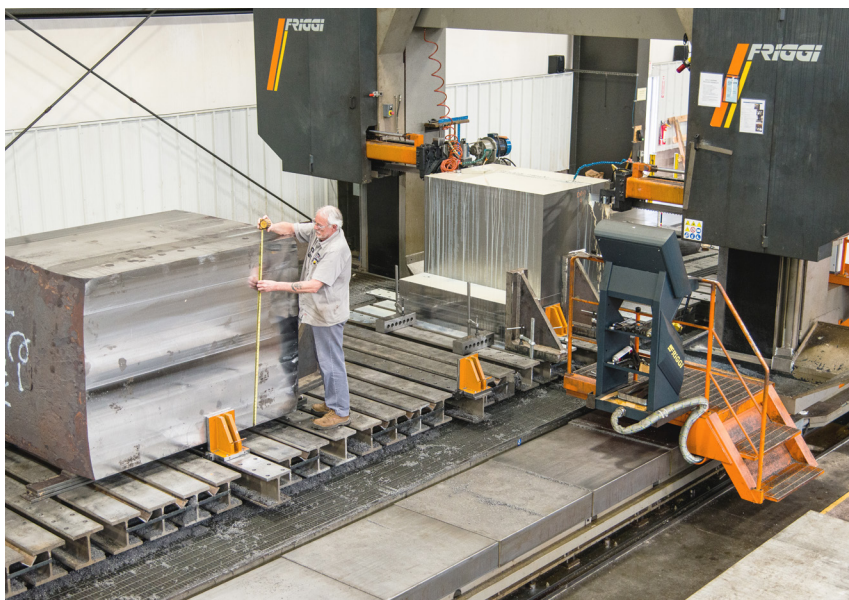
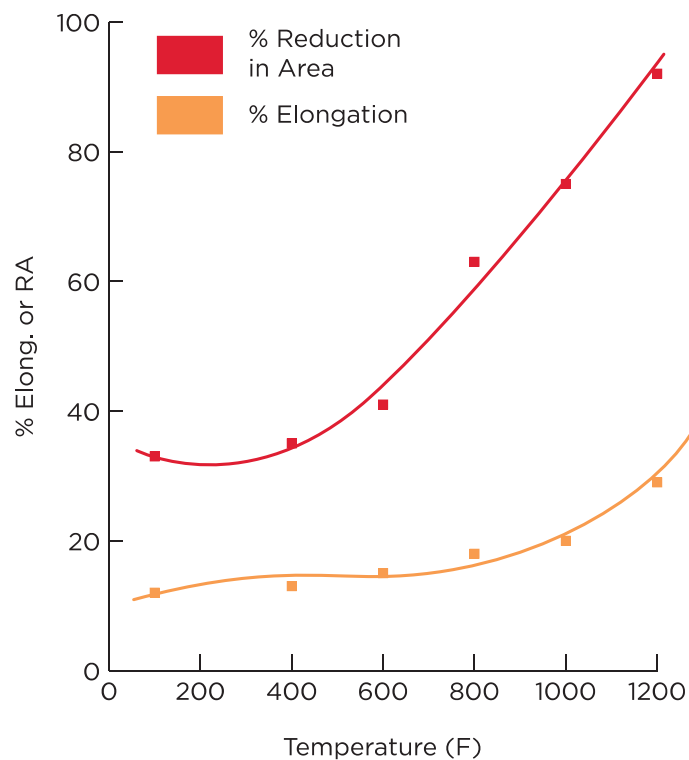
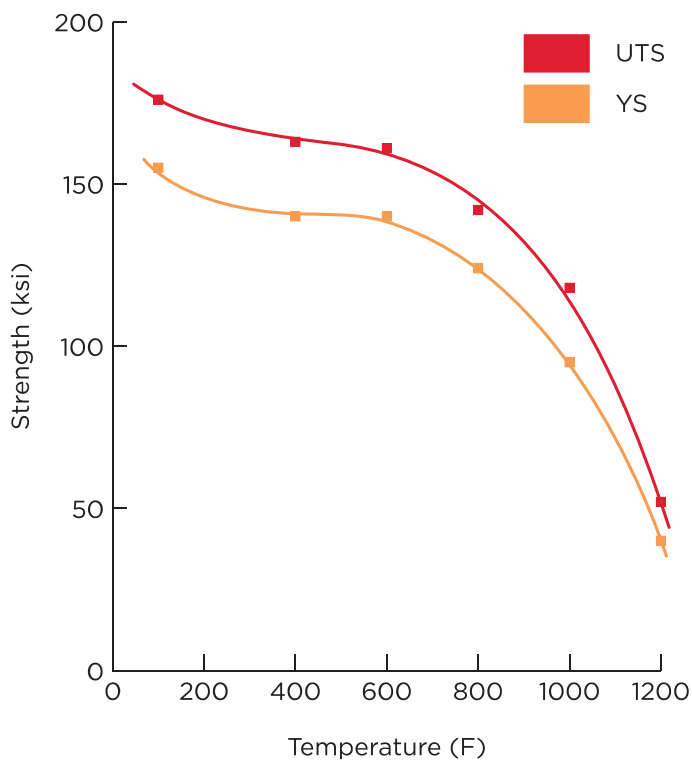
Typical tensile data for ExELL™ ForgeDie

HEAT TREATMENT (General Recommendations)

STRESS RELIEVING

- After rough machining, heat through to 1000F and hold two hours at temperature.
- Cool freely in air.
- ExELL™ ForgeDie is supplied in the pre-hardened condition and requires no separate heat treatment. For annealing or re-heat treating instructions, please contact ELLWOOD Specialty Metals - USA direct at 800.932.2188.

ELEVATED TEMPERATURE TENSILE PROPERTIES



CHARPY IMPACT TEST

TEMPERATURE (F)	CVN (FT-LB)
70	10
175	16
250	16
300	16
350	41
400	42
450	42

CAPABILITIES

ELLWOOD Specialty Metals - USA is a fully integrated producer of a wide range of specialty tool steels. Our ExELL™ grades are made with advanced steel making capabilities which include an ultra-high powered electric arc furnace with subsequent state-of-the-art ladle refining and vacuum degassing equipment for the most complete and modern ladle metallurgy.

Our steel making expertise and capability is further enhanced from a long forging history with optimum forging and heat treating practices to develop very special material characteristics of product uniformity, cleanliness, machinability, polishability, strength, toughness, hardenability and other steel properties. All this from production facilities certified to ISO 9001.

This information is intended to provide general data on our products, their uses and is based on our knowledge at the time of publication. No information should be construed as a guarantee of specific properties of the procedures described or suitability for a particular application. ELLWOOD Specialty Metals - USA reserves the right to make changes in practices which may render some information outdated or obsolete. ELLWOOD Specialty Metals - USA should be consulted for current information and/or capabilities.

QUALITY ASSURANCE

ELLWOOD Specialty Metals - USA is committed to providing products and services that consistently meet or exceed all quality and performance expectations. We will provide customer and technical service that will ensure complete satisfaction.

ELLWOOD Specialty Metals - USA will establish product programs to fully support industry or customer requirements. Our extensive stock programs are supported by short mill lead times of custom forged products.

Customized stock programs can be available for specific customer needs.



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