



Heat Treatment

ExELL ForgeDie is supplied in the pre-hardened condition and requires no separate heat treatment. For any annealing or re-heat treating instructions, contact Ellwood Specialty Steel at **1-800-932-2188**

Stress Relieving

After rough machining, heat through to 1000F and hold for two hours at temperature. Cool freely in air.

Capabilities

Ellwood Specialty Steel is a fully integrated producer of a wide range of specialty tool steels. Our ExELL grades are made with the advanced ASEA-SKF 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 technology.

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.

Quality Assurance

Ellwood Specialty Steel is committed to providing products and services which will consistently meet or exceed all quality and performance expectations. We will provide customer and technical service that will ensure complete satisfaction.

Being a very flexible provider, Ellwood Specialty

Steel will establish product programs to fully support industry or customer requirements. Our extensive stock programs are supported by very short mill lead times of custom forged products. Customized stock programs are and can be available for specific customer needs.

This information is intended to provide general data on our products and 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 products described or suitability for a particular application. Ellwood Specialty steel reserves the right to make changes in practices which may render some information outdated or obsolete. Ellwood Specialty Steel should be consulted for current information and/or capabilities.

ELLWOOD SPECIALTY STEEL

Your tool and mold steel specialist

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Forging Die Steel

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 characteristics resulting in good hardness distribution even 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 beginning with advanced ASEA-SKF steel making capabilities that include an ultra high power electric arc furnace with subsequent/multiple ladle refining, and 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.

Typical Analysis %

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

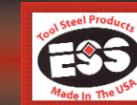
Delivery Condition

ExELL ForgeDie is supplied in a prehardened condition. Various temper hardness ranges are available.

Applications

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

- ★ Die blocks
- ★ Insert dies
- ★ Sow blocks
- ★ Holders
- ★ Bolster plates
- ★ Trim dies
- ★ Hammer rams and guides
- ★ Piston rods and heads



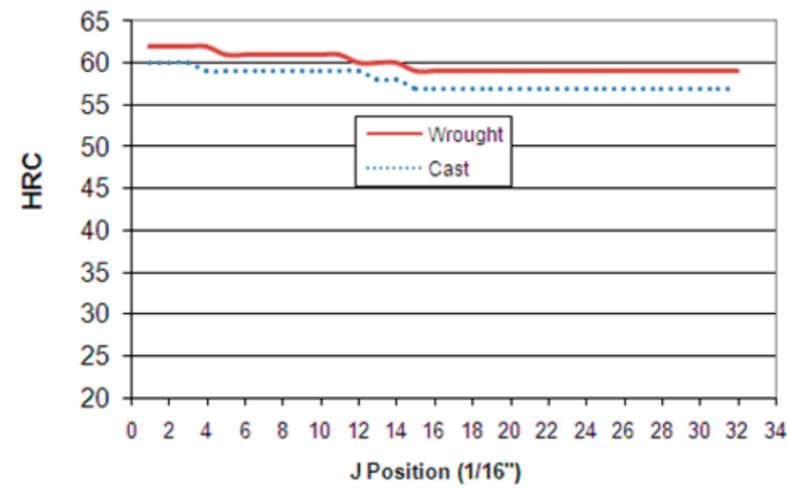


Properties

Hardenability

Jominy Hardenability of ExELL ForgeDie

Jominy Hardenability Data

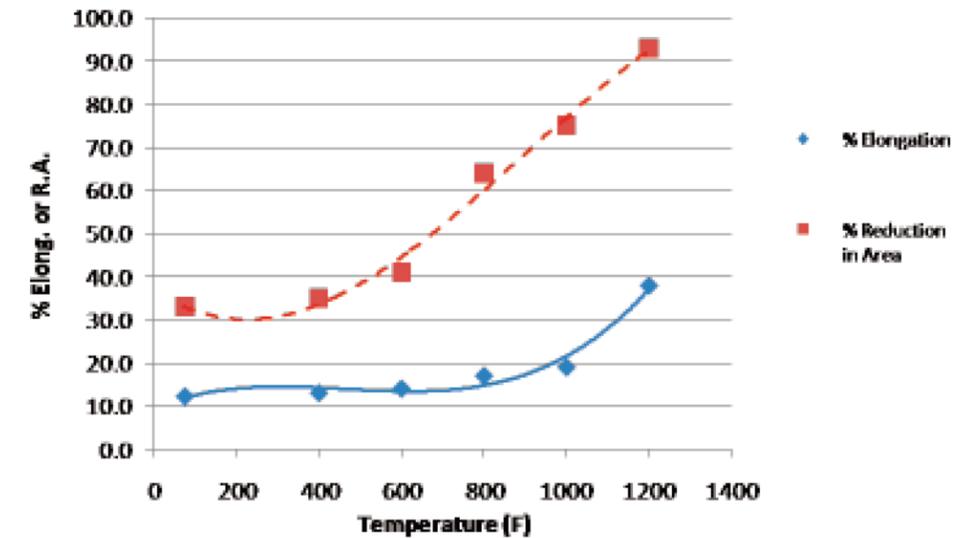
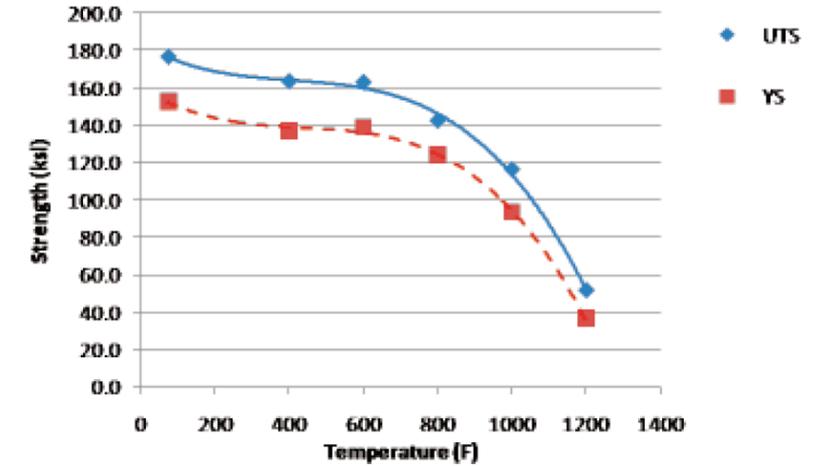


Room Temperature Tensile Properties

Typical tensile data for ExELL ForgeDie

Test Direction	UTS (ksi)	YS (ksi)	% Elong.	% RA
LT	175	150	12	33
ST	170	140	11.5	35

Elevated Temperature Tensile Properties



Charpy V-Notch Data

Temp	RT	175F	250F	300F	350F	400F	450F
CVN (ft-lb)	10	16	16	16	41	42	42

