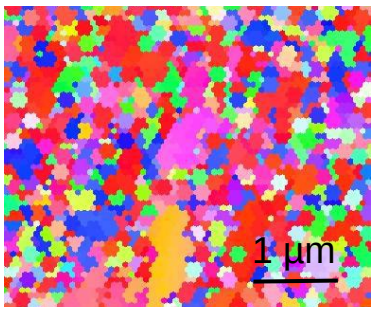
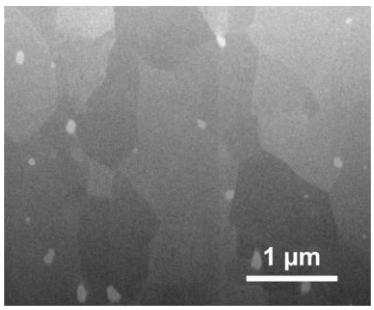
ECAP – Equal Channel Angular Pressing
for high performance nanostructured materials

ECAP materials

High strength pure metals and alloys without changing of composition

Severe plastic deformation by ECAP leads to ultrafine grained materials and increases strength and hardness of different kind of pure metals and alloys while maintaining good ductility. The chemical composition and all related properties are not changed. The materials show excellent homogeneity and can be further processed and shaped.





- excellent strength & hardness
- excellent homogeneity
- good ductility
- further conventional processing, shaping & hardening possible
- tuneable mechanical properties by different ECAP tools and process parameters
- unchanged chemical composition

Exemplary alloy	Condition	Mechanical properties (minimum values)		
		Rm [MPa]	$Rp_{0.2}$ [MPa]	A [%]
E-Cu	extruded	250	230	20
E-Cu	**ECAP**	**360**	**350**	**10**
Ti-6Al-4V ELI	ISO 5832-3	860	780	10
Ti-6Al-4V ELI	**ECAP**	**1160**	**1120**	**10**
Lean Ag-In-Ge alloy	annealed	180	95	70
Lean Ag-In-Ge alloy	**ECAP + conventional deformation**	**540**	**480**	**5**
Mg alloy EZ33	rolled	200	180	< 1
Mg alloy EZ33	**D-ECAP**	**330**	**310**	**3**

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