

AUBERT&DUVAL



High-performance alloys for
FIREARMS



Enhancing your performance

Reliability and performance to meet your safety requirements



Gun barrels

Aubert & Duval offers for this application three martensitic grades achieving the best high strength / toughness compromise on the market: ARMAD® and GKH® (CrMoV martensitic grades), and APX4 (martensitic stainless grade).

For barrels submitted to a transverse load during firing, a specific care has been placed on transverse properties of bars. Aubert & Duval grades (ARMAD®, GKH® and APX4) present a highly isotropic structure given to the material stable properties when longitudinal and transverse directions are compared.

A long history in Defense markets



Aubert & Duval designs and develops high-performance steels, superalloys and metal powders for MIM and additive manufacturing. These materials, as well as titanium and aluminum, are transformed by forging, rolling, closed-die forging, hot isostatic pressing.

As a leading provider of forging defense raw metallic materials, Aubert & Duval has over 65 years of experience within this Defense Market segment and is serving the weapons manufacturers community both for new equipment and upgrades.

Mechanism parts

For firing pins, extractors, ejectors, breeches...

All main parts in gun mechanisms are submitted to shock, intensive wear and are expected to exhibit the highest fatigue performances possible.

Main materials for mechanisms

High performance steels

HPS

A&D grade	Common name
GKP	32CrMoNiV5
FADH	14NiCrMo13-4
FDG	20NiCrMo13
FND	15NiMoSiCr10
FDMA	30NiCrMo16
819B	35NiCrMo16
819AW	E 35NiCrMo16
MARVAL18	Maraging250
MY19	Maraging300
MY24	Maraging350

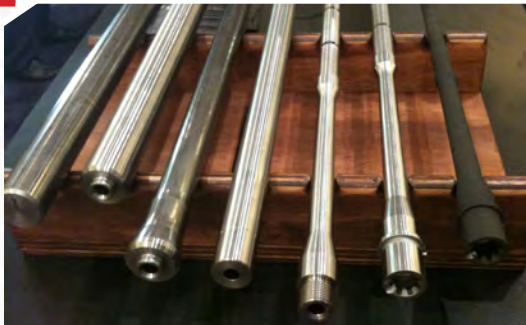
Services & Capabilities

- In house fully integrated production process
- NADCAP Heat Treatment
- Approved by major NATO gun manufacturers
- Logistics service provider
- Dedicated products for all manufacturing processes: drilling, machining, cold forming (hammer forging, swaging)
- ISO 9001, ISO 14001, OHSAS 18001
- Full Authorized Economic Operator (AEO)



Customer benefits directly coming from our metallurgical expertise

	APX4	GKH®	ARMAD®	
Type	Martensitic stainless	Martensitic CrMoV	Martensitic CrMoV	
EN designation	X4CrNiMo16-5-1	33CrMoV12-9	32CrMoV12-10	
HRC as delivered	28/34	28/34	28/34	
HRC after final hardening	38/42	38/42	38/46	
UTS (MPa)	900/1050	930/1080	1200/1250	1500/1550
YS 0,2 (MPa)	≥ 700	≥ 750	> 950	> 1250
A5d (%)	≥ 16	≥ 15	> 16	> 14
KV (RT) J	≥ 120	≥ 140	> 160	> 50
KV (-40°C) J	≥ 90	≥ 130	> 130	> 40



Fine and isotropic microstructure (x100)



Standard CrMoV

Benefits for firearm producer/designer:

- Use higher deformation yields of cold hammering and preserve more material compared with other grades
- Save production costs by cold hammering both chamber and gun barrel limiting misalignment between chamber and gun barrel.
- Use fatigue/strength upgrading opportunities of GKH® and ARMAD® to design lighter barrels.
- Ensure stable process and limit troubles during manufacturing
- Ensure perfect straightness during the cold hammering / swaging operation
- Core properties not impacted by nitriding/nitrocarburizing
- Exceptional safety margin regarding torture tests

Benefits for firearm user:

- Keeps perfect straightness during intensive firing and retains accuracy and safety
- Has longer fatigue lifetime, limiting bore ovalization, which causes a lack of accuracy
- Use a lighter weapon



Round and flat bars
Customized cuts



Learn more with our dedicated technical brochures available on our website www.aubertduval.com



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