

# LEAD FREE PRIMER DISCUSSION

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FIOCCHI'S LEADLESS AND HEAVY METAL FREE PRIMER FORMULATIONS

# FIOCCHI GROUP

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- Italian Producer of small arms ammunition and components. Lecco IT
- Founded in 1876
- Fiocchi produces over 1.9 billion primers a year.
- Fiocchi of America is a US subsidiary of Fiocchi Munizioni

# FIOCCHI LEAD FREE PRIMER PRODUCTION

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- Leadless Primer production started in the late 80's
- Fiocchi developed the heavy metal free primer formulation in the late 90's
  - No Lead, Barium, Antimony, Mercury, Copper, or Zinc
- Fiocchi has produced over 1 billion lead free/heavy metal free primers since 2003.

# FIOCCHI PRODUCES FOUR TYPES OF HEAVY METAL FREE PRIMERS (ZP)

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- 9mm Magnum Small Pistol ZP Primer
- 5.56 Magnum Small Rifle ZP Primer
- 7.62 Large Rifle ZP Primer (NATO Qualified for Italy's 7.62 ball, tracer, and link)
- 50 ZP Primer
- 209 Style Shot shell ZP Primer

# BENEFITS OF HEAVY METAL FREE FORMULATION

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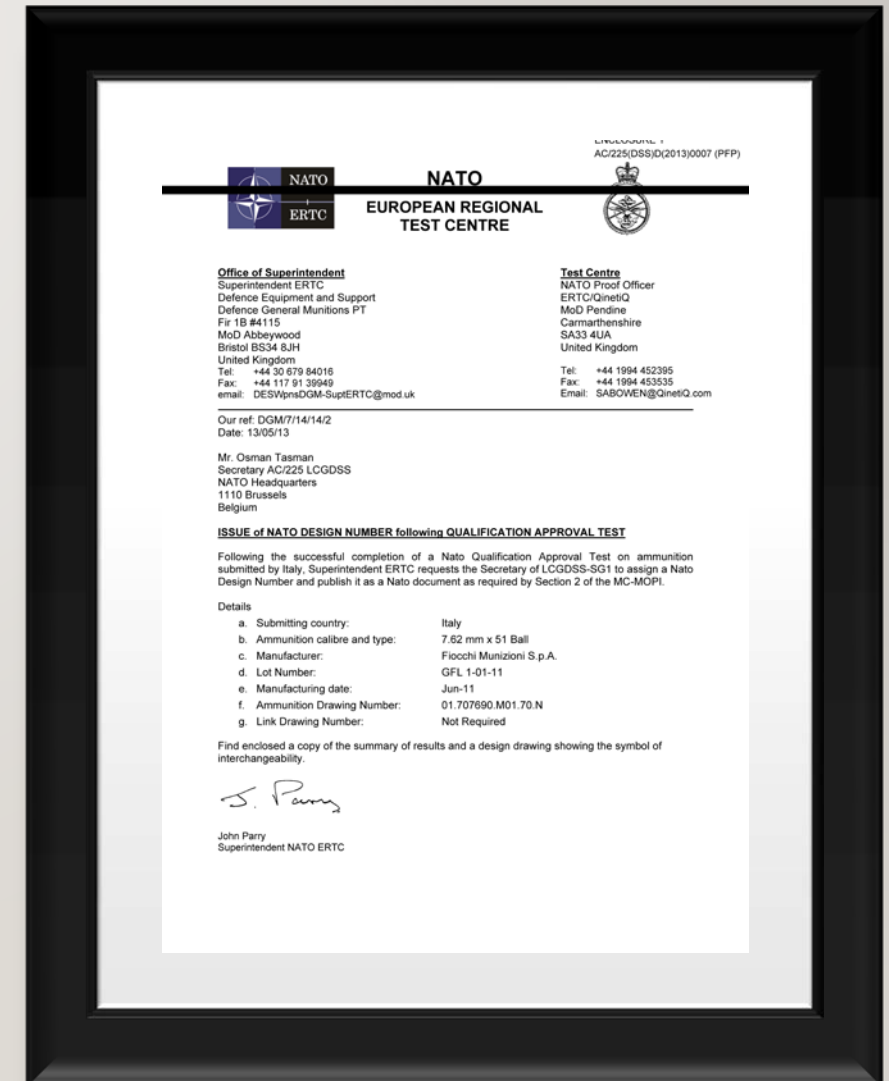
- Reduced water treatment cost during manufacturing process
- Lower risk of detonation during manufacturing process.
- Reduced personnel exposure to heavy metals during manufacturing process
- No heavy metal or zinc exposure at the firing line as a result of the primer.

# TESTING

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- NATO Qualification: Italy's 7.62 X 51(Ball, Link, Tracer) Fiocchi's Heavy Metal Free Primer
- Passed EPVAT testing at ARDEC: 5.56 with M855A1
- Passed EPVAT testing at GD St. Marks: 5.56 with M855 and M855A1
- Currently being used for training and deployment for other European militaries.
- In the last 7 months Fiocchi has optimized this mixture to improve performance at cold temperatures with spherical double base powders.

# NATO TEST REPORT



# EPVAT TESTING ST. MARKS/PICATINNY

140, 125 and -65 Degrees Fahrenheit

Ballistic Data Sheet												18-Jul-15 08:38 AM	
Military													
SPEED 842MB55A1 LC		LOADER JC/CP		PC/CP		GUNNER JF		DATA REC JF		COMMENTS:			
CUSTOMER LC		CALIBER LC 5.56mm (Green)		CASE Cases) CH/PM/CP		RANGE 7		LEAD CW		REFERENCE: LC13E000R021			
PROJ LC 1855A1 Green Proj		BARREL 245		HEAT 940		CH/PA 454 ( 1082) PORT GA 802 ( 1025)		AVERAGE 2997		SD 53360		Fst 16302	
No. samples: 2		SPECIES		VEL: 3070 ± 20 f/s		PRESS: 62,000 max psi		CORR: 18 -516		ASSESS 3015 52644		17261	
Export Mfr: SMP842-2047								ev 20 1293		230			
SD: 6 393		63											
SAMPLE: SMP842-X7359 (LC)		SMP842-X7359 (ZP)											
CHG WT: 26.4 grs.		26.4 grs.											
COATING:													
CORR AVE:		3095 54219 17280		3092 54290 17150									
CORR MAX:		3092 55947 17629		3088 56544 17398									
CORR MIN:		2987 48733 17078		3045 53087 17016									
EV:		105 7115 851		43 2977 363									
SD:		24 1648 144		11 718 87									
A.S:		A.S:		A.S:		A.S:		A.S:		A.S:		A.S:	
CHP-3rd 59157		CHP-3rd 56444		CHP-3rd 16889		CHP-3rd 16889		CHP-3rd 16889		CHP-3rd 16889		CHP-3rd 16889	
Pch-3rd 16848		Pch-3rd 16889		Pch-3rd 16889		Pch-3rd 16889		Pch-3rd 16889		Pch-3rd 16889		Pch-3rd 16889	
A.T: 0.95		A.T: 0.88		A.T: 0.88		A.T: 0.88		A.T: 0.88		A.T: 0.88		A.T: 0.88	
A.T. Max: 1.01		A.T. Max: 0.99		A.T. Max: 0.99		A.T. Max: 0.99		A.T. Max: 0.99		A.T. Max: 0.99		A.T. Max: 0.99	
SAMPLE: SMP842-X7359 (LC)		SMP842-X7359 (ZP)											
CHG WT: 26.4 grs.		26.4 grs.											
COATING:													
CORR AVE:		3140 50483 17835		3140 59525 18185									
CORR MAX:		3165 61452 18566		3163 61581 18033									
CORR MIN:		3105 56682 17596		3120 57053 17938									
EV:		60 5770 490		43 4528 1096									
SD:		17 1451 131		14 1191 395									
A:		75 5264 575		78 5335 1035									
A.S:		A.S:		A.S:		A.S:		A.S:		A.S:		A.S:	
CHP-3rd 63836		CHP-3rd 63198		CHP-3rd 17287		CHP-3rd 17287		CHP-3rd 17287		CHP-3rd 17287		CHP-3rd 17287	
Pch-3rd 17482		Pch-3rd 17287		Pch-3rd 17287		Pch-3rd 17287		Pch-3rd 17287		Pch-3rd 17287		Pch-3rd 17287	
A.T: 0.82		A.T: 0.88		A.T: 0.88		A.T: 0.88		A.T: 0.88		A.T: 0.88		A.T: 0.88	
A.T. Max: 0.90		A.T. Max: 0.90		A.T. Max: 0.90		A.T. Max: 0.90		A.T. Max: 0.90		A.T. Max: 0.90		A.T. Max: 0.90	
SAMPLE: SMP842-X7359 (LC)		SMP842-X7359 (ZP)											
CHG WT: 26.4 grs.		26.4 grs.											
COATING:													
CORR AVE:		2977 51412 17038		2949 49001 16937									
CORR MAX:		3016 54362 17471		2976 52600 17140									
CORR MIN:		2917 47294 16764		2905 47088 16742									
EV:		89 7098 717		70 3512 398									
SD:		28 1905 196		21 1147 127									
A:		89 2607 242		113 2399 213									
A.S:		A.S:		A.S:		A.S:		A.S:		A.S:		A.S:	
CHP-3rd 87127		CHP-3rd 82442		CHP-3rd 16556		CHP-3rd 16556		CHP-3rd 16556		CHP-3rd 16556		CHP-3rd 16556	
Pch-3rd 16450		Pch-3rd 16556		Pch-3rd 16556		Pch-3rd 16556		Pch-3rd 16556		Pch-3rd 16556		Pch-3rd 16556	
A.T: 0.84		A.T: 0.91		A.T: 0.91		A.T: 0.91		A.T: 0.91		A.T: 0.91		A.T: 0.91	
A.T. Max: 0.95		A.T. Max: 1.04		A.T. Max: 1.04		A.T. Max: 1.04		A.T. Max: 1.04		A.T. Max: 1.04		A.T. Max: 1.04	





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