

ARGE Lead (Pb) reduction programme:

Substantial progress to be reported

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The 4 Work Packages of the programme (1/2)

Keys:

- ⇒ Work Package 1: Tests to determine the lead release of all types of keys
- ⇒ Work Package 2: **Research project** to eliminate or at least reduce the lead content in nickel silver and brass keys (3 different machining processes)

Lock cylinders and padlocks:

- ⇒ Work Package 3: **Research project** to reduce or even better eliminate the lead content in brass rotors (broaching of keyways in rotors)

The 4 Work Packages of the programme (2/2)

All other building hardware products *):

⇒ Work Package 4: Compilation and dissemination of information on the usability of unleaded alternative materials for leaded brass, steel, aluminium alloys, etc.

(ARGE-internal work of experts from ARGE member companies)

*) e.g., mortice locks, door closers, door and window handles, hinges, emergency and panic exit devices, ...

Work Package 1: Determination of lead release of keys (1/2)

➡ **79 different types of keys** submitted by 20 companies tested

⇒ Pure metal keys: brass, nickel coated brass, nickel silver, steel

⇒ Metal keys with plastic cap on key bow

➡ **Test institute:** TÜV Rheinland (DE)

➡ **Test type:** EN 16711-3 (lead release); EN 12472 (wear simulation)

➡ **Test period:** July, August 2025



Work Package 1: Determination of lead release of keys (2/2)

➡ **Result:** All 79 keys had a lead release of $<0.05\mu\text{g}/\text{cm}^2/\text{h}$



➡ EU REACH Regulation, Annex XVII, Entry 63:

➡ Articles or accessible parts of articles shall not exceed a rate of lead release, whether coated or uncoated, of $0.05\mu\text{g}/\text{cm}^2/\text{h}$

➡ “keys and locks, including padlocks” are derogated



Work Package 2 + 3: to eliminate or at least reduce the lead content in keys and lock cylinder (1/2)

MTI – Manufacturing Technology Institute

at the Technical University in Aachen (<https://mti.rwth-aachen.de/>)



Work Package 2 + 3: to eliminate or at least reduce the lead content in keys and lock cylinder (2/2)

➡ Research projects are entering into the final phase:

➡ After the tests at MTI have been concluded, approx. 10,000 units of each, lead-free (<0.1% lead) nickel silver keys, brass keys as well as rotors for lock cylinders will be produced at the factories of participating companies

➡ Projects will end as originally scheduled end-December 2025

➡ Lead-free keys and lock cylinders seem to be technically possible, but will require substantial investments at manufacturers => long-term exercise

Work Package 4: Compilation and dissemination of information on the usability of unleaded alternative materials for leaded brass, steel, aluminium alloys, etc.

- Door closers and door coordinators
- Electric strikes
- Emergency and panic exit devices
- Handles (door and window handles) and knobs
- Hinges
- Mortise locks
- Sliding door hardware
- Surface mounted locks (night latches)
- Swing door drives
- Window automation
- Window fittings (e.g., tilt & turn furniture)

➡ WP 4 was not furthered in 2025 so far, but will be taken up again in Q4.

Take away from this presentation ...



- ➔ ARGE's ambition to support the member companies on their way towards lead-free locks and building hardware is yielding first results
- ➔ The journey towards lead-free keys and lock cylinders is not a sprint but a marathon



Thank you!

Any questions and/or comments?