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The Overlooked Use Ban

On a chromate that is already subject to authorisation today, the coming ban on the use of almost all chromium(VI) compounds, and what this means for the use of high-temperature insulation

Summary of the expert analysis

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Finding

Anyone working on a thermally stressed chromium-alloyed component under insulation that contains alkali or alkaline earth metal oxides has to check whether sodium chromate is being handled. If it is present, that handling has been prohibited since 21 September 2017 without a granted authorisation. Certainty exists only where the presence of sodium chromate can be ruled out on a sound basis, and ruling it out requires knowledge of the oxide composition of the installed insulation over the entire service history, together with a method whose recovery rate for this matrix has been established. In most cases neither is available.

To date, no leading manufacturer of high-temperature insulation has announced that it will make its products free of alkali and alkaline earth metal oxides. This concerns mineral wool, calcium silicate, E-glass products and aerogel products, to the extent that they contain these oxides.

If the authorisation question is set aside entirely, the same facts lead directly into occupational and environmental protection. Both routes end at the same decision, the oxide composition of the insulation that is placed on the chromium-alloyed hot part.

1. The facts

On chromium-alloyed hot parts, Chromium(VI) compounds form in service underneath insulation containing alkali and alkaline earth metal oxides. Sodium-oxide-bearing insulation produces sodium chromate, calcium-oxide-bearing insulation produces calcium chromate. They are present as pure powder, as dust that is readily stirred up, and as contamination of the insulation fibre. Contamination of the insulation element itself cannot be ruled out.

The preceding analysis *The Overlooked Ingredient* deals with formation and occupational protection. This analysis asks a different question. It asks which use bans the compound that has formed is already subject to.

Sodium chromate is listed as entry 22 in Annex XIV to the REACH Regulation. The sunset date was 21 September 2017. Since then the substance may no longer be placed on the market for use, or used, without a granted authorisation, under Article 56(1).

2. The concept of use

Article 3(24) of the REACH Regulation defines use as "processing, formulating, consuming, storing, keeping, treating, filling into containers, transfer from one container to another, mixing, production of an article or any other utilisation".

- Storing and keeping are expressly named. Consumption of the substance is not required.
- Treating is expressly named. Applying a reducing agent to chromate-bearing dusts and fibres is therefore a use of that substance.
- No function or purpose of the substance is required.

Anyone objecting that the compound is not used but arises confuses formation and handling. The Regulation attaches to the act.

3. Article, substance, mixture, waste

Which provision applies depends on what the material counts as at the time in question. The installed insulation element and the component in service are articles under Article 3(3). Pure, fully formed chromate powder is the substance under Article 3(1). Chromate-bearing dusts with soot, fibre abrasion, corrosion products and oil residues, as well as the contaminated insulation fibre, are mixtures under Article 3(2). From the point at which the material becomes waste, the Regulation no longer applies, under Article 2(2).

The object of the use is the material that is stored, kept, treated or transferred. A calculation that relates a few grams of chromate to several kilograms of wool relates to an object that is not being used at that moment.

4. The law as it stands today

Article 56(1) names five cases in which the ban does not apply: the granted authorisation, the use exempted in the Annex itself, the sunset date not yet reached, the application made in time and not yet decided, and the authorisation granted to the immediate downstream user.

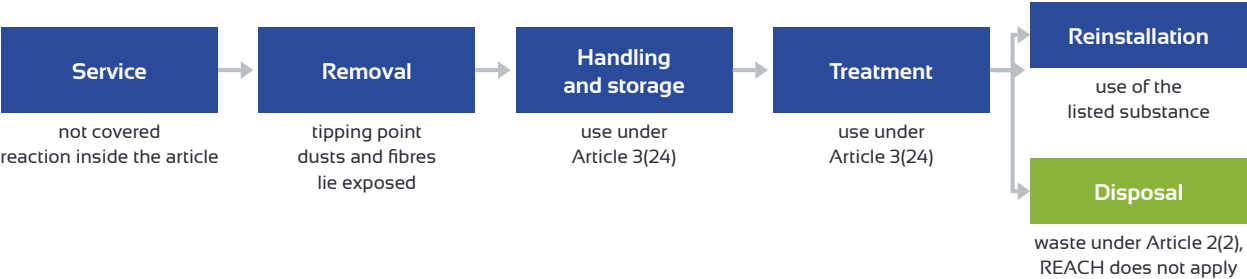
For entry 22 the latest application date was 21 March 2016 and the sunset date was 21 September 2017. The entry lists no exempted uses. For the handling of sodium chromate formed in situ, none of the five cases applies.

If a contaminated insulation element is removed, stored, treated or reinstalled after that date, a use within the meaning of Article 3(24) is present. Whether an infringement of Article 56(1) exists in an individual case is a matter for determination by the competent authority.

Calcium chromate is not listed in Annex XIV. The legal consequence today therefore depends on the material pairing. For an operator who has installed mineral wool the authorisation requirement applies; for an operator who has installed calcium silicate it does not, even though the hazard is the same.

5. The stages of a maintenance operation

The legal status of the chromate that has formed changes several times in the course of a maintenance operation.



Stage	Classification	Consequence
Service	reaction inside an article	no use; the substitution obligation for the next choice of material applies nonetheless
Removal	dusts and fibres lie exposed	from here the concept of use and the protective regime apply
Handling and storage	storage and keeping	use of a substance subject to authorisation, to the extent that sodium chromate is present
Treatment	treatment	a use in its own right; the treatment does not remove the conditions of formation
Reinstallation	use in full	additionally prohibited by the model operating instruction for mineral wool products
Disposal	waste under Article 2(2)	REACH does not apply; mixing ban under section 9a of the German Circular Economy Act

Proper removal under containment, negative pressure and controlled disposal remains possible. What cannot be achieved is routine maintenance in open operation followed by reinstallation of the material that has been removed.

6. The substitution obligation

Irrespective of the listing, Directive 2004/37/EC applies. Article 4 requires replacement of the carcinogen by a less dangerous substance so far as is technically possible. Article 5 requires the closed system where replacement is not possible. Annex III sets a binding limit value for Chromium(VI) of 0.005 mg/m³, in force since 17 January 2025.

The substitution obligation attaches to the classification and does not presuppose a listing. It therefore covers calcium chromate as well as sodium chromate and is the only one of the obligations dealt with here that addresses the source.

7. Reuse ban, maternity protection, waste law

The model operating instruction "Removal of chromate-contaminated insulation materials" in the hazardous substances information system WINGIS of the German statutory accident insurance institution for the construction industry, status 23 May 2026, contains the sentence that mineral wool products which have been removed are not to be reused. It therefore also covers insulation mattresses with a mineral wool core and an E-glass casing.

Section 11(1) of the German Maternity Protection Act prohibits activities involving an unjustifiable risk and names as a standard example classification as toxic for reproduction, germ cell mutagenic or carcinogenic in categories 1A or 1B. Sodium chromate carries all three classifications in category 1B. The exception in the third sentence requires two conditions together, and the second, an assessment regarding harm to the unborn child, is not available.

Section 9a(1) of the German Circular Economy Act declares the mixing of hazardous waste unlawful and expressly covers dilution. To the extent that insulation material, cleaning cloths, filters, covering material and disposable protective clothing fall under different waste types, collecting them together in one container is unlawful.

8. Section 5.9.3 of the German TRGS 561

The German TRGS 561 in its version of 4 May 2026 deals with this situation in a section of its own and is thus the only one of the sets of rules named here that addresses it expressly. Paragraph 2 records that Chromium(VI) compounds can form on thermally stressed chromium-alloyed industrial components such as steam pressure lines or turbines and, on thermally insulated components, can deposit in the insulation materials or assembly pastes.

Paragraph 5 defines the trigger. It states that for activities on industrial components where a Chromium(VI) contamination is present, or where it cannot be ruled out, there is a need to implement the protective measures under chapters 4.1 and 4.2 and to supplement them by further technical measures and personal protective equipment.

The trigger is the fact that contamination cannot be ruled out. The rule does not require a determination of the individual compound. In this it differs from the authorisation requirement under Article 56, and the two requirements exist side by side. Section 3.3.4(2) further provides that the concentration of 1 µg/m³ for the inhalable fraction is to be applied.

9. The restriction in procedure

On 11 April 2025 the European Chemicals Agency submitted a restriction report under Annex XV that is intended to replace the authorisation requirement for the Chromium(VI) compounds by a restriction under Annex XVII. The consultation ran from 18 June 2025 for six months; the committee evaluation is scheduled at twelve months.

Covered are all Chromium(VI) substances listed in Annex XIV except the lead chromates, together with barium chromate. Eleven of the thirteen designations carry the addition "as well as any salt with a different stoichiometry and hydration degree". The information note for the consultation states the scope without tying it back to an individual listed substance and refers to "any chromium (VI) salts with a different stoichiometry and hydration degree".

Calcium chromate is a salt of chromic acid and is covered accordingly. For sodium chromate the question is of no consequence, because the substance appears in the designation column by name.

Para.	Content of the proposed entry
1	prohibition of use on their own and in a mixture at 0.01 % by weight or more
2	derogation for intermediates within the meaning of Article 3(15)
3	derogation only where the emission limit values are met and only for the individually listed uses
4	where several use categories apply, the strictest limit value, unless the activities are strictly segregated

For the substance on its own paragraph 1 states no threshold. The value of 0.01 % by weight for mixtures is a factor of ten below the threshold that Article 56(6) provides today.

10. The closed list of uses

The Agency describes the scope of the derogation in its own presentation as a closed list of six use categories. Paragraph 3 of the proposed entry turns these into twelve individually designated uses, introduced by the words “for companies that use the substances”.

The twelve uses are the formulation of Cr(VI)-containing mixtures; electroplating onto metal and onto plastic substrates; coating objects with a paint or primer; other surface treatment processes requiring no or low currents; the machining of articles containing Cr(VI) in their coatings; use as an alkali metal dispenser in the production of photocathodes; as a corrosion or scaling inhibitor in cooling or heating systems; as a catalyst or processing aid; as a photosensitizer in UV lithography; as a colour indicator in single-use chemical breathalysers; and in pyrotechnic compositions for the defence sector.

All twelve describe the deliberate application of a purchased substance in a manufacturing process. None describes the handling of dusts and fibres that have formed on a component.

For maintenance, removal and reinstallation on insulated hot parts the derogation under paragraph 3 is therefore not available, irrespective of the exposure values measured and of how low the emissions of the site are. Paragraph 1 remains. There is no route to apply for a derogation, as there was under the authorisation procedure.

The report describes this as intended. The list is deliberately kept narrow so that uses that have already been phased out are not covered by any derogation.

11. Transition period and timing

The report proposes a uniform transition period of 18 months. It concedes that a short period does not encourage substitution and records that, if that were the objective, the period would need to be longer than five years. The short period was chosen because otherwise a lasting regulatory gap would remain.

The impact assessment uses 2028 as its base year. The procedural steps allow for an earlier date; if the opinions reach the Commission in the course of 2026, adoption in 2027 is possible. In my assessment this is to be expected. With the transition period this yields a span from the second half of 2028 to early 2030.

High-temperature insulation installed today will be in the plant at both of those dates. The transition period is tailored to sites that know they use the substance. Anyone who does not know that the substance forms at his plant derives no benefit from it, because it runs from entry into force and not from knowledge.

12. What the dossier does not address

The restriction report runs to 104 pages. High-temperature insulation does not appear in it. The word insulation occurs three times, and all three occurrences concern the insulation coating for the manufacture of grain-oriented electrical steel.

Section 3.1 of the report excludes activities where exposure results from modification of the surface of articles that do not themselves contain Cr(VI); grinding, scraping and welding are named. The sentence that immediately follows assigns self-healing and sacrificial coatings that contain Cr(VI) to the restriction. The report therefore distinguishes by the material and not by the activity. The chromate-bearing dusts and fibres under insulation form in service and are present as a finished compound when the insulation is opened.

13. Consequences for capital goods

Article 56(1) prohibits not only use but also placing on the market for use. Under Article 3(12) the supply or making available to a third party, whether in return for payment or free of charge, is sufficient.

- An insulation element that has never been in service carries no chromate. Article 56 does not apply to it; the substitution obligation nevertheless governs the choice of material.
- A removed exchange part is to be treated as contaminated under the manufacturers' notices until the contrary has been established. Storage and keeping are uses, and they continue for as long as the material is held.
- Return, sale and supply to a repairer are supplies to third parties. Two manufacturers already require neutralisation and visible marking, or packaging with a hazard indication, for this purpose.
- With the transition into waste the Regulation ceases to apply. That is the only route out of the use restriction, and it ends the object as a capital good.

Treating is itself a use. Two manufacturers have independently named the limits of treatment. On citric acid treatment it is stated that the procedure reduces the risk of airborne dust but does not guarantee that the area is free of Cr(VI). On neutralisation before return or scrapping it is stated that a component subjected to thermal stress again no longer counts as neutralised.

An insulation element that may not be reinstalled after the first maintenance does not reach the service life for which it was purchased. The residual value is lost, and the replacement falls due again at every further maintenance interval.

14. The manufacturers' notices

The notices are independent of one another, come from different countries and concern different product groups. They agree on the conditions of formation and differ in the temperature threshold.

Issuer	Document	Key statement
Wärtsilä Finland	Service Bulletin WS00Q563, issue 4 of 20 June 2024	three conditions: a calcium-bearing product, above 400 °C, chromium steel in contact; test kits on site when work begins
Mercedes-Benz	Service Information SI00.10-P-0054A of 7 August 2025	formation above 300 °C; neutralisation and visible marking on return and scrapping
MAN Truck & Bus	Service Information 8339SM of 13 December 2023	calcium chromate above 300 °C from insulation materials or assembly pastes; demonstrated in its own analyses
Rolls-Royce	Notice to Suppliers NTS 559 of 3 September 2022	Cr(VI) may be present even without visible residue; assume contamination until cleaned
Caterpillar	Technical Bulletin 2175/00 of 23 August 2021	confirmed by independent laboratory testing; residues cannot be excluded
Siemens	technical information on industrial steam turbines	four conditions; calcium sources are assembly pastes, insulation and heat-conducting cement
HUG Engineering	Chromium (VI) Precautionary Notice	the operator checks before the insulation is removed; testing and decontamination are not part of the service agreement
Proventia	Information Bulletin 2/2025	risk during assembly, disassembly, maintenance and end-of-life recycling; recommends calcium-free assembly pastes

All of them govern occupational protection at the moment of the activity. None of these documents mentions Annex XIV, the authorisation requirement or Article 56. The earliest notice examined here dates from 9 November 2020; the sunset date for sodium chromate was 21 September 2017. The question whether this connection ought to have been seen arises.

15. Road vehicles

A heat shield is high-temperature insulation. The conditions of formation are the same as on an industrial plant. What differs is the size of the components, the number of units and the fact that maintenance takes place in a workshop.

The service information of a German vehicle manufacturer of 7 August 2025 applies to all models, including light commercial vehicles and small cars. The components concerned are the exhaust gas turbocharger, exhaust gas recirculation with valve, cooler and lines, the exhaust manifold, SCR and oxidation catalytic converters, the diesel particulate filter and the connecting clamps. It requires FFP3 respiratory protection for overhead work from a mileage of more than 20,000 kilometres and thereby sets a mileage from which it assumes contamination. On the passenger compartment it records that the air ducting of the interior ventilation means any risk inside the cabin can effectively be ruled out; it makes no statement on the engine bay outside workshop activity.

The bulletin of a British sports car manufacturer of 27 August 2025 names the link pipe heat shields, exhaust manifolds, the exhaust side of the turbocharger, V-band clamps and mufflers, and records that this is an industry-wide matter that is not confined to that manufacturer.

The German statutory accident insurance institution for the transport sector records in its information on Cr(VI) exposure, status August 2026, that it is still investigating whether insulation work on car engines in vehicle workshops causes relevant exposures. That investigation concerns the level of exposure. The trigger of the protective regime is the fact that contamination cannot be ruled out, and Article 56 asks whether the substance is present.

The same sequence of stages applies in the workshop as in plant maintenance. Turbochargers, particulate filters and SCR components are handled as exchange parts on a large scale. They are the same components that the service information documents list.

16. What is overlooked

- Anyone pointing to the unintended formation passes over Article 3(24), which attaches to the act and requires neither function nor purpose.
- Anyone converting the concentration to the insulation element has changed the object. Pure chromate powder is the substance on its own, and neither provision states a threshold for it.
- Anyone quoting the sentence that the formation mechanism has not been clarified passes over the fact that Annex XIV attaches to substance identity and not to the route of formation. Article 3(1) expressly includes impurities resulting from the process used.
- Anyone restricting the salt clause to the same cation relies on an example and passes over the wording.
- Anyone invoking the exclusion of process-generated formation equates two situations that the report keeps apart, and additionally relies on a provision that is not yet in force.
- Anyone presenting the absence of an analytical method as an all-clear turns an open question into an answered one. A method that does not exist cannot produce a negative result.
- Anyone pointing to the absence of a practice describes a state of affairs. The list of uses in the draft restriction was compiled from reported uses; a use that nobody reported could not appear in it.

17. Conclusion

Anyone working on a thermally stressed chromium-alloyed component under insulation containing alkali or alkaline earth metal oxides has to check whether sodium chromate is being handled. If it is present, that handling has been prohibited since 21 September 2017 without a granted authorisation. Certainty exists only where the presence can be ruled out on a sound basis, and ruling it out requires knowledge of the oxide composition over the entire service history together with a method whose recovery rate has been established. In most cases neither is available.

With the entry into force of the restriction the retreat to substance identity falls away. Once the insulation is opened, a use without authorisation can then no longer be ruled out in practice, and which compound has formed is of no consequence.

To date, no leading manufacturer of high-temperature insulation has announced that it will make its products free of alkali and alkaline earth metal oxides. This concerns mineral wool, calcium silicate, E-glass products and aerogel products, to the extent that they contain these oxides. Under specification ASTM D578/D578M-23, European E-glass with 0 to 2 % by weight of alkali metal oxides is largely free of sodium oxide and carries the alkaline earth side in full, at 16 to 25 % by weight of calcium oxide.

If the authorisation question is set aside entirely, the same facts lead directly into occupational and environmental protection. Both routes end at the same decision, the oxide composition of the insulation that is placed on the chromium-alloyed hot part.

The full references are set out in the expert analysis *The Overlooked Use Ban*, version 0.18, parts A to F. A chapter on the national regulatory framework of the United Kingdom is still to be added.