

Surface Treatment



REACH influence on surface treatments

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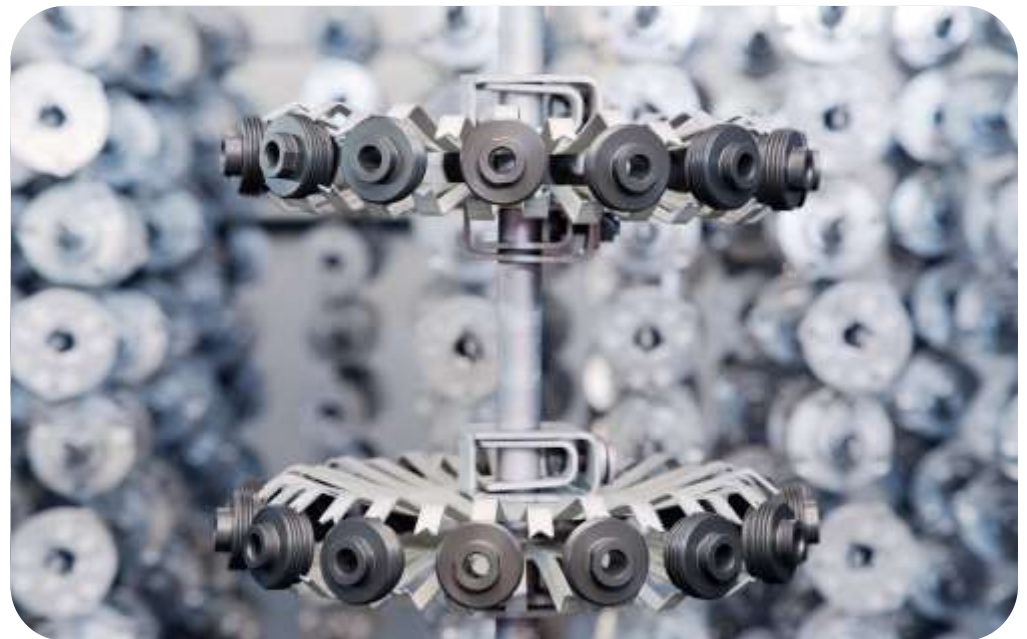
MPTB stakeholder day, 16th May 2017





Scope

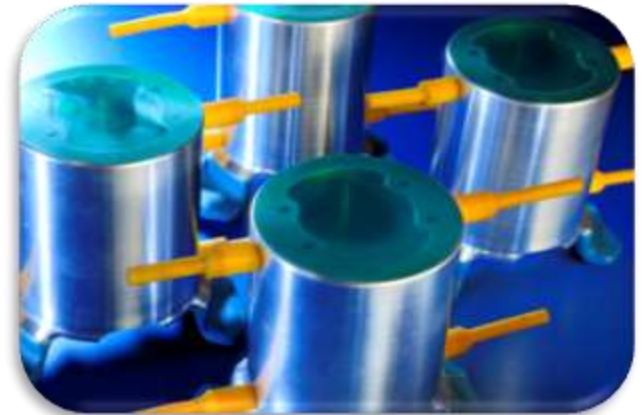
- Introduction to Surface Treatment Nederland (STN)
- REACh Impact on CrO_3
- Transition Management
- Surface Treatment situation
- Upcoming questions
- REACh consequences
- Research and Development





Introduction to Surface Treatment

- Development and application of coatings on aluminium alloys
- Almost 40 years knowledge and expertise
- Focus on technical and quality aspects
- From single parts to large series
- Practical customized solutions
- Multiple and combined treatments and masking solutions
- In accordance with the highest standards : Nadcap, ISO 9001-2008, AS9100
- Production by means of 5 surfacing-lines
- Partnership with GTM Advanced Structures with additional mechanical testing expertise
- Companies laboratories for development of new processes





Industrial markets

AEROSPACE

- Aeronautics
- Space
- Defense

INDUSTRY

- Semi Conductor Industry
- Automotive
- Machine manufacturing
- Medical Equipment
- Special products



References

AIRBUS – BAE – BOEING – FOKKER- KONGSBERG-
LATECOERE- LOCKHEED MARTIN- PREMIUM AEROTEC
PFW- RAYTHEON COMPANY- THALES

REACH Impact on CrO₃

➔ Replacement of chromium Trioxide CrO₃

- Used in several electrolytes for corrosion protection of aluminum alloys
- Sunset Date : 21st September 2017

➔ Actions taken in case no replacement possible/on time

- Application for Authorization
- Surface Treatment member of the CTAC since 2012

1- Fabricant

- 7 applicants
- Surface treatment concerned by 2 uses in ECHA application for authorization

Consultation number 0032-04

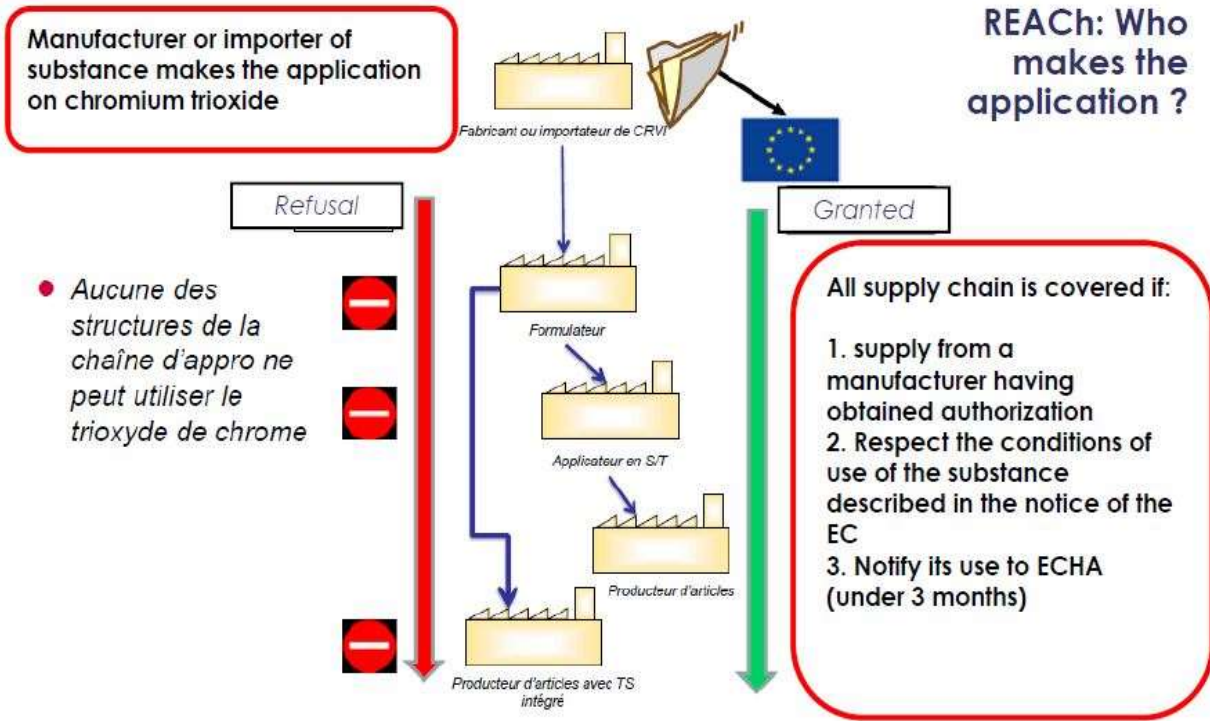
“Surface treatment for applications in the aeronautics and aerospace industries, unrelated to Functional chrome plating or Functional chrome plating with decorative character”

Consultation number 0032-05

“Surface treatment (except passivation of tin-plated steel (ETP)) for applications in various industry sectors namely architectural, automotive, metal manufacturing and finishing, and general engineering (unrelated to Functional chrome plating or Functional chrome plating with decorative character)”

Transition Management

The authorization granted to an upstream actor will relieve downstream users who wish to continue using chromium trioxide without having to obtain their own authorization





Transition Management

Consequences for Surface Treatment ?

- ✓ Internal decision to maintain the use of Chromium trioxide if authorization granted
- ✓ Ensure our chemical supplier is covered by Authorization file.
- ✓ Implementation and respect of the conditions of uses of the substances described in the notice of European Commission

Safety requirements after sunset date

- Exposure limit value $<1 \mu\text{g}/\text{m}^3$
- Local exhaust ventilation required
- Personal protection



STN situation

2-OEM

- Development phase leaded by OEM and CTAC members
- Implementation of alternatives selected and validated by OEM 's to supply chain

➔ *Chemical Conversion Coatings*

Most promising alternatives based on Chrome III (chromium trivalent)
 Running process in STN, qualified by a few OEM

Processes with CrO ₃	Alternatives chrome free
Chemical Conversion Coating (CCC) conform AIPS 02-05-001 / BAC5719 / MIL-DTL-5541	Surtec 650 included into QPD-81706 belonging to MIL-DTL-5541 Test: corrosion resistance / coating weight

STN situation

→ Chromic Acid Anodizing

Ongoing testing of alternatives , mainly thin sulfuric based, anodizing layers

Processes with CrO ₃	Alternatives chrome free
Chromic Acid Anodizing (CAA) conform AIPS 02-01-001 / BAC5019/MIL-A-8625	For Paint Application
	Tartaric Sulfuric Acid Anodizing (TSA) conform AIPS 02-01-003 (Airbus related projects)
	Boric Sulfuric Acid Anodizing (BSA) conform BAC 5632 (Boeing related projects)
	For Bonding Application
Phosphoric Sulfuric Acid Anodizing (PSA) conform AIPS 02-01-006 (Airbus related projects) – Approval ongoing	




Upcoming questions...

- Current alternatives don't reach same performance as CAA
- Additional research essential for CCC

Some Cr VI free acidic surface treatment are still used in combination with Cr VI –containing primer or sealing

Others processes involved by REACH regulations

- ➔ dichromate sealing with no official alternatives determined by OEM's
- ➔ Paint BR-127: Strontium dichromate (Sunset date 22-01-2019)



REACH consequences

- Research lead to a variety of specified processes
 - ➔ Implementation and qualification by primes according to the specification
- Strategic and economic decisions made by Management Team
- Huge investment essential for competitiveness of market
- STN jointly cooperating with OEM in order to define alternative processing.
- Dependent from OEM's decisions for projects after sunset date

Surface Treatment continues research, development and implementation of alternatives for chromium 6 compounds ➔ Optimization of processes



Research & Development

Our own research and development laboratories with Extensive chemical and physical control equipment

Equipment in Surface Treatment

- Methods for chemical analysis
- ICP spectrometry for determination of elements at ppm-level
- Microscopic research
- Abrasion resistance
- Corrosion resistance (Salt Spray Testing)
- Coating Layer Thickness
- Hardness (Micro Vickers)
- Roughness, adhesion and gloss





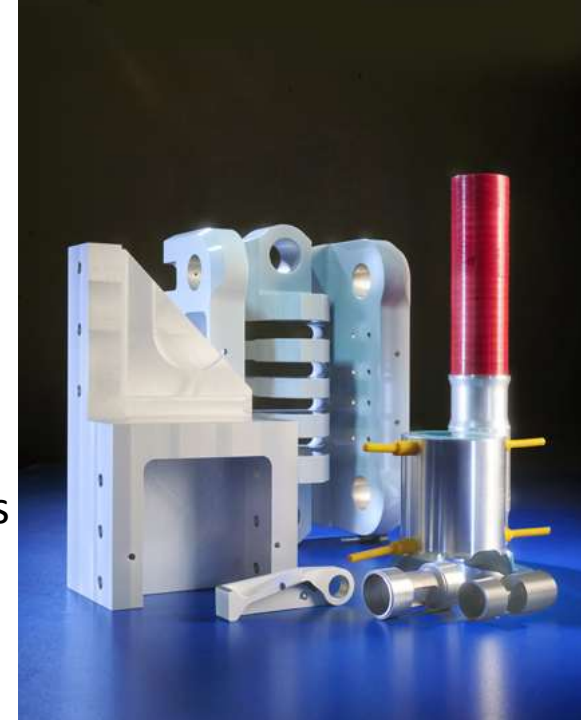
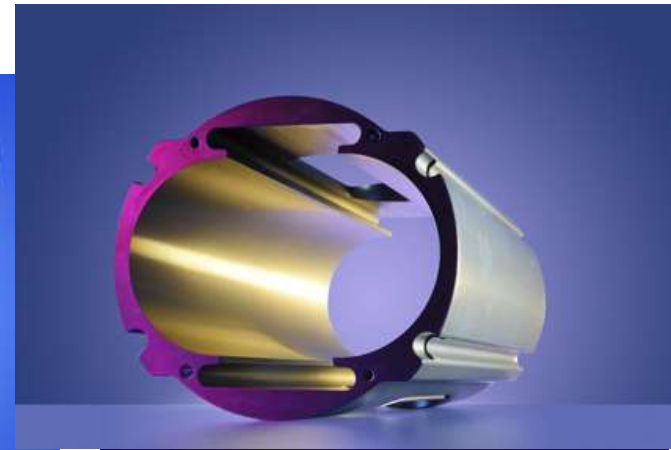
Research & Development

Equipment in GTM

- Fatigue Test
- Lap shear strength Test (RT, High Temp, Low Temp)
- Wedge Test



Questions ?



Surface Treatment



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