Succinct Summary of Representative Risk Management Measures (RMMs) and Operational Conditions (OCs)

| Legal name of applicant(s): | AKZO Nobel Car Refinishes B.V.; |
|-----------------------------|---|
| | Habich GmbH; |
| | Henkel Global Supply Chain B.V.; |
| | Indestructible Paint Ltd; |
| | Finalin GmbH; |
| | Mapaero; |
| | PPG Central (UK) Ltd in its legal capacity as Only Representative of PRC DeSoto International Inc OR5; |
| | PPG Industries (UK) Ltd; |
| | PPG Coatings SA; |
| | Aviall Services Inc. |
| Submitted by: | AKZO Nobel Car Refinishes B.V. |
| Substance: | Strontium chromate, EC Number: 232-142-6, CAS Number: 7789-06-2 |
| Use title: | Formulation of Mixtures |
| | Application of paints, primers and specialty coatings containing Strontium Chromate in the construction of aerospace and aeronautical parts, including aeroplanes / helicopters, spacecraft, satellites, launchers, engines, and for the maintenance of such constructions, as well as for such aerospace and aeronautical parts, used elsewhere, where the supply chain and exposure scenarios are identical |
| Use number: | Use 1, 2 |

November 2015

Formulation of Mixtures and Application of paints, primers and specialty coatings containing Strontium Chromate in the construction of aerospace and aeronautical parts, including aeroplanes / helicopters, spacecraft, satellites, launchers, engines, and for the maintenance of such constructions, as well as for such aerospace and aeronautical parts, used elsewhere, where the supply chain and exposure scenarios are identical

| ECS and WCS | Task (ERC/spERC or PROC) | Annual amount per site (tonnes/ye ar) | Technical RMMs†, including: *Containment, *Ventilation (general, LEV) *customized technical installation, etc | Organisational RMMs†, including: *Duration and Frequency of exposure *OSH management system *Supervision *Monitoring arrangements *Training, etc | PPE† (characteristic s) | Other conditions | Effectiveness of waste water and waste air treatment (for ERC) | Release factors: water, air and soil (for ERC) | Detailed info. in CSR (page) |
|----------------|--------------------------------------|---|--|--|-------------------------|------------------|--|---|---------------------------------------|
| ECS 1 | ERC 2: Formulation of Mixtures | 25 tonnes/year [as Cr(VI)] | All solid and any liquid waste is collected. The collected waste is either directly forwarded to an external licensed waste management company for disposal, or Cr(VI) in wastewater is treated onsite by reduction to Cr(III). In the case of onsite treatment, the treated waste is either recycled or forwarded to an external licensed waste management company for disposal Exhaust air is passed through filters or wet scrubbers according to best available technique before being released to atmosphere | | | | Negligible release to waste water Air emission abatement: at least 99% efficiency § | Water: Negligible Air: 5.0E-05 Soil: 0 (no release to soil) | 16-25 |

| WCS 1 | PROC 1: | General ventilation: | Duration of activity: | | Concentration of | 24 |
|-------|------------------|---------------------------|-------------------------|------------|------------------|-------|
| | Delivery and | Basic (1-3 ACH per hour) | < 8 hours | | Cr(VI): | |
| | storage of raw | • | | | < 25% | |
| | material | Containment: | Occupational Health and | | | |
| | | Closed system (sealed | Safety Management | | Place of use: | |
| | | containers or bags) | System: Advanced | | Indoor | |
| WCS 2 | PROC 8b: | General ventilation: | Duration of activity: | PPE* | Concentration of | 25/26 |
| | Decanting and | Basic (1-3 ACH per hour) | < 1 hour | | Cr(VI): | |
| | weighing of | | | RPE**: Yes | < 25% | |
| | solids | Local exhaust ventilation | Occupational Health and | (with APF | | |
| | | | Safety Management | 30) | Place of use: | |
| | | | System: Advanced | | Indoor | |
| WCS 3 | PROC 8b: | General ventilation: | Duration of activity: | PPE | Concentration of | 26 |
| | Transfer to | Basic (1-3 ACH per hour) | < 4 hours | | Cr(VI): | |
| | mixing vessel | _ | | RPE: Yes | < 25% | |
| | | Local exhaust ventilation | Occupational Health and | (with APF | | |
| | | | Safety Management | 30) | Place of use: | |
| | | | System: Advanced | | Indoor | |
| WCS 4 | PROC 2-5, PROC | General ventilation: | Duration of activity: | PPE | Concentration of | 26/27 |
| | 26: Mixing by | Basic (1-3 ACH per hour) | < 8 hours | | Cr(VI): | |
| | dilution, | | | RPE: Yes | < 25% | |
| | dispersion, wet- | Local exhaust ventilation | Occupational Health and | (with APF | | |
| | grinding (closed | | Safety Management | 30) | Place of use: | |
| | or open process) | | System: Advanced | | Indoor | |
| WCS 5 | PROC 9: Transfer | General ventilation: | Duration of activity: | PPE | Concentration of | 27/28 |
| | to small | Basic (1-3 ACH per hour) | < 8 hours | | Cr(VI): | |
| | containers | | | | < 10% | |
| | (including | Local exhaust ventilation | Occupational Health and | | | |
| | filtering) | | Safety Management | | Place of use: | |
| | | | System: Advanced | | Indoor | |

| WCS 6 | PROC 8b: | General ventilation: | Duration of activity: | PPE | Concentration of | | 28 |
|--------|-----------------|----------------------------|-------------------------|---------------|------------------|--|-------|
| | Cleaning of | Basic (1-3 ACH per hour) | < 1 hour | | Cr(VI): | | |
| | equipment | | | RPE: Yes | < 25% | | |
| | | Local exhaust ventilation | Occupational Health and | (with APF | | | |
| | | | Safety Management | 30) | Place of use: | | |
| | | | System: Advanced | | Indoor | | |
| WCS 7 | PROC 8b: | General ventilation: | Duration of activity: | PPE | Concentration of | | 28/29 |
| | Maintenance of | Basic (1-3 ACH per hour) | < 30 min | | Cr(VI): | | |
| | equipment | | | RPE: Yes | < 25% | | |
| | | Local exhaust ventilation | Occupational Health and | (with APF | | | |
| | | | Safety Management | 30) | Place of use: | | |
| | | | System: Advanced | | Indoor | | |
| WCS 8 | PROC 1: Storage | General ventilation: | Duration of activity: | | Concentration of | | 30/31 |
| | of formulation | Basic (1-3 ACH per hour) | < 8 hours | | Cr(VI): | | |
| | | | | | < 10% | | |
| | | Containment: | Occupational Health and | | | | |
| | | Closed system | Safety Management | | Place of use: | | |
| | | | System: Advanced | | Indoor/outdoors | | |
| WCS 9 | PROC 15, PROC | General ventilation: | Duration of activity: | PPE for spray | Concentration of | | 31-33 |
| | 7: Laboratory | Good natural ventilation | < 2.5 hours | booth | Cr(VI): | | |
| | analysis | | | DDE W | 5-10% | | |
| | (sampling, | Fixed capturing hood | | RPE: Yes | DI C | | |
| | laboratory | (90% efficiency) | | (with APF | Place of use: | | |
| | analysis, test | | | 30) | Indoor | | |
| | spraying) | | | | | | |
| WCS 10 | PROC 8b: Waste | General ventilation: | Duration of activity: | PPE | Concentration of | | 34/35 |
| WCS 10 | management | Good natural ventilation | < 30 min | IIL | Cr(VI): | | 34/33 |
| | management | Good natural ventilation | < 50 mm | RPE: Yes | < 25% | | |
| | | Low level containment | | (with APF | < 23 /0 | | |
| | | "Physical containment or | | 30) | Place of use: | | |
| | | enclosure of the source of | | 30) | Indoor | | |
| | | emission. The air within | | | muoor | | |
| | | the enclosure is not | | | | | |
| | | actively ventilated or | | | | | |
| | | extracted. The enclosure | | | | | |
| | | is not opened during the | | | | | |
| | | activity." Advanced | | | | | |
| | | REACH Tool (ART) | | | | | |
| | | version 1.5 | | | | | |

| ECS 2 | ERC 5: | 10 | All solid and any liquid | | | | Negligible | Water: Negligible | 37-40 |
|-------|---------------------|-------------|-----------------------------|-------------------------|-----|--------------------|------------------|---------------------|-------|
| 2002 | Application of | tonnes/year | waste is collected. The | | | | release to waste | | |
| | paints, primers | [as Cr(VI)] | collected waste is either | | | | water | Air: 5.0E-03§ | |
| | and specialty | , ,, | directly forwarded to an | | | | | | |
| | coatings | | external licensed waste | | | | Air emission | Soil: 0 (no release | |
| | containing | | management company for | | | | abatement: at | to soil) | |
| | Strontium | | disposal, or Cr(VI) in | | | | least 99% | | |
| | Chromate in the | | wastewater is treated on- | | | | efficiency§ | | |
| | construction of | | site by reduction to | | | | - | | |
| | aerospace and | | Cr(III). In the case of on- | | | | | | |
| | aeronautical parts, | | site treatment, the treated | | | | | | |
| | including | | waste is either recycled or | | | | | | |
| | aeroplanes / | | forwarded to an external | | | | | | |
| | helicopters, | | licensed waste | | | | | | |
| | spacecraft, | | management company for | | | | | | |
| | satellites, | | disposal | | | | | | |
| | launchers, | | | | | | | | |
| | engines, and for | | Exhaust air is passed | | | | | | |
| | the maintenance | | through filters or wet | | | | | | |
| | of such | | scrubbers according to | | | | | | |
| | constructions, as | | best available technique | | | | | | |
| | well as for such | | before being released to | | | | | | |
| | aerospace and | | atmosphere | | | | | | |
| | aeronautical parts, | | | | | | | | |
| | used elsewhere, | | | | | | | | |
| | where the supply | | | | | | | | |
| | chain and | | | | | | | | |
| | exposure | | | | | | | | |
| | scenarios are | | | | | | | | |
| | identical | | | | | | | | |
| WCS 1 | PROC 1: | | General ventilation: | Duration of activity: | | Concentration of | | | 40/41 |
| | Delivery and | | Basic (1-3 ACH per hour) | < 8 hours | | Cr(VI): Minor (5 - | | | |
| | storage of raw | | | | | 10%) | | | |
| | material | | Closed system (minimal | Occupational Health and | | | | | |
| | | | contact during routine | Safety Management | | Place of use: | | | |
| | | | operations) | System: Advanced | | Indoor | | | |
| WCS 2 | PROC 5: | | General ventilation: | Duration of activity: | PPE | Concentration of | | | 41/42 |
| | Decanting, | | Good natural ventilation | < 60 min | | Cr(VI): Minor | | | |
| | mixing and filling | | | | | (5 – 10%) | | | |
| | of guns, cups or | | Fixed capturing hood | | | DI C | | | |
| | small containers | | (90% efficiency) | | | Place of use: | | | |
| | | | | | | Indoor | | | |

| WCS 3 | PROC 7: Surface treatment by spraying (large sized parts) in a purpose-designed room | Downward laminar flow booth | Duration of activity: < 240 min | PPE RPE: Yes (with APF 1000) | Concentration of Cr(VI): Minor (5 - 10%) Spray room | 43 |
|-------|---|--|--|-------------------------------|---|-------|
| WCS 4 | PROC 7: Surface treatment by spraying in spray cabin/spray booth | Fixed capturing hood (90% efficiency) | Duration of activity: < 120 min | PPE RPE: Yes (with APF 30) | Concentration of Cr(VI): Minor (5 - 10%) Spray room | 44/45 |
| WCS 5 | PROC 7: Surface treatment by spraying outside of paint-booth | General ventilation: Good natural ventilation | Duration of activity: < 30 min Frequency of activity: 2 days/week | PPE RPE: Yes (with APF 30) | Concentration of Cr(VI): Minor (5 - 10%) Place of use: Indoor/ outdoors | 46/47 |

| WCS 6 | PROC 10: Surface treatment by brushing/rolling (small to medium sized parts) | General ventilation: Good natural ventilation Fixed capturing hood (90% efficiency) | Duration of activity: < 240 min | PPE RPE: Yes (with APF 30) | Concentration of Cr(VI): Minor (5 - 10%) Place of use: Indoor | 47/48 |
|--------|---|--|---|-------------------------------------|---|-------|
| WCS 7 | PROC 10: Surface treatment by brushing (very small parts/touch- up) | General ventilation: Good natural ventilation | Duration of activity: < 30 min | PPE | Concentration of Cr(VI): Minor (5 - 10%) Place of use: Indoor/outdoors | 49/50 |
| WCS 8 | PROC 26: Drying/self- curing | General ventilation: Good natural ventilation | Duration of activity: < 120 min (< 30 min for activities of workers within 1 m distance;<90 min for activities of workers outside 1 m distance) | PPE | Concentration of Cr(VI): Small (1 – 5 %) Place of use: Indoor | 50-52 |
| WCS 9 | PROC 26: Drying/heat- curing | General ventilation: Good natural ventilation Fixed capturing hood (90% efficiency) Fully enclosed process | Duration of activity: < 480 min | PPE | Concentration of Cr(VI): Small (1 – 5 %) Place of use: Indoor | 52/53 |
| WCS 10 | PROC 26: Drying/self- curing of large sized parts | General ventilation: Good natural ventilation | Duration of activity: < 360 min | PPE | Concentration of Cr(VI): Small (1 – 5 %) Place of use: Indoor | 54/55 |
| WCS 11 | PROC 8b: Cleaning of equipment – tools cleaning (closed system) | General ventilation: Good natural ventilation Fixed capturing hood (90% efficiency) Fully enclosed process | Duration of activity: < 60 min | PPE | Concentration of Cr(VI): Minor (5 - 10%) Place of use: Indoor | 56/57 |

| WCS 12 | PROC 8b: Cleaning and maintenance of equipment – tools cleaning | Specialised room ventilation with more than 10 ACH | Duration of activity: < 60 min | PPE | Concentration of Cr(VI): Minor (5 - 10%) Place of use: Indoor (Spray room/paint mixing room) | 58 |
|--------|--|--|--|--|---|-------|
| WCS 13 | PROC 8b: Cleaning – paint cabin and ancillary areas | General ventilation: Good natural ventilation | Duration of activity: < 60 min | PPE | Concentration of Cr(VI): Minor (5 - 10%) Place of use: Indoor | 59/60 |
| WCS 14 | PROC 8a: Infrequent maintenance activities | General ventilation: Good natural ventilation | Duration of activity: < 240 min Frequency of activity: 1 time/month | PPE RPE: Yes (with APF 30) | Concentration of Cr(VI): Minor (5 - 10%) Place of use: Indoor | 60/61 |
| WCS 15 | PROC 21, 24: Machining operations on small to medium sized parts containing Cr(VI) on an extracted bench/extraction booth including cleaning | General ventilation: Good natural ventilation Fixed capturing hood/Vacuum cleaner (HEPA filter with at least 99.00 % reduction) | Duration of activity: < 180 min | PPE RPE: Yes (with APF 10) If individual workplace monitoring data do not confirm negligible exposure below I µg/m³ | The Cr(VI) weight fraction of the part is assumed to be < 0.1%) In case of lower or higher Cr(VI) content, OCs and RMMs could be adjusted for that different situation Place of use: Indoor | 62/63 |

| WCS 16 | PROC 21, 24: Machining operations on small to medium sized surfaces containing Cr(VI) on an extracted bench/extraction booth including | General ventilation: Good natural ventilation Fixed capturing hood/Vacuum cleaner (HEPA filter with at least 99.00 % reduction) | Duration of activity: < 180 min | PPE RPE: Yes (with APF 400) If individual workplace monitoring data do not | The Cr(VI) content of the surface is assumed to be < 13 %. In case of lower or higher Cr(VI) content, OCs and RMMs could be adjusted for that | 64 |
|--------|--|---|------------------------------------|---|---|-------|
| | cleaning | | | confirm negligible exposure below 1 µg/m³ | different situation Place of use: Indoor | |
| WCS 17 | PROC 21, 24: Machining operations in large work areas on parts containing Cr(VI) including cleaning | General ventilation: Good natural ventilation Wetting at the point of release/on-tool extraction/vacuum cleaning (90.00 % reduction) | Duration of activity: < 60 min | PPE RPE: Yes (with APF 10) If individual workplace monitoring data do not confirm negligible exposure below 1 µg/m³ | The Cr(VI) weight fraction of the part is assumed to be < 0.1%) In case of lower or higher Cr(VI) content, OCs and RMMs could be adjusted for that different situation Place of use: Indoor | 66 |
| WCS 18 | PROC 21, 24: Machining operations in large work areas on surfaces containing Cr(VI) including cleaning | General ventilation: Good natural ventilation Wetting at the point of release/on-tool extraction/vacuum cleaning (90.00 % reduction) | Duration of activity: < 60 min | PPE RPE: Yes (with APF 400) If individual workplace monitoring data do not confirm negligible exposure below 1 µg/m³ | The Cr(VI) content of the surface is assumed to be < 13 %. In case of lower or higher Cr(VI) content, OCs and RMMs could be adjusted for that different situation Place of use: Indoor | 67/68 |

| WCS 19 | PROC 21, 24: | General ventilation: | Duration of activity: | PPE | The Cr(VI) weight | | 69/70 |
|---------|-------------------|--------------------------|-----------------------|---------------------|----------------------|--|-------|
| | Machining | Good natural ventilation | < 60 min | | fraction of the part | | |
| | operations on | | | RPE: Yes | is assumed to be | | |
| | parts containing | | | (with APF | < 0.1%) | | |
| | Cr(VI) in small | | | 400) | In case of lower or | | |
| | work areas | | | If individual | higher Cr(VI) | | |
| | including | | | workplace | content, OCs and | | |
| | cleaning | | | monitoring | RMMs could be | | |
| | cicuming | | | data do not | adjusted for that | | |
| | | | | confirm | different situation | | |
| | | | | negligible | aijjereni siiuanon | | |
| | | | | | Place of use: | | |
| | | | | exposure below 1 | Indoor | | |
| | | | | | Illuooi | | |
| TWOC OO | DD OC 21 24 | C 1 (1) | D .: 6 .: 1 | μg/m³ | TI C (VII) | | 70/71 |
| WCS 20 | PROC 21, 24: | General ventilation: | Duration of activity: | PPE | The Cr(VI) | | 70/71 |
| | Machining | Good natural ventilation | < 60 min | DDE W | content of the | | |
| | operations on | | | RPE: Yes | surface is assumed | | |
| | surfaces | Wetting at the point of | | (with APF | to be < 13 %. | | |
| | containing Cr(VI) | release (90.00 % | | 1000) | In case of lower or | | |
| | in small work | reduction) | | If individual | higher Cr(VI) | | |
| | areas including | | | workplace | content, OCs and | | |
| | cleaning | | | monitoring | RMMs could be | | |
| | | | | data do not | adjusted for that | | |
| | | | | confirm | different situation | | |
| | | | | negligible | | | |
| | | | | exposure | Place of use: | | |
| | | | | below I | Indoor | | |
| | | | | $\mu g/m^3$ | | | |
| WCS 21 | PROC 21, 24: | Wetting at the point of | Duration of activity: | PPE | The Cr(VI) | | 72/73 |
| | Sanding of large | release/on-tool | < 120 min | | content of the | | |
| | surfaces | extraction/vacuum | | RPE: Yes | surface is assumed | | |
| | containing Cr(VI) | cleaning (90.00 % | | (with APF | to be < 13 %. | | |
| | in large work | reduction) | | 1000) | In case of lower or | | |
| | areas including | , | | When | higher Cr(VI) | | |
| | cleaning | | | sanding large | content, OCs and | | |
| | | | | parts (e.g. | RMMs could be | | |
| | | | | airplanes, | adjusted for that | | |
| | | | | helicopters | different situation | | |
| | | | | etc.) | JJ | | |
| | | | | / | Place of use: | | |
| 1 | | | | | Place of use: | | |

| WCS 22 | PROC 8b: | General ventilation: | Duration of activity: | PPE | Concentration of | | 73/74 |
|--------|------------|--------------------------|-----------------------|-----------|--------------------|--|-------|
| | Waste | Good natural ventilation | < 30 min | | Cr(VI): Minor (5 – | | |
| | management | | | RPE: Yes | 10%) | | |
| | | Low level containment: | | (with APF | · | | |
| | | "Physical containment | r | 30) | Place of use: | | |
| | | enclosure of the source | of . | | Indoor | | |
| | | emission. The air within | | | | | |
| | | the enclosure is not | | | | | |
| | | actively ventilated or | | | | | |
| | | extracted. The enclosure | is | | | | |
| | | not opened during the | | | | | |
| | | activity." Advanced | | | | | |
| | | REACH Tool (ART) | | | | | |
| | | version 1.5 | | | | | |

[†] The RMM and OC specified represent good industry practice for this task. DUs may adapt or improve RMM and OC selection in order to most appropriately and efficiently control worker exposure and maintain compliance with national regulations.

Abbreviations: WCS=Worker contributing scenario, ECS=Environmental Contributing Scenario, ERC=Environmental Release Category (or spERC if available), PROC= Process category, LEV=Local Exhaust Ventilation, PPE=Personal Protective Equipment, ACH=Air Changes per Hour, RPE=Respiratory Protective Equipment, APF=Assigned Protection Factor, DU=Downstream User

[§] Estimated Clocal based on measured data: 1.61E-06 mg Cr(VI)/m³

^{*} Adequate protective clothing, chemical-resistant gloves, goggles in case of potential exposure to chromium trioxide.

^{**}RPE is specified in cases where exposure to chromium trioxide in solid form may occur