Material Safety Data Sheet

Section 1. Chemical, Product and Company Identification

Product Name: Access Cheek Retractor
Product Code: CH1 & CH2
Cheek White Material: 2-NAPHTHALENECARBOXYLIC ACID, 6-(ACETYLOXY), POLYMER WITH 4-(ACETYLOXY)BENZOIC ACID, AROMATIC LIQUID CRYSTAL POLYESTER.
Cheek Wire Material: T302 Stainless Steel
Responsible Party: Reliance Orthodontic Products, Inc.
1504 West Thorndale Ave
Itasca, IL  60143  U.S.A.
Phone: 1-800-323-4348
Phone: 1-630-773-3580
Fax: 1-630-250-7704
http://www.relianceorthodonics.com

Product Use: To retract cheeks during orthodontic procedures.

Section 2. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>%</th>
<th>OSHA PEL</th>
<th>ACGIH</th>
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<tbody>
<tr>
<td>Base Resin</td>
<td>70679-92-4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stainless Steel:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>52.3/78.0</td>
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<tr>
<td>Manganese</td>
<td>7439-96-5</td>
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<td></td>
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<td></td>
<td>1 mg/m3 fume</td>
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<td></td>
<td></td>
<td>3 mg/m3 STEL</td>
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<tr>
<td>Silicon</td>
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<td>10 mg/m3</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>5 mg/m3 respirable nuisance</td>
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<tr>
<td>Chromium (Metal)</td>
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<td>Titanium</td>
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<td>5 mg/m3 respirable</td>
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<tr>
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<td></td>
<td>1 mg/m3 dust</td>
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<td></td>
<td></td>
<td>5 mg/m3 respirable 5 mg/m3</td>
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<td>Tungsten</td>
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<td></td>
<td></td>
<td>10 mg/m3 STEL</td>
<td>10 mg/m3</td>
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</table>

This is a polymeric material. Any hazardous constituents are wetted by the polymer system, and therefore, present no likelihood of exposure under normal conditions of processing and handling. Steel products in their usual physical form do not pose any health hazards. However, when subjected to welding, burning, sawing, brazing, grinding… potentially hazardous fumes or dust may be generated. These fumes and uts must be controlled by engineering controls or PPE. This product may contain proprietary ingredients. While this product is not classified as hazardous under OSHA Regulations, this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and made available for employees and other users of the product.

Section 3. Hazards Identification

Emergency Overview: Pellets or chips with slight to no odor. Combustion and decomposition may produce hazardous fumes. Base resin dust/powder has a US Bureau of Mines relative dust explosion hazard rating of weak. Molten material can cause thermal burns on contact with skin or eyes. Spilled pellets may create a slipping hazard.

Routes of Exposure: Skin and eye contact; inhalation of vapors, if overheated.

Signs and Symptoms of Exposure: No specific information available on the product. Thermal decomposition may evolve fumes, which can cause "polymer fume fever", which has flu-like symptoms.
Immediate Effects:

**Skin:** No specific information available on the product. Hot or molten material has the potential to cause thermal burns. Polymer particles can cause mechanical irritation. If dust of stainless steel wire gets on the skin, wash the contaminated area with soap and water.

**Eyes:** No specific information available on the product. Polymer particles can cause mechanical irritation. Degradation vapors may cause irritation. Flush dust particles from wire with large amounts of water and seek prompt medical attention.

**Inhalation:** No specific information available on the product. Pellets are not considered an inhalation hazard; polymer particles may be considered an inert nuisance particulate. Thermal decomposition may evolve hazardous, irritating fumes, which can cause "polymer fume fever", which has flu-like symptoms. For stainless steel wire, if acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

**Ingestion:** No specific information available on the product, however, low toxicity by this route is expected based on the biological activity of the base resin. If stainless steel wire particles are ingested, give 1-2 glasses of water or milk. Induce vomiting only if the victim is fully conscious and has not convulsed. Seek prompt medical attention.

**Long Term/Delayed Effects:** No specific information available.

**Carcinogenicity:** No specific information available on the resin product. The stainless steel product is a mixture that has not been determined to be carcinogenic. However, individual components of nickel, certain chromium and cobalt compounds and titanium dioxide in a dust or fume form when generated from the activities noted above have been associated with carcinogenicity.

**Medical Conditions** No specific information available on the product. Off-gases, which may be released if overheated, may affect those with chronic diseases of the respiratory system. **Iron Oxide in Wire:** Chronic inhalation of excessive concentrations of iron oxide fumes or dust may result in development of a benign pneumoconiosis, called siderosis, which is observable as an x-ray change. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of ferric oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens. **Managanese in Wire:** Chronic exposure to high concentrations of manganese fumes and suts may increase the incidence of pneumonia and lung damage and may adversely affect the central nervous system with symptoms including languor, sleepiness, weakness, emotional disturbances, spastic gas mask like facial expressions and paralysis. Animal studies indicate that managanese exposure may increase susceptibility to bacterial and viral infections. **Nickel in Wire:** Nickel fumes are respiratory irritants and may cause pneumonitis. Skin contact may cause an allergic skin rash. Nickel itch is the dermatitis resulting from sensitization to nickel; the first symptom is usually itching, which occurs up to 7 days before skin eruption occurs. The primary skin eruption is erythematous or follicular which may be followed by skin ulceration. Nickel sensitivity, once acquired, is apparently not lost. All airborne nickel contaminating dusts are regarded as carcinogens via inhalation. **Chromium in Wire:** Health hazards are dependent on oxidation state. The American Conference of Governmental Industrial Hygienists (ACGIH) has reviewed the toxicity data and concluded that chromium metal is not carcinogenic to humans. However, the International Agency for Research on Cancer (IARC) lists hexavalent chromium compounds as a known human carcinogen. The hexavalent form is very toxic. The metal form (chromiumas it exists in this product) is of very low toxicity. **Titanium Dioxide in Wire:** Dust is a mild pulmonary irritant, eye and skin irritant and may be a potential carcinogen. Laboratory animals exposed to titanium dioxide developed small focal areas of emphysema which were attributable to large deposits of dust. Excessive exposure in humans may result in slight changes in the lungs. The dusts of titanium dioxide can be placed in the nuisance category. **Silicon in Wire:** Elementary silicon is an inert material which appears to lack the property of causing fibrosis in lung tissue. Slight pulmonary lesions have been reported in laboratory animals from intratracheal injections of silicon dust. Dust has little adverse affect on lungs and does not appear to product significant organic disease or toxic effects when exposures are kept under the TLV. Silicon may cause chronic respiratory effects.
Molybdenum in Wire: Molybdenum is not foreseen as a hazard in the present context. Though molybdenum has caused toxicity (anemia and poor growth) in farm animals, there is not data documenting toxicity to humans due to industrial exposure; however, molybdenum may cause lung disease and irritation.

Columbium(Nb) in Wire: Interferes with calcium as an activator of enzyme systems.

Copper in Wire: Industrial exposure to copper fumes, dusts or mists results in metal fume fever with atrophic changes in nasal musosal membranes. Chronic poisoning results in Wilson’s disease, characterized by a hepatic cirrhosis, brain damage, demyelination, renal disease and copper deposition in the cornea.

Aluminum in Wire: Excessive exposure to aluminum fumes and dust have been associated with lung disease and irritation but this effect is probably due to the simultaneous silica exposure.

Tungsten in Wire: Chronic exposure to tungsten dust has caused respiratory disorders characterized by cough, dyspnea and wheezing. There is no correlation between the onset of symptoms, length of exposure and the development of initial fibrosis. Dermatitis primarily on the side of the neck, flexor parts of the forearm and the backs of the hands was also detected. Dusts of tungsten pose a hazards considered to be somewhat greater than that of nuisance dust.

Section 4. First Aid Measure for Resin only

Skin: If hot or molten polymer or hot vapors contact skin, cool rapidly with cold water. If polymer is stuck to skin, do not remove. Seek medical attention. Allow adhered polymer to come off naturally. Removal of adhered polymer may result in more tissue damage than if polymer is allowed to come off over time.

Eyes: Flush with plenty of water. Seek medical attention if discomfort persists, and to remove foreign body.

Inhalation: Remove to fresh air. Seek medical attention if breathing difficulties occur.

Ingestion: If a significant quantity has been swallowed, give two glasses of water to dilute. Seek medical attention.

Note to Physicians: This product is essentially inert and nontoxic. However, if it is overheated so that excessive off-gassing occurs, a condition called polymer fume fever may be seen in individuals exposed to the gases. Polymer fume fever is a flu-like syndrome (aches, chest pain, cough and fever) that clears within one to two days (see Sections 5 and 10 for off-gases). Patients who have been exposed to off-gases may need to have their arterial blood gases and carboxyhemoglobin levels checked. If the carboxyhemoglobin levels are normal and the exposure occurred in an enclosed space, asphyxia (carbon dioxide replacing oxygen) is a possibility. Formaldehyde, fluorinated hydrocarbons, and hydrogen fluoride are all respiratory irritants. If patients may have inhaled high concentrations of irritating fumes, they should be monitored for delayed onset pulmonary edema. The greatest hazard is from respiratory tract irritation; specific antidotes for hydrogen fluoride (HF) are not recommended because HF is not likely to be present in high enough concentration for an antidote to be of use.

Section 5. Fire Fighting Measures

Flashpoint: >93 deg C (>200 deg F) by Tag Closed Cup Method for Resin.

Autoignition: 540 deg c (1004 deg F)

Hazardous Products of Combustion:

Carbon monoxide, carbon dioxide, and hydrogen fluoride for Resin Material. Steel wire products do not constitute fire and explosion hazards. However, dust generated during grinding and cutting operations may present a fire and explosion hazard. Further coatings, which are applied at the customer’s request, may be combustible. For fires involving coating oils, consult the attached coating oil MSDS.
Water spray, foam, carbon dioxide, or dry chemical for resin material. Firefighters should wear self-contained breathing apparatus and full fire-fighting turn-out gear (bunker gear). Keep personnel removed from and upwind of fire. Water should be used to keep fire-exposed containers cool. Water, foam and dry chemical may cause damage to electrical equipment.

**Section 6. Accidental Release Measures**

*For more information, see regulatory section 15.

**Procedures in Case of Spill or Leak:** Sweep or gather up spills and place in proper container for recovery or disposal. Ticona supports SPI's Operation Clean Sweep.

**Section 7. Handling and Storage**

**Handling:** Do not handle hot or molten material without appropriate protective equipment. Maintain good housekeeping in work areas. Do not exceed recommended process temperatures to minimize release of decomposition products. Do not smoke in areas where polymer dust is present. Appropriate measures should be taken to control the generation and accumulation of dust during conveying and processing operations.

**Storage:** Store in a cool dry place. Maintain dryness of resin.

**Section 8. Exposure Controls/Personal Protection**

**Engineering Controls:** Local Exhaust: Recommended when appropriate to control employee exposure to dust or process vapors. General: May not be adequate as the sole means to control employee exposure.

**Protective Equipment:**

- **Skin:** When thermal or melt processing, wear long pants, long sleeves, well insulated gloves, and face shield when there is a chance of contact.
- **Eyes:** Safety eyewear recommended.
- **Inhalation:** A NIOSH approved respirator is recommended if there is a possibility of dust generation above permissible exposure limits or that decomposition vapors may be generated.

**Exposure Guidelines:** Operations involving grinding and machining of parts should be reviewed to assure that particulate levels are kept below recommended standards. See the exposure limits below.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Agency</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuisance particulates</td>
<td>ACGIH TLV</td>
<td>5 mg/cu m (respirable)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA: 10 mg/cu m (total)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 mg/cu m (respirable)</td>
</tr>
</tbody>
</table>

Ticona recommends the ACGIH Limit.

**Section 9. Physical and Chemical Properties**

**Appearance:** Pellets

**Odor:** Slight characteristic odor

**Physical State:** Solid

**Vapor Pressure:** < 0.001 mm Hg

**Melting Point:** 275 - 335 deg C (527 - 635 deg F) for resin and 2800 deg F for the wire

**Solubility:** Negligible < 0.1% (in water)

**Specific Gravity:** 1.37-1.42 (resin) and 7.6-7.8 (wire)

**Percent Volatiles:** < 1.0 by weight

**Molecular Weight:** > 20,000 (base resin)
**Section 10. Stability and Reactivity**

**Chemical Stability:** Stable under ordinary conditions of use and storage.

**Conditions to Avoid:** Flame; do not heat above 662 deg F (350 deg C). Avoid prolonged exposure to temperatures above 644 deg F (340 deg C).

**Incompatibility:** Contact with strong alkali solutions may soften the resin material. The stainless steel wire will react with strong acids to form hydrogen gas.

**Hazardous Decomposition Products:** Phenol, fluorinated hydrocarbons, acetic acid, hydrogen fluoride, aromatic compounds, and phenyl esters for resin material.

**Hazardous Polymerization:** Will not occur.

**Section 11. Toxicological Information for resin**

Oral LD50: Not available for product. Base resin LD50 > 5 g/kg (rat).

Dermal LD50: Not available for product. Base resin LD50 > 2 g/kg (rat).

No irritation or sensitization observed in lab animal or human patch tests for base resin.

Inhalation LC50: Not applicable.

Inhalation of carbon black, a possible ingredient, has been shown to cause lung tumors in rats at high exposure concentrations. These concentrations appear to exceed the capacity of the lung to clear the carbon black particles, thus resulting in significant toxicity.

Tests on the base resin showed that polymer and water extracts are not active in the Ames Test.

**Section 12 Ecological Information**

**Ecotoxicity:** The effects of resin pellets on the wildlife that may ingest them is not well understood. In the case of seabirds, some marine biologists believe that the fowl may not be able to pass plastic pellets through their digestive tracts. Thus, large quantities of ingested pellets may cause intestinal blockage, false feelings of satiation or reduction in absorption of nutrients, causing malnutrition and starvation. The goal of SPI's Operation Clean Sweep is zero loss of pellets into the environment.

**Environmental Fate/Information:** This material is considered to be non-biodegradable.

**Section 13. Disposal Considerations**

**Disposal:** Recycling is encouraged. Landfill in accordance with federal, state, and local regulations. This product, as shipped, is not a RCRA hazardous waste under present EPA regulations.

**Section 14. Transport Information**

Not regulated under US Department of Transportation.

**Section 15. Regulatory Information**

**TSCA:** All ingredients are listed in the TSCA Inventory or are compliant with the TSCA Polymer Exemption Rule.

**SARA:** This product does not contain any toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372.
Other: For information regarding regulations not listed please contact Ticona Product Stewardship.

Section 16. Other Information

<table>
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<tr>
<th>Hazard Rating Plastics:</th>
<th>Agency</th>
<th>Health</th>
<th>Flammability</th>
<th>Physical Hazard</th>
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<td>1</td>
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<td>HMtS</td>
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</tbody>
</table>

| Hazard Rating Wire:    | NFPA   | 2      | 0            | 0               |

Note 1: NFPA and FflVUS ratings are as determined by Ticona.

Note 2: Revisions in this version include Sections 3 and 8.

Disclaimer: This product is not intended for use in medical or dental implants.

Refer to the appropriate Reliance Orthodontic Products, Inc. bulletins for specific processing guidance and good manufacturing practices (purging, processing parameters, shutdown, etc.).

The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Reliance Orthodontic Products, Inc. makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. Effects can be aggravated by other materials and/or this material may aggravate or add to the effects of other materials. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.