HUSKY ENERGY

SPECIFICATION FOR PPE COVERALS, OUTERWEAR AND RELATED PPE

REFENCE NUMBER 8.24.1.164

1.0 Purpose

The purpose of this spec is to ensure that coveralls worn by personnel working on husky installations are provided the best possible protection against hydrocarbon flash fire and electrical arc flash without compromising comfort and usability. Wearing flame-resistant clothing will provide thermal protection, which if exposed to electric arcs or flash fires, will self-extinguish after the source of ignition is removed, limiting the degree of burn and body burn percentage of the user.

2.0 Scope

General P.P.E. required for all Husky Facilities is as follows:

- Eye Protection (*CAN/CSA-Z94.3-07 and CAN/CSA-Z94.3-02 or CAN/CSA-Z94.3-99 (Industrial))*
- Footwear (*Grade 1 Specification of CAN/CSA-Z195-02 (Green Triangle) or ANSI Z41-1991)*
- Hand Protection
- Head Protection (CAN*/CSA-Z94.1-05 or ANSI Z98.1-2003 Type I Class G or E*)
- Hearing Protection (*CAN/CSA Z94.2-02*)
- Work Clothing (*see specific section for standard references*)

3.0 Limb & Body Protection

3.1 Background Material & Fabric

The materials/Fabrics selected must provide;

- Protection at HRC-2 producing a minimum Arc rating (ATPV) of 8.7 cal/cm^2 or greater in a single layer garment (CSA Z462 or NFPA 70E)
- Protection against hydrocarbon flash fire, with proven independent test results indicating a body burn of less than 25% using ASTM F1930 as used in NFPA 2112.
    - *Total burn percentage used without any subtractions for the exposed head of the manikin*
    - *Burn percentage calculated based on test with standard special testing coverall, not production garments*
- Comfort without compromising protection for the wearer
- Reliability provided by the assurance of a Quality Management System that meets or exceeds the requirements of International Standard Organization (ISO) 9001-2008
- FR durability provided by an Inherently FR material/fabric

In addition to the requirements above;

- Entire garment shall be Flame resistant (FR) and must meet the requirements of CGSB 155.20 or NFPA 2112.
- 6.4 oz GlenGuard ® FR is preferred however other materials that conform to the PPE specification as outlined may be acceptable.
- Completed garment shall be compliant with CSA Z96 – Class 1, Level 2 compliance at a minimum and labelled in accordance with the standard. Alternate trims meeting the CSA Z96-09 standard are acceptable and encouraged where they exceed the minimum requirements as stated above.
- Background material shall be “bright” or “fluorescent” orange for all core Husky personnel. Contractors may use other “bright” or “fluorescent” colors as long as those colors meet the CSA Z96-09 requirements.
- Background material shall meet ASTM F1506 and be labelled in accordance, providing a minimum Arc rating (ATPV) of 8.7 cal/cm^2 in a single layer garment.

At the time of manufacture, material/fabric must meet or exceed the requirements of the most current version of the standards listed below.

Standard	Description / Title
CAN/CGSB-155.20-2000	Work-wear for Protection against Hydrocarbon Flash Fire.
CAN/CGSB -155.21-200	Recommended Practices for the provision and use of workwear for protection against hydrocarbon flash fires
NFPA 2112-2007 Edition	Standard on Flame-Resistant Garments for Protection of Industrial Personnel against Flash Fire
NFPA 2113-2007 Edition	Standard on selection, care, use, and maintenance of flame resistant garments for protection of industrial personnel against flash fires
ASTM F1506–08 Standard	Performance Specification for Flame Resistant Textile Materials for Wearing Apparel for Use by Electrical Workers Exposed to Momentary Electric Arc and Related Thermal Hazards
ASTM F1930	Test method for evaluation of Flame resistant clothing for protection against flash fire simulations using an instrumented Manikin
ASTM F1891-06	Standard specification for Arc Flash and Flame resistant Rainwear
NFPA 70E	Standard for Electrical Safety in the Workplace, 2009Edition
CSA Z462 Standard	Electrical Safety in the Workplace, 2008 Edition
BSI BS EN ISO 9001 - 2008	Quality Management Systems

3.2 Visibility

At time of manufacture, all garments must meet the requirements as set out in the most recent version of CSA Z96-09

3.2.1 Reflective Striping

Retro-reflective trim/striping shall meet the requirements of CSA Z96-09 – Class 1, Level 2 compliance at a minimum.

Recommended trim for Class 1, Level 2 compliance is

- 3M™ Scotchlite™ retro-reflective material, silver industrial wash in a ¾" (19.05mm) width sewn on to a 2" (50.8mm) fluorescent yellow visibility enhancing trim.

- Retro-reflective trim, before test exposure retro-reflective performance: Shall be CAN/CSA Z96-02 Level 2 compliant
- Retro-reflective Trim, after test exposure retro-reflective performance: Shall be CAN/CSA Z96 Section 6.2, Level 2 compliant
- Trim/striping shall include a fluorescent color meeting the CSA Z96-09 standard. This fluorescent color shall be in a contrasting color to the fluorescent or bright background material of the garment.

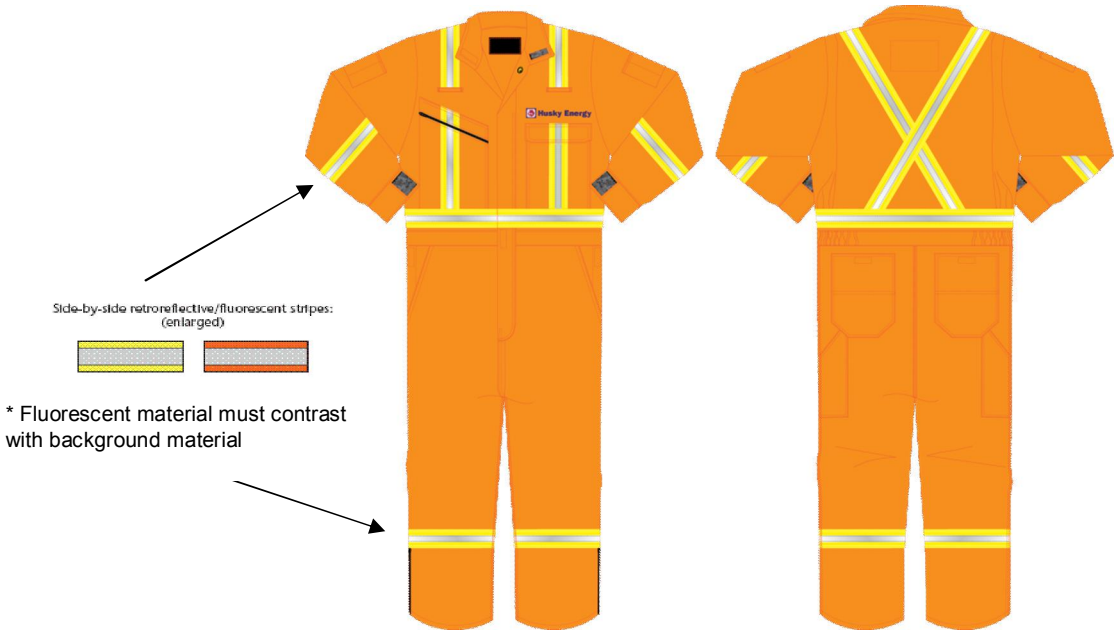
All striping will be sewn, not heat applied

Alternate trims meeting the CSA Z96-09 standard are acceptable and encouraged where they exceed the minimum requirements as stated above.

3.2.2 Reflective Striping Placement

All striping and placement shall be in accordance to CSA Z96-09, Class 1, Level 2 at a minimum. This includes;

- Single horizontal stripe around torso and limbs, double vertical stripes on chest, continuous over the shoulder with an X on the back.



Coverall Front View Coverall Back View
CSA Z96-09-Class 1 – Level 2

3.3 Garment labeling

All labeling shall be in accordance with CGSB 155.20 or NFPA 2112, and ASTM 1506, & CSA Z96-09 and will include the following at a minimum:

- Name, trade mark or other means of identifying the manufacturer or representative;
- Designation of product type, commercial name, or code;
- Size;
- Description of FR fabric of the background material;
- Compliance to CSA Z96-09 along with class and level of compliance:
- Background material classification as per CSA Z96-09 (i.e. bright, fluorescent);
- FR performance and complete compliance to CGSB 155.20, not just one aspect of compliance (i.e. performance)
- Arc Rating (ATPV) in accordance with ASTM 1506
- Label must state CGSB listing number in accordance with CGSB 155.20.
- Laundering instructions

Any other labeling required as per the standard and certifying organization shall be included

3.4 Specific Design Criteria

The specific design requirements for coveralls for Husky core personnel are as follows;

- One-piece, long sleeve, mandarin collar, bi-swing pleated back with zipper front closure and two pass-through side openings for easy access to under garments.
    - Pockets include;
        - Left front patch pocket with flap closure; Zippered deep pocket on right;
        - 2 front mic loops (1 on each side).
        - 2 lower front bag pockets; 2 side pass throughs with Velcro closure.

        - 2 rear pockets with Velcro closure; self fabric bottom pocket reinforcement.
        - Pen pocket on both sleeves;
        - 2 utility/tool leg pockets (1 on each leg)
        - Inseam shall have a comfort crotch
    - Zippers shall be made of non conductive vislon with full length protective fly over zippers
        - Front zipper shall be two-way, tear away, full length;
        - Zipper in both legs, extending 12-14" from bottom of leg

- All thread used in manufacture of the garment, including any embroidery, shall be 100% NOMEX® FR. Tex 60 for seaming/stitching. Tex 40 for surging.
- All snaps on garment are to be covered.
- Waistband to be elasticized at sides to allow for a self-adjusting fit.
- Husky logo will be present on the left chest of the garment, with the employees name located on the right chest. Neither will conflict with the high viz-striping as per CSA Z96-09.
- Seam strength test required to confirm integrity of garment.

4.0 Outerwear

Outerwear will be required to meet the same specs as outlined for single layer coveralls with regards to FR requirements and reflectability and must meet the requirements of CGSB 155.20 or NFPA 2112.

Outerwear includes the following;

- Winter Parkas *(to have removable lining)*
- Bomber Jackets *(to have removable lining)*
- Bib Pants *(insulated, however removable lining where possible)*
- *Rain Wear

Parka and bomber jacket to have a removable lining. Where possible, the garment should be waterproof to allow use in environments with excessive rain, snow, and fog.

*Rainwear must meet the following;

Standard	Description / Title
ASTM F 2733	Standard Specification for Flame Resistant Rainwear for Protection against Flame Hazards
ASTM F1930 – 00	Standard Test Method for Evaluation of Flame Resistant Clothing for Protection against Flash Fire Simulations Using an Instrumented Manikin

5.0 Compliance to Standards (Coveralls & Outerwear)

Manufacturer or supplier must be able to prove compliance to all aspects of CGSB 155.20 or NFPA 2112 as well as ASTM 1506, and CSA Z96-09 by providing performance and testing certifications when requested.

Third party certified garments as per standards is preferred, however not mandatory if the above can be provided

6.0 Hearing Protection

Where there is a danger of injury or irritation to personnel's eyes and / or face, the person will wear properly fitted eye and / or face protection, suitable to the task at hand, determined by hazard assessment, manufacturer's recommendations and MSDS guidelines.

- Hearing protection must meet and be worn in accordance with standard CAN/CSA Z94.2-02 (R2007).
- Hearing protection should be used in any area where hearing protection signs are displayed or where the need has been identified in a risk assessment.
- Where communication is required in high noise areas, combined defenders with radios should be used.

7.0 Head Protection

Where there is a hazard of head injury in a work place, protective headwear must be used.

- Minimum requirements on Husky installations is CSA-Z94.1-05 or ANSI Standard Z89.1-2003 Type 2, Class G and or E head protection
- Metal hard hats shall not be used.

8.0 Protective Footwear

- Grade 1 specifications of the CSA Standard CAN/CSA-Z195-02 (green triangle) or ANSI Z41-1991 equivalent standard must be worn at all Husky field and plant sites.
- It is recommended that footwear with a continuous sole and heel not be worn. Heel should be higher than ball of foot.

- Field personnel must have a minimum of 15-cm (6-inch) of distance on heel from ground to top of boot.

9.0 Eyewear

Where there is a danger of injury or irritation to personnel's eyes and / or face, the person will wear properly fitted eye and / or face protection, suitable to the task at hand, determined by hazard assessment, manufacturer's recommendations and MSDS guidelines.

- Eye protection must meet the standards of CAN/CSA-Z94.3-07 and CAN/CSA-Z94.3-02 or CAN/CSA-Z94.3-99 (Industrial).
- Laboratory marks must be visible in the lenses and the frames must indicate the standard.

10.0 Hand Protection

The type of glove will be dictated by task requirements referencing hazard assessments, MSDS regulation and manufacturers recommendations. Gloves will be fitted properly and be worn for the specific use for which they were intended.