



FÜNFTE DEUTSCHE FEUERWEHRKOMPANIE TALCAHUANO
QUINTA COMPAÑÍA DE BOMBEROS "BOMBA CHILE" DE TALCAHUANO
FUNDADA EL 29 DE ENERO DE 1908

Fifth Fire Company "Bomba Chile" of Talcahuano

Project for The Uniforms for Talcahuano's Fifth Fire Company "Bomba Chile"

Talcahuano, August 2019



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Technical Proposal for Obtaining Uniforms

The Fifth Tacahuano Fire Company begins writing its story 111 years ago. His first lines written on fire would be the ignition spark of one of the most famous and recognized fire companies in southern Chile.

In 1908, a group of people native to Germany and of German descent had settled some time ago in the port of Talcahuano, these were especially dedicated to nurturing the growing maritime trade that abounded in the area, being people tra lowering, intelligent and recognized.

On 29 January of the same year they meet in the halls of the old music club; After hearing some opinions, it was agreed to scrap the first idea of founding a "Property Keeper" company, accepting instead laying the foundations of a water company. The founding act of the Fifth Fire Company was approved.

In 1985, due to some volunteers who were interested in rescue matters driven by the needs of our commune, a city that experienced a great demographic and industrial expansion, forced us to acquire a continuous improvement and improvement personnel to meet this new challenge, it was necessary to create the "Rescue Brigade" which began to operate with manual and electrical tools that allowed to carry out the tasks of releasing people who suffered vehicle accidents in a way efficient in our city.

At the beginning of the 90s, the Fifth Tacahuano Fire Company had an obligation to project itself into the future, due to the increasing process of modernization and expansion of our port city, which in part forced a greater endowment of trained staff.



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Thus the Fifth develops its history day by day, renewing the strong commitment we have to the people of Talcahuano, people we serve with pleasure and care, as well as the entire Talcahuano Fire Corps. This, not to mention its most valuable material, which today is formed by its more than 140 members who give their lives to the yearning to serve in an altruistic way.

We could not finish without paying tribute to those volunteers who are no longer with us; even so, from eternity they will always be a deserved call of their beloved "Bomba Chile" and to the Honorary Volunteers who, by determination of the high still say present when duty calls them, guiding young generations on the paths of the discipline, camaraderie and tradition in this glorious story that was built, built, and will continue to be built over the years.

Currently our company presents the problem that it lacks suitable uniforms for work in fire and rescuemanuevers. The current uniforms have been overtaken by the new challenges and, above all, dangers incurred by a firefighter at the time of working in an emergency. Personal Protective Equipment (PPE) must ensure safety against biological, mechanical or road hazards, including:

- On high-traffic roads (highway)
- Weather difficulties (fog, rain, etc.).
- Against fire, acids, explosions, spills.
- Pathogens (HIV, Hepatitis B and C, H1N1, etc.) among others.



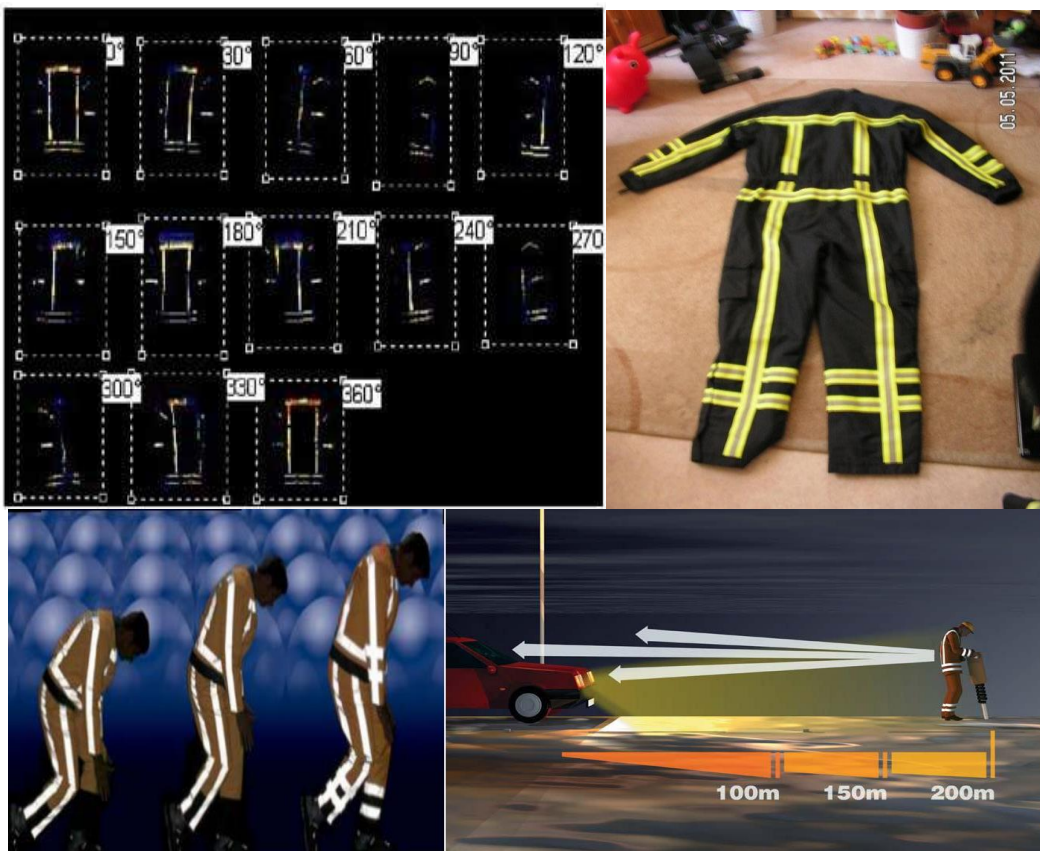
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Types of hazards to which Firefighters are exposed.

1) Road hazards, high traffic in minor and older vehicles

(Road safety) Solution:

- Arrangement of reflectors and fluorescent colors according to ANSI/ISEA 107-1999 and EN 471 that allow greater visibility to the distance for work in roads (reference images below).





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2) Protection against Acids or Chemical

Agents: According to ISO 6530 or
EN14126 Example:



- **Sulfuric acid** is a clear and oily liquid, very corrosive, produces severe burns, is used in the battery of vehicles and in numerous products.

3) Protection against Pathogens (bacteria, viruses, etc.)

- Waterproof, breathable and breathable fabrics to prevent contact with fluids both biological and chemical.
- Some of the pathogens that can be purchased for lack of protection proper biological mechanic are.

v **HIV:** The human immunodeficiency virus causes an infection that destroys white blood cells (the cells that fight infections in the body), causing a dysfunction of the immune system. HIV weakens the immune system and makes it difficult to fight certain infections.



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v **hepatitis B:** can lead to severe liver failure and cause death. Hepatitis B virus transmission occurs through exposure to blood and bodily fluids, such as blood, semen, vaginal secretions, saliva, or cerebrospinal fluid. The following describes the type of people at risk of developing hepatitis B:

- Children born to mothers who have hepatitis B (the disease may occur up to five years after birth).

People living in a household where another member is infected with the virus.

People who have blood clotting disorders, such as hemophilia.

- People whose employment requires contact with human blood.

v **hepatitis C:** occurs mainly by contact with infected blood, although at first the symptoms of hepatitis C are mild, in most infected people can produce chronic liver disease. According to the Centers for Disease Control and Prevention, hepatitis C is the primary indicator for liver transplantation.

(v **Syphilis):** Syphilis is produced by *Treponema pallidum* one of the many spiral-shaped microorganisms. people infected by this agent have lesions on the skin, mucous membranes, muscles, bones, etc. progressively and destructively, ending with heart problems and large vessels (aortitis) as well as major alterations of the central nervous system.



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From the previous points it is clear that at present it is endangered to the community and our families by exposing them to contact with dirty and saturated uniforms in pollutants (phenols, medium- and long-term carcinogens to name just a few), because at the moment the m is uniforms of fire in rescues, which in addition to being uncomfortable and unsuitable for rescue tasks, in which speed and agility are required; they only hinder work on long-term tasks, not providing adequate comfort and biological protection. In addition to being unversatile when it comes to rescue tasks that require a greater technical degree, either moving through confined spaces or descending with ropes on a steep slope.

Given the above facts and having carried out different researches on the subject; the need to acquire new personal protective equipment is prevailing. Which leads to proposing the next option.

Proposal

The new provisions required by the regulation of the framework law in force in our country, requires that in 2015 the total active firefighters have ANB courses equivalent to the NFPA-1001 standard, standard uniforms and certificates d specifically designed for the work of firefighting, Haz-Mat, vehicular rescue, etc; If not required by law, the firefighter will be deprived of the benefits provided by the insurance, for example:

- "The firefighter was injured in a fire without carrying his complete personal protection uniform, the uniform he was carrying was not suitable for these Vehicular Rescue Bores."



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- "The firefighter contracted a contagious infectious disease as the uniform he was carrying did not have the biological chemical barriers to protect him from eventual contact."

In situations such as those described, the firefighter will automatically be devoid of the benefits granted by the insurance, the affected person must bear all the costs of the corresponding medical treatment.

Taking into account the background presented and after conducting the bibliographic review of multiple international regulations, it was determined that personal protective equipment (PPE) intended for vehicle rescue work, should be exclusive use for these tasks, must be standardized and certified under international standards (this due to the lack of national regulations), complying with the following requirements:

- Fireproof, heat and flame resistant.
- Anti static.
- High visibility on 360-degree roads.
- Waterproof, breathable and breathable.
- Have a chemical and biological barrier.
- Have 2 pieces, trousers or gardener and jacket.



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- Have reinforcements in areas of high wear such as knees, shoulders, elbows, buttocks, sleeve finish and enough.
- Safety closures that allow a quick release of the garment in case emergency services.
- Full covered jacket closure with velcro-closed rug.
- Trousers with velcro-covered closure
- Trousers with adjustable waist adjustment
- Velcro and/or fasteners to adjust sleeve and pants width for better fit with gloves and boots of different brands.
- Pockets for transport, radio, safety glasses, gloves, knives or similar tools.
- Flashlight holder with hook.
- Folds on the back, arms and between the leg, for greater mobility. • Folds on the back, arms and between the leg, for greater mobility.



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Reference Image:





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To meet these requirements and the standards required by law, it is necessary to the PPE complies with the following international standards:

- EN 469:2005 Xf 1, Xr 1, Y2, Z2 Annex B (Flame Protection Clothing)
- ANSI/ISEA 107-1999 or UNE –EN 471 (High visibility clothing on roads).
- UNE-EN 343:2004+A1:2008/AC:2010 class 3/3 (Protection clothing against rain).
- UNE-EN ISO 20471:2013 High visibility clothing. Testing methods and Requirements. (ISO 20471:2013, Corrected Version 2013-06-01). Class 1/ 2.
- ISO 6530 or UNE-EN 14126 (protection against biological agents).
- EN 1149-5 (Antistatic).
- UNE-EN ISO 11612 Class III (Heat and Flame Resistant Clothing During a certain period).



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Benefits:

- Uniformity.
- Complete and adequate protection of personnel.
- Increased durability and lifespan of PPE.
- Compliance with the requirements of the Framework Law.
- Gives autonomy to each volunteer.
- Lower spending on PPE renewal by the Fifth Tacahuano Fire Company.

POINTS TO CONSIDER:

The first part of this paper focused on pointing out the importance of

Rescue uniforms, be uniform "Standards", which ensure the safety of volunteers, as well as comply with the provisions of the Chilean Fire Framework Law, with regard to Uniforms for Emerge such matters.

According to the above, the Framework Law states that from 2015 the total uniforms must be standard, according to the requirements of the Ministry of the Interior, since this will be a relevant factor when carrying out an expertise to the women to have a firefighter crash.

The following points are as follows:



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Useful Life of PPE:

CRescue hangover Model HUpf Teil 3 and p a n t a l n n m o d e l o H u P F T e i l 2 meets international safety standards in fire and rescue / Duration: 3 to 5 years.

FINAL COMMENTS AND WORDS

In relation to the above, the use of standard equipment providing the necessary safety measures for the work to be carried out is to be highlighted in this document.

The options indicated in this report indicate that ideally you would be able to purchase 70 jackets and 70 fire and /or rescue pants, due to the large flow of personnel that our company manages, and that year after year Increases.