



GENERAL RECYCLED

a division of Sparlings Sportwear Mfg

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The Four R's of Recycling Fire Resistant (FR) Garments in the Industrial Work-Wear Market Place...2!

Recover, Recycle, Re-use, Reduce

Ownership Group

- Ted Parker/Larry Suzuki/Dave Kasper
- Head Office – Vancouver, BC, Canada
- warehouse/sorting facility – Leduc, AB
- warehouse/sorting facility – Montreal, QC

Recover

- a 100% Made in Canada solution!
- General Recycled (GR) will take back all Fire Resistant (FR) garments at the end of the garments life cycle
- examples of garment fabrics with fibre that can be recycled include: Nomex IIIA®, Kermel®, Kevlar®, Nomex® MHP, Tecasafe® Plus and even FR treated cotton/nylon blends such as UltraSoft®
- garments are sorted at our facilities in Leduc or Montreal
- garments are stripped of all brass zippers and snaps before being transferred to our shredding facility

Recover

- recycled Nomex IIIA® (aramid) and 88/12 cotton nylon coveralls ready for shredding



Recycle

- all garments are dry cleaned to remove residual contamination
- the brass zippers and snaps are removed and recycled
- high-visibility reflective striping is also recycled in our process. (on average of 4-5 m per garment)

Recycle

Our proprietary blend of virgin FR fibres combined with shredded aramid fibre from disposed garments, being processed into sliver prior to yarn spinning



Re-use

- once garments are shredded, the recycled fibre is blended with virgin FR fibre, creating a unique inherent flame resistant (FR) yarn (patent pending) with a 30% post consumer recycled blend
- recycled yarn is used to weave our 7oz (6.95 oz/yd²) inherent FR fabric.
- recycled yarn is used to knit inherent FR polar fleece and athletic fleece.
- recycled yarn is used to knit jacket cuffs, balaclavas and other base layer fabrics
- recycled fibre is also used in non woven applications such as, batting for quilted linings in winter garments

Re-use

Spinning our recycled inherently flame resistant (FR) yarn



Re-use

Warping set up of our recycled aramid yarn...preparing to weave fabric



Re-use

Recycled yarn set up on a circular knitting machine, producing recycled fleece, and other base-layer fabrics



Reduce

- Para/Meta aramid yearly production...2012 = 200,000,000LBS
- Alberta – “conservative” estimates of 5000 tons of FR garments disposed of each year
- aramid garments can **NOT** be incinerated (chemical structure is the Benzene ring)...currently, landfill is the only option
- landfill operators are starting to refuse FR aramid garments
- **garments made from recycled aramids can be recycled again and again**
- disposal problem has been eliminated
- **100% Made in Canada solution!!!**

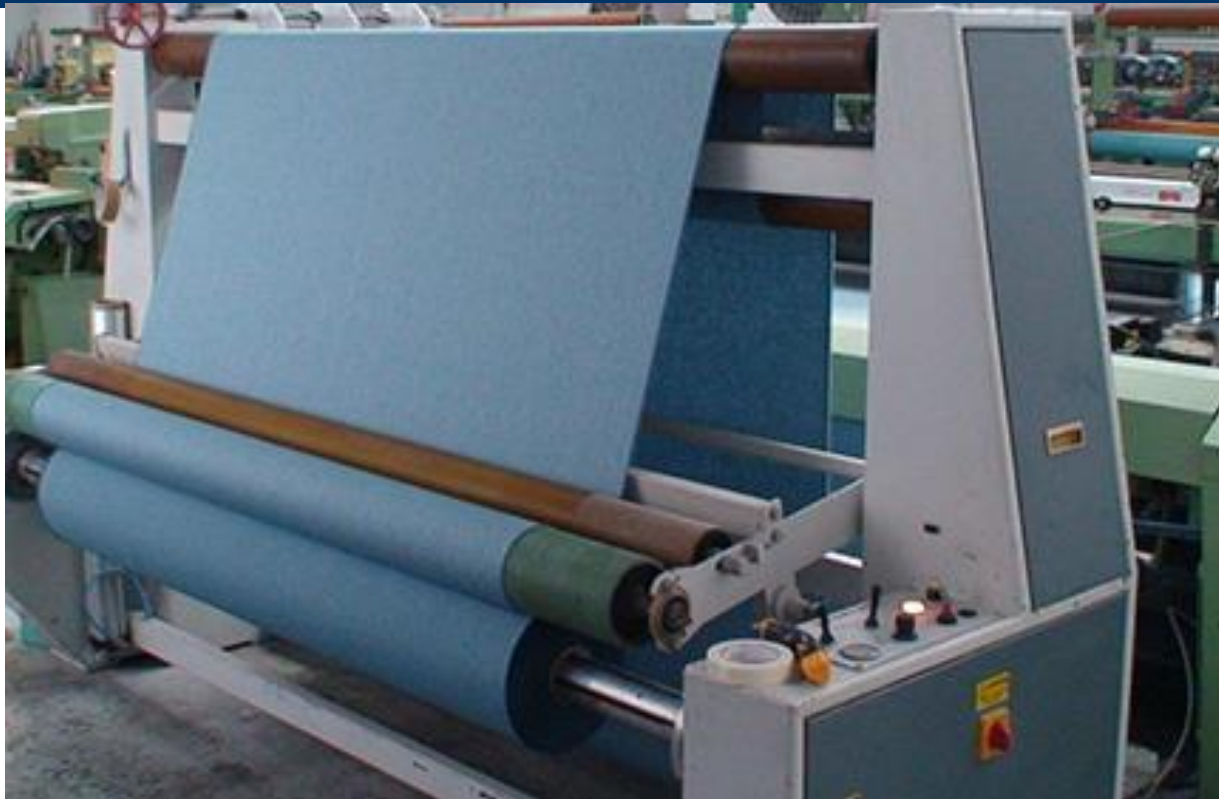
Reduce

Recycled inherently FR aramid fabric is woven using a blend of fibres from:

- Shredded Nomex IIIA® fabric plus modacrylic from hi-vis striping
- Virgin inherently FR aramid and modacrylic fibres



Reduce



Weaving recycled twill aramid fabric

Dye Process

- recycled fabrics can be dyed into various industry colours...royal blue, navy, red, orange
- dyed recycled fabrics have a unique appearance



Dye Process

- the dye-house we use produces on average 10,000,000 metres of virgin and recycled fabric each year



Industry Standards

- full compliance to CGSB 155.20 (Groupe CTT and PCERF, University of Alberta)
- ASTM F1959 (NFPA 70E) HRC 2, 8.2 cal/cm² (CTT/Kinectrics)
- ASTM F1930 (NFPA 2112)...excellent results on our manikin burn test at both 3 seconds and 5 seconds (PCERF, University of Alberta)

Suggested Process of Recycling Garments

- garments continue to be dry cleaned prior to disposal
- General Recycled will supply companies with recycle collection bags and pre-paid shipping weigh bills to our warehouse in Leduc or Montreal...once collection bags are full, simply call courier for pick up...and we take care of the rest
- Goods are shipped directly to our depots by “end-users”

Environmental Impact

- no need to landfill aramid coveralls/garments
- viable and simple “green” initiative for the oil and gas sector, and industry as a whole
- recovering oil in the dry cleaning process
- recycled garments can be recycled repeatedly
- re-allocation of disposal costs
- good corporate citizens
- environmental stewardship

Health, Safety and Environmental

- They say...“We recognize that how we interact with the environment is of vital importance to you. It is to us, too...Our Environment Strategy goes beyond simply complying with all applicable environmental laws and regulations; we strive for excellence at every level of the organization...Environmental Stewardship means considering our corporate values in every interaction we have with the environment.”
- General Recycled shares this commitment but...

Health, Safety and Environmental

- They also say...“...views health, safety, environmental responsibility and strong corporate governance as critical sustainability foundations and key components of the corporation’s High Performance, High Value strategy. ...We consider the impacts our activities have on the environment and communities in which we operate, and we work to minimize these impacts through sustainable best practices. We believe these sustainable initiatives will create social benefits and shareholder value over the long-term.”
- General Recycled shares this commitment but...

Proposed Federal Legislation

- Federal Legislation, **CAP-EPR 2017**, may take effect whereby all producers will have to be responsible for disposal of their hazardous product.

Dr. David Boyd

“This is a step in the right direction, applying key principles of sustainability like reduce, re-use and recycle. Every step in the right direction helps.”

David R. Boyd is one of Canada’s leading experts in environmental law and policy. A former Trudeau Scholar at the Institute for Resources, Environment and Sustainability at the University of British Columbia, and current professor at UBC, Boyd has advised many governments—from Canada to Sweden—on environmental and constitutional issues, and is the co-chair of Vancouver’s Greenest City Action Team along with Mayor Gregor Robertson.

**David R. Boyd, Ph.D., J.D.
Professor, Resource and Environmental
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Questions?

