

BARRY UPDATE

Scribed B-Net Support Poles - A Dangerous Proposition...

Alpine ski racing and training often requires that temporary safety nets be erected along the edges of the track (or piste) in order to prevent a falling or out of control skier from hitting obstacles as rocks, trees, towers and so on.

Various types of safety systems are offered on the market, each with varying degrees of quality and installation modes. B-Nets are temporary portable safety systems consisting of support poles inserted approx 30-35 cm deep in the snow and supporting net panels 2 m in height by means of clips attached to the poles.

The net support poles are required to be made of polycarbonate (PC) resin – a highly flexible and durable plastic material known for its ductile, non-splintering and non-shattering properties even at low temperatures.

Some safety system suppliers “scribe” their net support poles at approximately 35-40 cm from the base. A scribe is a fine shallow groove etched around the perimeter of the pole. It is also referred to by some as a “predetermined breaking point”. The concept being that this scribe will create an even cleavage plane where the pole will break away in the event of a skier crash; thereby supposedly reducing the risk of an injury. It is essential that no snow or ice accumulates inside the pole to further affect the flex and performance of the scribe to cleave-off evenly.

This concept requires that several conditions be met for it to work perfectly every time.

Factors such as:

- Material quality and homogeneity to break off neatly at varying temperatures
- Depth of insertion into the snow of the base of the pole and constant monitoring of the scribe position for each pole to ensure that remnant pieces do not protrude from the snow or are buried under too deeply
- Tightness of the net panels and adjustment distance of the base of the nets to the snow surface
- Availability of spare poles at course side for replacement for the broken poles
- Angle of insertion
- Etc

Whilst presumed testing data on scribed systems and installation guidelines are not readily available for analysis, several recent ski crashes filmed at various locations are causing serious concern on the functionality and safety of this type of system.

It has been frequently observed that this type of system fails to catch skiers sliding on the snow as they are installed very tightly, and upon impact by the skiers body, the poles break off and create an opening at the base of the net simply allowing the victim to slip out and continue his/her slide into either the next row of nets or the potential obstacle. In some instances, the skier slid under 2 or even 3 rows of safety nets!

For example, Resi Stiegler's Crash at Lienz Sturz 12/07
<http://www.youtube.com/watch?v=C1SKcfLXg-s>



Austrian Kathrin Zettel's Crash in Tarvisio, Italy
<http://www.youtube.com/watch?v=1WzsbEH6ZII&feature=related>



These videos clearly show the skier sliding right under the two rows of safety nets and the support poles offering no resistance.

Recently, remnant pieces of scribed poles were collected by Technical Delegates (TD) from two locations and were sent for analysis to Bodycote Testing Group, a reputable independent laboratory.

The B-Net support poles were dug out from the snow after a ski-racer crash and grave concerns were noted due to the type of break of the polycarbonate net support pole.

The fractured edges were a very irregular and sharp point which could cause serious injury to a skier whose body would slide over these pieces still anchored into the snow. The sharp edges could cut through clothing and cause lacerations to the skiers whose body was dragging across the sharp edges.



Photo 1: Showing the bases of the broken scribed poles



Photo 2: Detail view of fractured end



Photo 3: Detail view of end break along the scribed mark



Photo 4: Detail view of fractured end

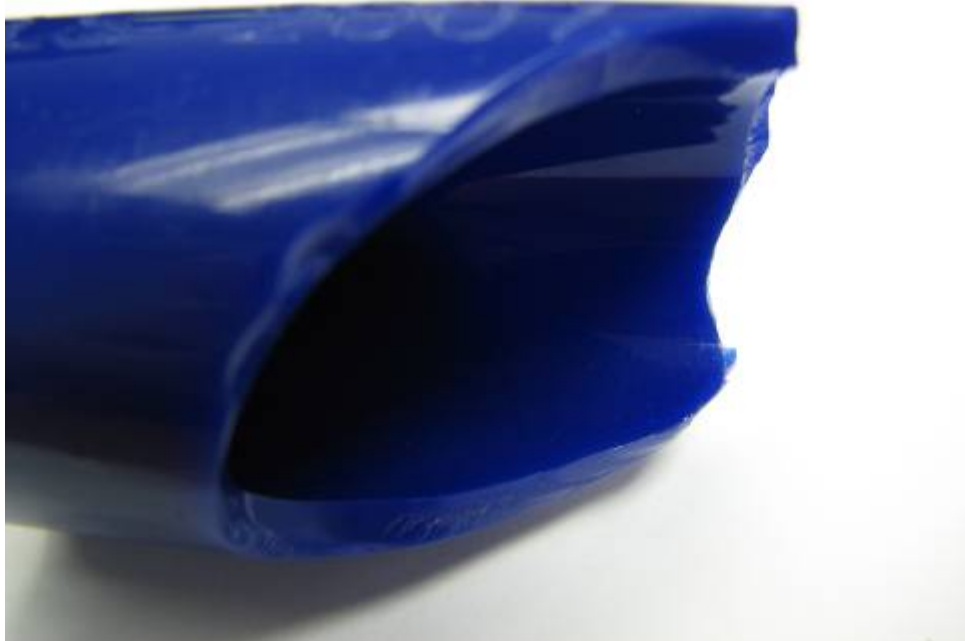


Photo 5: Detail view showing sharp pointy edges

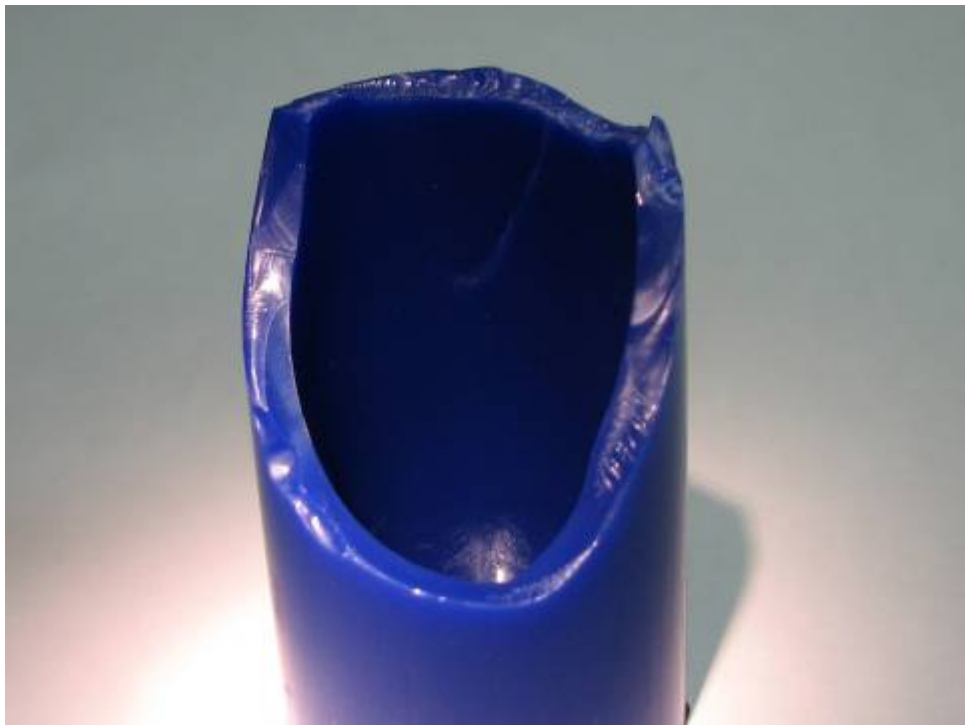


Photo 6: Detail view showing sharp pointy edges



Photo 7: Showing ductile bend



Photo 8: Detail view showing ductile bend

The laboratory performed various tests on Barry B-Net support poles (which were used for reference in the comparison) as well as on the broken remnant pieces of safety fence poles (marked ALS 2007) which were collected by the TD after a skier crashed into a B-Net safety fence in Western Canada.

Report Summary

Comparative analysis of support poles for Safety B-Nets

Samples Tested: Barry Blue PC B-Net Support Poles
ALS 2007 Blue Safety Fence Pole with Predetermined Breaking Point (PDBP)

1) FTIR (Fourier Transform Infrared analysis)

Barry Results: Polycarbonate (PC)
ALS 2007 Results: Polycarbonate (PC)

2) DSC (Differential Scanning Calorimetry)

Barry Results: Tg 147.3 Minor Difference
ALS 2007 Results: Tg 141.6 Minor Difference

3) GPC (Gel Permeation Chromatograph)

	Molecular Weight (Mw)	Molecular Weight Moment (Mz)	Interpretation
Barry	30,390	51,416.....	Better resin, stronger & more ductile
ALS 2007	25,924	40,301.....	Weaker & brittle

4) IZOD Impact Testing

Barry Results: Partial ductile bend
1.53 ft lb required to break

ALS 2007 Results: Complete brittle fracture
0.87 ft lb required to break

Remarks:

In an attempt to further clarify, the poles marked ALS 2007 that were submitted have broken under controlled testing at approximately half the force required to break the Barry poles used as reference . Furthermore, the Barry poles did not actually break, but rather deformed or bent. It is suspected that, in actual use, when the impact force applied exceeds the strength of the plastic material, the ALS 2007 more brittle poles will break in an unpredictable fracture pattern possibly leaving jagged edges, whereas the Barry poles will deform or bend in a ductile manner.

Conclusion

The recent series of crashes where ski racers are observed sliding under nets which are hung tightly and supported by scribed poles has reaffirmed Barry's position on the need to hang the nets loosely to "catch" the fallen skier sliding on the snow.

Barry's B-Net Systems incorporate extra material at the base to drape or skirt loosely on the snow towards the race track and prevents the skier from sliding under, and Barry only uses first grade PC resin for the support poles which will bend and flex to absorb the impact forces, but do not shatter or splinter into dangerous shards.

In our opinion, the scribed poles are dangerous as they may break with pointed edges in an unpredictable manner as well as facilitate the skier to pass right under the nets, rendering them useless.



If you would like more information on these studies, please contact **Marc André Pilon** at the Barry Centre of Excellence – mapilon@barry.ca

Barry Cordage Ltd.

6110, boul. des Grandes-Prairies, Montreal QC H1P 1A2 CANADA

514.328.3888 Toll Free: 1.800.305.2673 (Canada / USA)

514.328.1963 www.barry.ca

References:

Bodycote Testing Group Report No: 08-04-2577-1

Why Choose the Barry B-Net System

Barry B-Net Installation Guidelines

Field Testing of Barry B-Net Systems used in Alpine Ski Race Course Protection – 60km/hr

Field Testing of Barry B-Net Systems used in Alpine Ski Race Course Protection – 100km/hr