Optimization of the synthetic rigid sole curling brush

Comparative tests with synthetic fabric sole curling brushes

Comments: (after the use of the first rigid sole brushes tests)

- The brushing effort is much less demanding.
- Brushing brings the stone further.
- The brush is very light and moves easily.
- The sole dries and cleans immediately.
- The sole does not deteriorate and therefore does not need to be replaced.
- Brushing covers a larger surface but is noisier.
- No one wants to revert to a fabric sole brush.

Construction of the first test brushes

- The soles are moulded on the fiberglass base of the brush heads.
- The brushes have a sole with the same hardness.
- The soles have the same grid pattern.
- The contact surface of the grid pattern is the same for all soles.

Improvements made (February 2014)

Ten new test brushes have been produced:

- Using different material fixed under the head of the brush that receives the sole.
- Decreasing the hardness of the polymer used to mould the sole.
- Increasing the contact surface under the same grid pattern by sanding.

Efficacy tests

In a tray, an ice surface has been produced and maintained. A proper pebble was created as needed.

This quickly allowed many tests with brushes, with the variations mentioned above.

One brush proved to be superior to the others and more efficient.

The efficacy of this brush was compared with that of the Cordura ® nylon fabric sole brushes by brushing on-site.

The verification of the results was made on the Curling Centre ice.

(See the photos and explanations below)

Ice tray and scraping

Pebble created

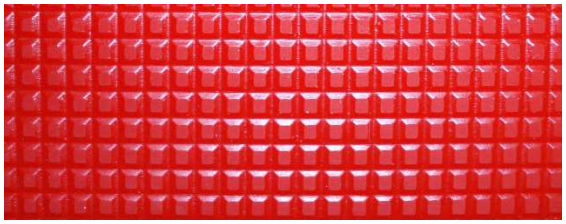
Preparation of ice -5 degree C, watered and scraped

Pebble; water 30 degree C, 2 Fine + 2 Extra-fine

Accessories

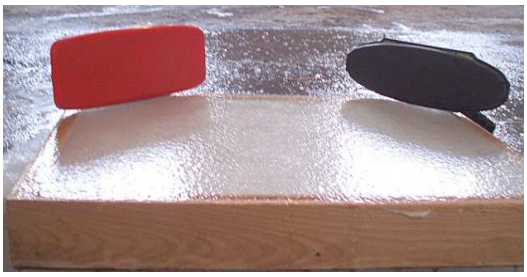
The test brushes

Water sanded on emery paper



Flat spots surfaces of the grid pattern for total contact surface

Comparative tests brushes



Use of the daylight reflections for photos. Brushing with a rigid sole on the left and a fabric sole on the right

Rigid sole Fabric sole

Photo after 100 brushings on-site with alternating brushes
(20 brushings at a time with one minute to rest) About 60 *psi* applied.
Photographed in the daylight reflections

Close-up, the pebble is flat and level with the rigid sole brush.

Close-up, the pebble is rounded and bumpy with the fabric sole brush.

Friction on the ice with a rigid sole brush

Soft and even sliding side rigid sole

Soft and bumpy sliding side fabric sole

The stone slides better and more accurately on a leveled pebble surface than on an uneven and bumpy surface, it slides so as observed previously a little further.

Conclusion

One of the brushes with the sole of less hardness and with an enlarged contact surface under its grid pattern provided increased friction and emerged as the most effective. The sole, moulded on insulation material (barrier) under the base of the brush head, added to its efficiency.

The softer sole of this brush, with contact surfaces expanded under its pattern, sinks a little less on the pebble with a result of reduced noise brushing.

In addition, with the amount of increased friction, the sole warms a few more heads of the highest droplets and levels them more easily, without increasing or decreasing the effort of brushing.

Tests, with a still softer sole, keeping the surfaces of the grid pattern of the first soles, obtained a pebble approaching that of a sole fabric, that is polished, slightly rounded and whose heads vary slightly in height.

Other tests with soles made of padded fabric, adapted and laid under the heads of the RIGID brushes, brought no beneficial result and lost many of the significant benefits of the rigid soles.

Comparative tests between the improved rigid sole brush and brushes with fabric cushioned sole demonstrate that the rigid sole is the most efficient. Results of earlier tests (described in a previous article) consisting of successive passages of the nipper before throwing a stone, reinforces this observation.

Countless results can be achieved by playing with the variables mentioned above, with more or less aggressive patterns and variations in the use of other more or less abrasive polymer compounds.

In many fields, including sports, research and testing of new technologies, the use of modern materials and recent innovations have the same goal: to achieve greater efficiency with less physical effort.

It is an ongoing process that inspires and evokes our Mission Statement: ''Perfect Curling ''.

Gaston Gagné, March 2014

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