

Grilbond
Bonding Agents

GRILBOND®
EMS





Introduction

The safety demands in the tire industry and for mechanical rubber goods (MRG) are a big challenge for all incorporated materials. The adhesion of the flexible rubber to the reinforcing fabric is one of the big challenges in this application.

Especially for the main reinforcing material, polyester (PET), special adhesion bonding systems are needed. The Grilbond products are the key factor for the stable adhesion and have proven their performance for over 40 years' experience in this application.

Determining Factors

Reinforcement in the tire industry must meet the high demands for radial tires. The approval process is extensive. New regulations for environmental friendlier tires increase the demands in rolling resistance, environmental footprint and weight reduction.

The adhesion promotion system with the Grilbond products ensure to meet this high requirements.

Grilbond IL-6

- Highest quality standards
- Outstanding performance for over 40 years
- Proven application for tires and MRG for PET fiber to rubber adhesion

Main Focus for Bonding Agents for the Tire Reinforcement

- Highest reactivity
- Uniform application
- Lowest consumption
- Clean processing
- Highest yield strength

Products

Grilbond	Description	Bag / Can	Drum	Big bag / IBC*
IL-6 100%	Powder	20 kg	-	600 kg
IL-6 50% F	Dispersion	22 kg	220 kg	1'150 kg
IL-6 60% F	Dispersion	22 kg	220 kg	1'150 kg
G 1701	Epoxy	25 kg	230 kg	1'150 kg

*Intermediate Bulk Container

Additional products are available on request.

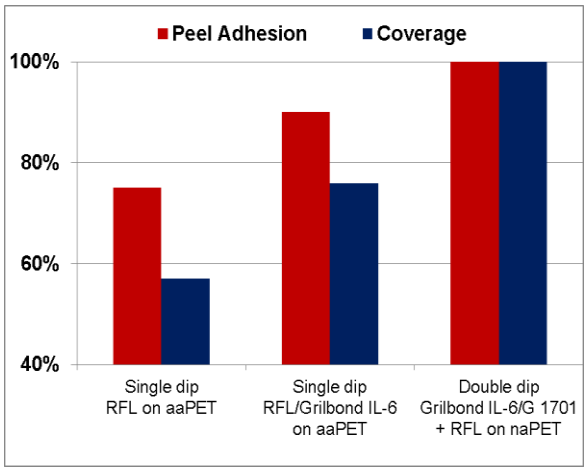




Testing, Research and Development

- Dispersion and dip testing
  - Particle size and quality control
  - Sedimentation
  - Foaming behavior
  - Reactivity
- Dipping trials
  - Lab dipping of single end and fabric
  - Dip pick up (DPU)
  - Gum up testing
- Tire cord testing
  - Adhesion testing
  - Fatigue testing - shoe shine test (SST)
  - Cord properties
    - Breaking strength (tenacity)
    - Elongation
    - Shrinkage
  - Stiffness

Double Dip compared to Single Dip



aaPET: Adhesion activated polyester
naPET: Non adhesion activated polyester

Applications

- Polyester cord fabric for tires
- Single end cord for tires
- Fabric for conveyor-belts and others
- Single end cord for power transmission belts and hoses

Benefits of Grilbond Products

- Reduced dip settlement
- Highest consistency within dip solutions
- Optimum in processability
- Highest adhesion values
- Reduced consumption of bonding agent
- Controllable low pick up levels
- Reduced down time of the dip unit
- Cost savings at higher cord quality

Added Value

- Flexible tire cord
  - ➔ up to 10% better fatigue performance
- Uniform coating
  - ➔ for 10% higher adhesion values
- Reduced chemical consumption
- High productivity (close to zero gum-up)
  - ➔ up to 90% reduced down time
  - ➔ higher line speed (higher output rate)
- Up to 40 % reduced dip costs

Grilbond - Leading Technology

- Fast – Innovative – Competent
- Worldwide service

GRILBOND® EMS



EMS-GRILTECH worldwide

www.emsgriltech.com

EMS-GRILTECH is a Business Unit of EMS-CHEMIE AG, which belongs to the EMS-CHEMIE HOLDING AG (www.ems-group.com).

We manufacture and sell Grilon, Nexylon and Nexylene fibers, Griltex hotmelt adhesives, Grilbond bonding agents, Primid cross linkers for powder coatings and Grilonit reactive diluents. We have developed these materials and additives into outstanding speciality products for technically demanding applications. In this way we create added value for our customers as they can also enjoy success in their own markets only through continuous improvement.

Europe

EMS-CHEMIE AG
Business Unit EMS-GRILTECH
Via Innovativa 1
7013 Domat/Ems
Switzerland
Phone: +41 81 632 72 02
Fax: +41 81 632 74 02
E-Mail: info@emsgriltech.com

Asia

EMS-CHEMIE (Taiwan) Ltd.
Business Unit EMS-GRILTECH
36, Kwang Fu South Road
Hsin Chu Industrial Park
Fu Kou Hsiang
Hsin Chu Hsien 30351
Taiwan, R.O.C.
Phone: +886 35 985 335
Fax: +886 35 985 731
E-Mail: info@tw.emsgriltech.com

Americas

EMS-CHEMIE (North America) Inc.
Business Unit EMS-GRILTECH
2060 Corporate Way, P.O. Box 1717
Sumter, SC 29151
USA
Phone: +1 803 481 61 90
Fax: +1 803 481 61 29
E-Mail: info@us.emsgriltech.com

Japan

EMS-CHEMIE (Japan) Ltd.
Business Unit EMS-GRILTECH
Osaka Office, Umeda Shinmichi Bldg.
1-1-5, Dojima, Kita-ku
Osaka 530-0003
Japan
Phone: +81 6 6348 1655
Fax: +81 6 6348 1702
E-Mail: info@jp.emsgriltech.com

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