

SYNTRAN® 1921

NEW ENVIRONMENTALLY PREFERRED POLYMER TECHNOLOGY FOR INDUSTRIAL FLOOR CARE

Interpolymer Corporation, a leader in providing innovative polymer technology, has introduced **SYNTRAN 1921**, proprietary water based acrylic co-polymer for industrial floor care applications.

SYNTRAN 1921 has been developed to deliver performance equal to conventional metal cross-linked acrylic polymers with the chemical properties required to meet or exceed global green standards.

SYNTRAN 1921 based floor care formulations offer superior durability, scratch and black heel mark resistance and excellent gloss. This novel polymer can be formulated as a low maintenance dry-brite finish or for finishes designed for high speed burnishing maintenance programs.

Interpolymer's R&D team conducted bench and floor tests comparing **SYNTRAN 1921** and starting point formulation to a leading competitive "green" polymer's recommended formula. The results highlight the superior performance properties that floor care product formulators will achieve with **SYNTRAN 1921**.

With **SYNTRAN 1921** based floor care products, achieve conventional cost performance properties with an environmentally preferred product.

Tests Conducted:

- A. ASTM bench test
- B. Floor test

Materials:

1. Leading competitive polymer brand and recommended formulation.
2. Interpolymer Formulation F-52-086-02 based on **SYNTRAN 1921**.

Bench Test Procedures:

The above listed finishes were performance tested in bench evaluations. The finishes were applied to black vinyl tile substrates to determine gloss, leveling and recoatability properties.

The **SYNTRAN 1921** F-52-086-02 has the highest total gloss value at 293 compared to 266 for the competitive brand.

The **SYNTRAN 1921** F-52-086-02 has excellent rubber heel mark resistance. The competitive brand finish rated a very good.

The complete bench test results are shown in Table 1.1.

Bench Test Results Table 1.1
Test Results and Observations

TEST SAMPLES	Leading Competitive Polymer & Recommended Formulation	SYNTRAN 1921 based F-52-086-02
60° Specular Gloss ASTM D1436 5 Coats on BVT	17,43,58,71,77	20,45,68,77,83
Total Gloss Value Sum of the five coats	266	293
20° Specular Gloss ASTM D1436 5 Coats on BVT	2,8,19,31,38	2,9,24,37,53
Total Gloss Value Sum of the five coats	98	125
Powder Resistance ASTM D 2048	Excellent	Excellent
Crazing	Excellent	Excellent
Leveling ASTM D1436	Initial Final Excellent Excellent	Excellent Excellent
Recoatibility ASTM D3153	Initial Final Excellent Excellent	Excellent Excellent
Rubber Heel Mark Resistance ASTM D 3714	Very Good 1.04	Excellent 1.02
Water Spot Resistance ASTM D1793	Initial Final Excellent Excellent	Excellent Excellent
Detergent Resistance ASTM D3207	Excellent	Excellent
Removability ASTM D1792	Excellent	Excellent
Slip Index ASTM D2047	0.5	0.6
Sward Rocker Hardness ASTM D 2134	14	18
Non-Volatile Content ASTM D2834	19.8	20.0
Viscosity LVF (cps)	5.6	5.8
pH ASTM E70-77	7.9	8.0

FLOOR TEST

PURPOSE:

A floor test was conducted to compare application properties and burnishing response of the floor finishes listed.

MATERIALS TESTED:

1. Leading competitive polymer and recommended formulation
2. Interpolymer Formulation F-52-086-02 based on **SYNTRAN 1921**

FLOOR TEST PARAMETERS:

Location: Test floor at Interpolymer Corporation in Canton, MA
Flooring: 12" x 12" Black vinyl composition tiles
12" x 12" White vinyl composition tiles
12" x 12" Black solid vinyl tiles

Floor Preparation: The floor was machine stripped with a commercial stripper and rinsed twice with water using a mop and pail.

Application of Finish: Five coats of each finish were applied to the floor at a rate of 1000 to 1500 ft²/gallon using a cotton blend mop (size large) and allowing sufficient drying time between coats. The finishes were applied at atmospheric conditions of 70°F and relative humidity of 33% with fair air circulation.

60° Specular Gloss
 (Measurements taken on vinyl composition tiles)

Coats	Leading Competitive Polymer & Recommended Formulation	F-52-086-02 based on Syntran 1921
1	11°	13
2	34°	34
3	54	54
4	65	66
5	72	74

°Denotes Leveling Issue

Conditions on day of application: 70° F and 33% R/H

Table 3.1
Conditions After Three Days of Traffic: 67°F and 45%RH)

Coats	Leading Competitive Polymer & Recommended Formulation	F-52-086-02 based on Syntran 1921
Initial gloss after 3 days traffic	62	63
After UHS Propane with 3M peach (3200 medium)	70 Δ8	75 Δ12
After UHS Propane with natural pad (aggressive)	75 Δ5	81 Δ6

Comments:

Application Results: Each of the finishes applied easily to the floor with comparable gloss and recoatability properties. Formulation F-52-086-02 has excellent leveling on each coat of application while the competitive polymer and formulation has leveling issues on the first two coats of application.

After three days of medium traffic, the floors coated with each finish had equal amount of scuffing. The floor was sectioned into quarters where a pad and machine matrix evaluation was conducted. See Table 3.1 for details.

Results for UHS propane burnish with Peach Pad: The scuffing marks removed well with the burnishing operation for each section. Each finish responded to the burnishing with an increase in gloss and no scratching or swirling of the film.

Results for UHS propane burnish with natural pad: The areas coated with the competitive polymer's formulation showed slight swirl marks on the black vinyl tiles, whereas the F-52-086-02 produced no swirl marks.

SYNTRAN[®] 1921

ENVIRONMENTALLY FRIENDLY

Interpolymer Corp. is pleased to introduce **NEW, PROPRIETARY** Acrylic co-polymer technology for the expanding “Green” marketplace.

SYNTRAN 1921 is a zinc and other heavy metal, ammonia and APE surfactant free acrylic co-polymer.

SYNTRAN 1921's proprietary cross-linking system will add extended life to green floor polishes.

Typical Properties of Emulsion

POLYMER TYPE	Acrylate Copolymer
TOTAL SOLIDS	38%
PH @ 22°C	8.0
SPECIFIC GRAVITY @ 22°C	1.054
VISCOSITY @ 22°C	60 cps (Brookfield)
MINIMUM FILM FORMATION TEMPERATURE	75° C
CHARGE OF EMULSION PARTICLE	Negative
HEAT STABILITY @ 52°C	Unchanged after 30 days
FREEZE-THAW STABILITY	Protect from Freezing

03/06 wft

SYNTRAN[®] 1921

Zinc free polymer for “Green” floor finishes

Formulation F-52-086-02 is suggested as a starting point green floor polish finish for maintenance programs where occasional burnishing will be utilized. Formulation F-52-086-02 is zinc, ammonia and APE surfactant free, with a low VOC content.

Formulation F-52-086-02 @ 20% N.V.

Mix in Order Listed:

	<u>Pounds</u>	<u>Weight %</u>
Water	405.60	47.20
Bactericide	q.s.	q.s.
Premixed Plasticizers:		
Tributoxyethyl Phosphate	28.70	3.30
Diethylene Glycol Ethyl Ether	38.20	4.40
1% Active Zonyl FSA	3.80	0.40
Tomadol 23-3	4.80	0.60
SYNTRAN 1921 @ 38% N.V.	339.50	39.50
SYNTRAN 6160 @ 35% N.V.	20.50	2.40
SYNTRAN PA-1465 @ 38% N.V.	18.90	2.20
Defoamer	q.s.	q.s.
YIELD:	<u>860.00</u>	<u>100.00%</u>

pH: 8.0 \pm 0.2

Polymer/Resin/Wax Ratio: 90 / 0 / 10

4/2006

SYNTRAN[®] 1921 Green

