



# PolyJet Materials Data Sheet

## MATERIALS SIMULATING ENGINEERING PLASTICS

DIGITAL ABS, GREEN (RGD5160-DM, RGD5161-DM) MADE OF RGD515 & RGD535 | DIGITAL ABS, IVORY (RGD5130-DM, RGD5131-DM) MADE OF RGD515 & RGD531

|  | ASTM                | UNITS   | METRIC    | UNITS      | IMPERIAL        |
|--|---------------------|---------|-----------|------------|-----------------|
| Tensile strength   | D-638-03            | MPa     | 55-60     | psi        | 8000-8700       |
| Elongation at break  | D-638-05            | %       | 25-40     | %          | 25-40           |
| Modulus of elasticity                                      | D-638-04            | MPa     | 2600-3000 | psi        | 375,000-435,000 |
| Flexural Strength  | D-790-03            | MPa     | 65-75     | psi        | 9,500-11,000    |
| Flexural Modulus   | D-790-04            | MPa     | 1700-2200 | psi        | 245,000-320,000 |
| HDT, °C @ 0.45MPa  | D-648-06            | °C      | 58-68     | °F         | 136-154         |
| HDT, °C @ 0.45MPa after thermal post treatment procedure A | D-648-06            | °C      | 82-90     | °F         | 180-194         |
| HDT, °C @ 0.45MPa after thermal post treatment procedure B | D-648-06            | °C      | 92-95     | °F         | 198-203         |
| HDT, °C @ 1.82MPa  | D-648-07            | °C      | 51-55     | °F         | 124-131         |
| Izod Notched Impact  | D-256-06            | J/m     | 65-80     | ft lb/inch | 1.22-1.50       |
| Tg   | DMA, E <sub>2</sub> | °C      | 47-53     | °F         | 117-127         |
| Shore Hardness (D)   | Scale D             | Scale D | 85-87     | Scale D    | 85-87           |
| Rockwell Hardness  | Scale M             | Scale M | 67-69     | Scale M    | 67-69           |
| Polymerized density  | ASTM D792           | g/cm3   | 1.17-1.18 |            |                 |

HIGH TEMPERATURE MATERIAL (RGD525)

|  | ASTM                | UNITS   | METRIC    | UNITS      | IMPERIAL        |
|--|---------------------|---------|-----------|------------|-----------------|
| Tensile strength   | D-638-03            | MPa     | 70-80     | psi        | 10,000-11,500   |
| Elongation at break  | D-638-05            | %       | 10-15     | %          | 10-15           |
| Modulus of elasticity                                      | D-638-04            | MPa     | 3200-3500 | psi        | 465,000-510,000 |
| Flexural Strength  | D-790-03            | MPa     | 110-130   | psi        | 16,000-19,000   |
| Flexural Modulus   | D-790-04            | MPa     | 3100-3500 | psi        | 450,000-510,000 |
| HDT, °C @ 0.45MPa  | D-648-06            | °C      | 63-67     | °F         | 145-163         |
| HDT, °C @ 0.45MPa after thermal post treatment procedure A | D-648-06            | °C      | 75-80     | °F         | 167-176         |
| HDT, °C @ 1.82MPa  | D-648-07            | °C      | 55-57     | °F         | 131-135         |
| Izod Notched Impact  | D-256-06            | J/m     | 14-16     | ft lb/inch | 0.262-0.300     |
| Water Absorption, %  | D-570-98 24hr       | %       | 1.2-1.4   | %          | 1.2-1.4         |
| Tg   | DMA, E <sub>2</sub> | °C      | 62-65     | °F         | 144-149         |
| Shore Hardness D   | Scale D             | Scale D | 87-88     | Scale D    | 87-88           |
| Rockwell Hardness  | Scale M             | Scale M | 78-83     | Scale M    | 78-83           |
| Polymerized density  | ASTM D792           | g/cm3   | 1.17-1.18 |            |                 |
| Ash content  | USP281              | %       | 0.38-0.42 | %          | 0.38-0.42       |

## MATERIALS SIMULATING STANDARD PLASTICS

TRANSPARENT MATERIALS

| RGD720                |                     |         |           |            |                 |
|-----------------------|---------------------|---------|-----------|------------|-----------------|
|                       | ASTM                | UNITS   | METRIC    | UNITS      | IMPERIAL        |
| Tensile strength      | D-638-03            | MPa     | 50-65     | psi        | 7250-9450       |
| Elongation at break   | D-638-05            | %       | 15-25     | %          | 15-25           |
| Modulus of elasticity | D-638-04            | MPa     | 2000-3000 | psi        | 290,000-435,000 |
| Flexural Strength     | D-790-03            | MPa     | 80-110    | psi        | 12000-16000     |
| Flexural Modulus      | D-790-04            | MPa     | 2700-3300 | psi        | 390,000-480,000 |
| HDT, °C @ 0.45MPa     | D-648-06            | °C      | 45-50     | °F         | 113-122         |
| HDT, °C @ 1.82MPa     | D-648-07            | °C      | 45-50     | °F         | 113-122         |
| Izod Notched Impact   | D-256-06            | J/m     | 20-30     | ft lb/inch | 0.375-0.562     |
| Water Absorption      | D-570-98 24hr       | %       | 1.5-2.2   | %          | 1.5-2.2         |
| Tg                    | DMA, E <sub>2</sub> | °C      | 48-50     | °F         | 118-122         |
| Shore Hardness (D)    | Scale D             | Scale D | 83-86     | Scale D    | 83-86           |
| Rockwell Hardness     | Scale M             | Scale M | 73-76     | Scale M    | 73-76           |
| Polymerized density   | ASTM D792           | g/cm3   | 1.18-1.19 |            |                 |
| Ash content           | USP281              | %       | 0.01-0.02 | %          | 0.01-0.02       |

TRANSPARENT MATERIALS

| VEROCLEAR RGD810      |                     |         |           |            |                 |
|-----------------------|---------------------|---------|-----------|------------|-----------------|
|                       | ASTM                | UNITS   | METRIC    | UNITS      | IMPERIAL        |
| Tensile strength      | D-638-03            | MPa     | 50-65     | psi        | 7250-9450       |
| Elongation at break   | D-638-05            | %       | 10-25     | %          | 10-25           |
| Modulus of elasticity | D-638-04            | MPa     | 2000-3000 | psi        | 290,000-435,000 |
| Flexural Strength     | D-790-03            | MPa     | 75-110    | psi        | 11000-16000     |
| Flexural Modulus      | D-790-04            | MPa     | 2200-3200 | psi        | 320,000-465,000 |
| HDT, °C @ 0.45MPa     | D-648-06            | °C      | 45-50     | °F         | 113-122         |
| HDT, °C @ 1.82MPa     | D-648-07            | °C      | 45-50     | °F         | 113-122         |
| Izod Notched Impact   | D-256-06            | J/m     | 20-30     | ft lb/inch | 0.375-0.562     |
| Water Absorption      | D-570-98 24hr       | %       | 1.1-1.5   | %          | 1.1-1.5         |
| Tg                    | DMA, E <sub>2</sub> | °C      | 52-54     | °F         | 126-129         |
| Shore Hardness (D)    | Scale D             | Scale D | 83-86     | Scale D    | 83-86           |
| Rockwell Hardness     | Scale M             | Scale M | 73-76     | Scale M    | 73-76           |
| Polymerized density   | ASTM D792           | g/cm3   | 1.18-1.19 |            |                 |
| Ash content           | USP281              | %       | 0.02-0.06 | %          | 0.02-0.06       |

Find material properties for color materials on the Color Digital Materials Data Sheet.

### RIGID OPAQUE MATERIALS

VEROGRAY RGD850, VEROBLACKPLUS RGD875, VEROWHITEPLUS RGD835, VEROYELLOW RGD836, VEROcyan RGD841, VEROMAGENTA RGD851

|                                     | ASTM          | UNITS   | METRIC    | UNITS      | IMPERIAL        |
|-------------------------------------|---------------|---------|-----------|------------|-----------------|
| Tensile strength                    | D-638-03      | MPa     | 50-65     | psi        | 7250-9450       |
| Elongation at break                 | D-638-05      | %       | 10-25     | %          | 10-25           |
| Modulus of elasticity               | D-638-04      | MPa     | 2000-3000 | psi        | 290,000-435,000 |
| Flexural Strength                   | D-790-03      | MPa     | 75-110    | psi        | 11000-16000     |
| Flexural Modulus                    | D-790-04      | MPa     | 2200-3200 | psi        | 320,000-465,000 |
| HDT, °C @ 0.45MPa                   | D-648-06      | °C      | 45-50     | °F         | 113-122         |
| HDT, °C @ 1.82MPa                   | D-648-07      | °C      | 45-50     | °F         | 113-122         |
| Izod Notched Impact                 | D-256-06      | J/m     | 20-30     | ft lb/inch | 0.375-0.562     |
| Water Absorption                    | D-570-98 24hr | %       | 1.1-1.5   | %          | 1.1-1.5         |
| Tg                                  | DMA, E>       | °C      | 52-54     | °F         | 126-129         |
| Shore Hardness (D)                  | Scale D       | Scale D | 83-86     | Scale D    | 83-86           |
| Rockwell Hardness                   | Scale M       | Scale M | 73-76     | Scale M    | 73-76           |
| Polymerized density                 | ASTM D792     | g/cm3   | 1.17-1.18 |            |                 |
| Ash content VeroGray, VeroWhitePlus | USP281        | %       | 0.23-0.26 | %          | 0.23-0.26       |
| Ash content VeroBlackPlus           | USP281        | %       | 0.01-0.02 | %          | 0.01-0.02       |

### SIMULATED POLYPROPYLENE MATERIALS

DURUS WHITE RGD430

|                       | ASTM          | UNITS   | METRIC    | UNITS      | IMPERIAL        |
|-----------------------|---------------|---------|-----------|------------|-----------------|
| Tensile strength      | D-638-03      | MPa     | 20-30     | psi        | 2900-4350       |
| Elongation at break   | D-638-05      | %       | 40-50     | %          | 40-50           |
| Modulus of elasticity | D-638-04      | MPa     | 1000-1200 | psi        | 145,000-175,000 |
| Flexural Strength     | D-790-03      | MPa     | 30-40     | psi        | 4350-5800       |
| Flexural Modulus      | D-790-04      | MPa     | 1200-1600 | psi        | 175,000-230,000 |
| HDT, °C @ 0.45MPa     | D-648-06      | °C      | 37-42     | °F         | 99-108          |
| HDT, °C @ 1.82MPa     | D-648-07      | °C      | 32-34     | °F         | 90-93           |
| Izod Notched Impact   | D-256-06      | J/m     | 40-50     | ft lb/inch | 0.749-0.937     |
| Water Absorption      | D-570-98 24hr | %       | 1.5-1.9   | %          | 1.5-1.9         |
| Tg                    | DMA, E>       | °C      | 35-37     | °F         | 95-99           |
| Shore Hardness (D)    | Scale D       | Scale D | 74-78     | Scale D    | 74-78           |
| Rockwell Hardness     | Scale M       | Scale M | no data   | Scale M    | no data         |
| Polymerized density   | ASTM D792     | g/cm3   | 1.15-1.17 |            |                 |
| Ash content           | USP281        | %       | 0.10-0.12 | %          | 0.1-0.12        |

### RIGUR RGD450

|                       | ASTM      | UNITS   | METRIC    | UNITS      | IMPERIAL          |
|-----------------------|-----------|---------|-----------|------------|-------------------|
| Tensile strength      | D-638-03  | MPa     | 40-45     | psi        | 5800-6500         |
| Elongation at break   | D-638-05  | %       | 20-35     | %          | 20-35             |
| Modulus of elasticity | D-638-04  | MPa     | 1700-2100 | psi        | 246,000 – 305,000 |
| Flexural Strength     | D-790-03  | MPa     | 52-59     | psi        | 7500 - 8500       |
| Flexural Modulus      | D-790-04  | MPa     | 1500-1700 | psi        | 217,000 – 246,000 |
| HDT, °C @ 0.45MPa     | D-648-06  | °C      | 49-54     | °F         | 120-129           |
| HDT, °C @ 1.82MPa     | D-648-07  | °C      | 45-50     | °F         | 113-122           |
| Izod Notched Impact   | D-256-06  | J/m     | 30-35     | ft lb/inch | 0.561-0.656       |
| Tg                    | DMA, E>   | °C      | 48-52     | °F         | 118-126           |
| Shore Hardness (D)    | Scale D   | Scale D | 80-84     | Scale D    | 80-84             |
| Rockwell Hardness     | Scale M   | Scale M | 58-62     | Scale M    | 58-62             |
| Polymerized density   | ASTM D792 | g/cm3   | 1.20-1.21 |            |                   |
| Ash content           | USP281    | %       | 0.3-0.4   | %          | 0.3-0.4           |

### RIGID OPAQUE MATERIALS

VEROBLUE RGD840

|                       | ASTM          | UNITS   | METRIC    | UNITS      | IMPERIAL        |
|-----------------------|---------------|---------|-----------|------------|-----------------|
| Tensile strength      | D-638-03      | MPa     | 50-60     | psi        | 7250-8700       |
| Elongation at break   | D-638-05      | %       | 15-25     | %          | 15-25           |
| Modulus of elasticity | D-638-04      | MPa     | 2000-3000 | psi        | 290,000-435,000 |
| Flexural Strength     | D-790-03      | MPa     | 60-70     | psi        | 8700-10200      |
| Flexural Modulus      | D-790-04      | MPa     | 1900-2500 | psi        | 265,000-365,000 |
| HDT, °C @ 0.45MPa     | D-648-06      | °C      | 45-50     | °F         | 113-122         |
| HDT, °C @ 1.82MPa     | D-648-07      | °C      | 45-50     | °F         | 113-122         |
| Izod Notched Impact   | D-256-06      | J/m     | 20-30     | ft lb/inch | 0.375-0.562     |
| Water Absorption      | D-570-98 24hr | %       | 1.5-2.2   | %          | 1.5-2.2         |
| Tg                    | DMA, E>       | °C      | 48-50     | °F         | 118-122         |
| Shore Hardness (D)    | Scale D       | Scale D | 83-86     | Scale D    | 83-86           |
| Rockwell Hardness     | Scale M       | Scale M | 73-76     | Scale M    | 73-76           |
| Polymerized density   | ASTM D792     | g/cm3   | 1.18-1.19 |            |                 |
| Ash content           | USP281        | %       | 0.21-0.22 | %          | 0.21-0.22       |

### RUBBER-LIKE MATERIALS

TANGOBLACKPLUS FLX980 AND TANGOPLUS FLX930

|                         | ASTM      | UNITS   | METRIC    | UNITS   | IMPERIAL |
|-------------------------|-----------|---------|-----------|---------|----------|
| Tensile strength        | D-412     | MPa     | 0.8-1.5   | psi     | 115-220  |
| Elongation at break     | D-412     | %       | 170-220   | %       | 170-220  |
| Compressive set         | D-395     | %       | 4-5       | %       | 4-5      |
| Shore Hardness (A)      | D-2240    | Scale A | 26-28     | Scale A | 26-28    |
| Tensile Tear resistance | D-624     | Kg/cm   | 2-4       | Lb/in   | 18-22    |
| Polymerized density     | ASTM D792 | g/cm3   | 1.12-1.13 |         |          |

TANGOBLACK FLX973

|                         | ASTM      | UNITS   | METRIC    | UNITS   | IMPERIAL |
|-------------------------|-----------|---------|-----------|---------|----------|
| Tensile strength        | D-412     | MPa     | 1.8-2.4   | psi     | 115-350  |
| Elongation at break     | D-412     | %       | 45-55     | %       | 45-55    |
| Compressive set         | D-395     | %       | 0.5-1.5   | %       | 0.5-1.5  |
| Shore Hardness (A)      | D-2240    | Scale A | 60-62     | Scale A | 60-62    |
| Tensile Tear resistance | D-624     | Kg/cm   | 3-5       | Lb/in   | 18-24    |
| Polymerized density     | ASTM D792 | g/cm3   | 1.14-1.15 |         |          |

TANGOGRAY FLX950

|                         | ASTM      | UNITS   | METRIC    | UNITS   | IMPERIAL |
|-------------------------|-----------|---------|-----------|---------|----------|
| Tensile strength        | D-412     | MPa     | 3-5       | psi     | 435-725  |
| Elongation at break     | D-412     | %       | 45-55     | %       | 45-55    |
| Compressive set         | D-395     | %       | 0.5-1.5   | %       | 0.5-1.5  |
| Shore Hardness (A)      | D-2240    | Scale A | 73-77     | Scale A | 73-77    |
| Tensile Tear resistance | D-624     | Kg/cm   | 8-12      | Lb/in   | 50-60    |
| Polymerized density     | ASTM D792 | g/cm3   | 1.16-1.17 |         |          |





# Digital Materials Data Sheet

## RIGID OPAQUE MATERIALS

| PRIMARY MATERIAL: VEROWHITEPLUS™ RGD835<br>SECONDARY MATERIAL: VEROBBLACKPLUS™ RGD875 |          |       |                                    |
|---|----------|-------|------------------------------------|
| PROPERTY  | ASTM     | UNITS | RGD8310-DM, RGD8320-DM, RGD8330-DM |
| Tensile strength  | D-638-03 | MPa   | 50-65                              |
| Elongation at break   | D-638-05 | %     | 10-25                              |
| Modulus of elasticity   | D-638-04 | MPa   | 2000-3000                          |
| Flexural strength   | D-790-03 | MPa   | 75-110                             |
| Flexural modulus  | D-790-04 | MPa   | 2200-3200                          |
| HDT, °C @ 0.45MPa   | D-648-06 | °C    | 45-50                              |
| Izod notched impact   | D-256-06 | J/m   | 20-30                              |

| PRIMARY MATERIAL: VEROBBLUE™ RGD840<br>SECONDARY MATERIAL: VEROBBLACKPLUS™ RGD875 |          |       |            |
|---|----------|-------|------------|
| PROPERTY  | ASTM     | UNITS | RGD8210-DM |
| Tensile strength  | D-638-03 | MPa   | 50-60      |
| Elongation at break   | D-638-05 | %     | 15-25      |
| Modulus of elasticity   | D-638-04 | MPa   | 2000-3000  |
| Flexural strength   | D-790-03 | MPa   | 60-70      |
| Flexural modulus  | D-790-04 | MPa   | 1900-2500  |
| HDT, °C @ 0.45MPa   | D-648-06 | °C    | 45-50      |
| Izod notched impact   | D-256-06 | J/m   | 20-30      |

| PRIMARY MATERIAL: VEROWHITEPLUS RGD835<br>SECONDARY MATERIAL: TANGOBLACKPLUS™ FLX980 / TANGOPLUS™ FLX930 |          |         |  |  |
|--|----------|---------|--|--|
| PROPERTY   | ASTM     | UNITS   | RGD8505-DM<br>RGD8510-DM<br>RGD8515-DM<br>RGD8520-DM | RGD8525-DM<br>RGD8425-DM<br>(ONLY OBJECT<br>TANGOPLUS<br>FLX930) |
| Tensile strength   | D-638-03 | MPa     | 40-60  | 35-45  |
| Elongation at break  | D-638-05 | %       | 15-25  | 20-30  |
| Modulus of elasticity  | D-638-04 | MPa     | 1700-2300  | 1400-2000  |
| Flexural strength  | D-790-03 | MPa     | 55-75  | 45-60  |
| Flexural modulus   | D-790-04 | MPa     | 1500-2500  | 1400-1800  |
| HDT, °C @ 0.45MPa  | D-648-06 | °C      | 40-45  | 40-43  |
| Izod notched impact  | D-256-06 | J/m     | 22-35  | 22-35  |
| Shore hardness (D)   | D2240-05 | Scale D | 81.1-85.5  | 79.5-83.5  |

| PRIMARY MATERIAL: VERO BLACKPLUS RGD875<br>SECONDARY MATERIAL: TANGOBLACKPLUS™ FLX980 / TANGOPLUS™ FLX930 |          |         |                          |
|---|----------|---------|--------------------------|
| PROPERTY  | ASTM     | UNITS   | RGD8555-DM<br>RGD8455-DM |
| Tensile strength  | D-638-03 | MPa     | 35-45                    |
| Elongation at break   | D-638-05 | %       | 20-30                    |
| Modulus of elasticity   | D-638-04 | MPa     | 1400-2000                |
| Flexural strength   | D-790-03 | MPa     | 45-60                    |
| Flexural modulus  | D-790-04 | MPa     | 1400-1800                |
| HDT, °C @ 0.45MPa   | D-648-06 | °C      | 40-43                    |
| Izod notched impact   | D-256-06 | J/m     | 25-35                    |
| Shore hardness (D)  | D2240-05 | Scale D | 79.5-83.5                |

| PRIMARY MATERIAL: HIGH TEMPERATURE RGD525<br>SECONDARY MATERIAL: TANGOBLACKPLUS™ FLX980 |          |       |  |             |
|---|----------|-------|--|-------------|
| PROPERTY  | ASTM     | UNITS | RGD5205-DM<br>RGD5210-DM<br>RGD5215-DM<br>RGD5220-DM<br>RGD5225-DM | RGD5250-DM* |
| Tensile strength  | D-638-03 | MPa   | 43-55  | 50-56       |
| Elongation at break   | D-638-05 | %     | 9-15   | 18-27       |
| Modulus of elasticity   | D-638-04 | MPa   | 1600-2700  | 1700-2400   |
| Flexural strength   | D-790-03 | MPa   | 50-100   | 47-70       |
| Flexural modulus  | D-790-04 | MPa   | 1700-2700  | 1400-2000   |
| HDT, °C @ 0.45MPa   | D-648-06 | °C    | 46-60  | 50-56       |
| Izod notched impact   | D-256-06 | J/m   | 16-19  | 16-26       |

| PRIMARY MATERIAL: HIGH TEMPERATURE RGD525<br>SECONDARY MATERIAL: TANGOPLUS™ FLX930 |          |       |            |
|--|----------|-------|------------|
| PROPERTY   | ASTM     | UNITS | RGD5150-DM |
| Tensile strength   | D-638-03 | MPa   | 45-60      |
| Elongation at break  | D-638-05 | %     | 18-27      |
| Modulus of elasticity  | D-638-04 | MPa   | 1700-2400  |
| Flexural strength  | D-790-03 | MPa   | 47-70      |
| Flexural modulus   | D-790-04 | MPa   | 1400-2000  |
| HDT, °C @ 0.45MPa  | D-648-06 | °C    | 50-56      |
| Izod notched impact  | D-256-06 | J/m   | 16-26      |

\* Vero™-like DM with higher temperature resistance  
Find material properties for color materials on the Color Digital Materials Data Sheet.

## RIGID OPAQUE MATERIALS

PRIMARY MATERIAL: VEROWHITEPLUS RGD835  
SECONDARY MATERIAL: TANGOBLACK™ FLX973

| PROPERTY              | ASTM     | UNITS | RGD8110 - DM | RGD8120 - DM | RGD8130 - DM |
|-----------------------|----------|-------|--------------|--------------|--------------|
| Tensile strength      | D-638-03 | MPa   | 45-65        | 46-65        | 27-33        |
| Elongation at break   | D-638-05 | %     | 10-30        | 10-30        | 25-35        |
| Modulus of elasticity | D-638-04 | MPa   | 2000-3000    | 2000-3000    | 1500-2100    |
| Flexural strength     | D-790-03 | MPa   | 70-100       | 70-100       | 40-50        |
| Flexural modulus      | D-790-04 | MPa   | 2000-3000    | 2000-3000    | 1400-1800    |
| HDT, °C @ 0.45MPa     | D-648-06 | °C    | 43-50        | 43-50        | 40-45        |
| Izod notched impact   | D-256-06 | J/m   | 20-35        | 20-35        | 30-40        |

## TRANSPARENT MATERIALS

PRIMARY MATERIAL: RGD720  
SECONDARY MATERIAL: VEROBLACKPLUS RGD875

| PROPERTY              | ASTM     | UNITS | RGD7513-DM (DOTS)<br>RGD7523-DM (GRID) |
|-----------------------|----------|-------|--|
| Tensile strength      | D-638-03 | MPa   | 50-65                                  |
| Elongation at break   | D-638-05 | %     | 15-25                                  |
| Modulus of elasticity | D-638-04 | MPa   | 2000-3000                              |
| Flexural strength     | D-790-03 | MPa   | 80-110                                 |
| Flexural modulus      | D-790-04 | MPa   | 2700-3300                              |
| HDT, °C @ 0.45MPa     | D-648-06 | °C    | 45-50                                  |
| Izod notched impact   | D-256-06 | J/m   | 20-30                                  |

PRIMARY MATERIAL: RGD720  
SECONDARY MATERIAL: TANGOBLACK FLX973

| PROPERTY              | ASTM     | UNITS | RGD7210-DM | RGD7220-DM | RGD7230-DM |
|-----------------------|----------|-------|------------|------------|------------|
| Tensile strength      | D-638-03 | MPa   | 50-55      | 50-55      | 45-50      |
| Elongation at break   | D-638-05 | %     | 15-25      | 15-25      | 15-25      |
| Modulus of elasticity | D-638-04 | MPa   | 2200-2500  | 2000-2300  | 1700-2000  |
| Flexural strength     | D-790-03 | MPa   | 80-90      | 75-85      | 70-80      |
| Flexural modulus      | D-790-04 | MPa   | 2300-2700  | 2200-2600  | 2100-2400  |
| HDT, °C @ 0.45MPa     | D-648-06 | °C    | 45-50      | 45-50      | 45-50      |
| Izod notched impact   | D-256-06 | J/m   | 20-30      | 20-30      | 20-30      |

PRIMARY MATERIAL: VEROCLEAR™ RGD810  
SECONDARY MATERIAL: TANGOPLUS FLX930 / TANGOBLACKPLUS FLX980

| PROPERTY              | ASTM     | UNITS   | RGD8705-DM<br>RGD8710-DM<br>RGD8715-DM<br>RGD8720-DM | RGD8625-DM<br>RGD8725-DM |
|-----------------------|----------|---------|--|--------------------------|
| Tensile strength      | D-638-03 | MPa     | 40-60  | 35-45                    |
| Elongation at break   | D-638-05 | %       | 15-25  | 20-30                    |
| Modulus of elasticity | D-638-04 | MPa     | 1,700-2,300  | 1,400-2,000              |
| Flexural strength     | D-790-03 | MPa     | 55-75  | 45-60                    |
| Flexural modulus      | D-790-04 | MPa     | 1,500-2,500  | 1,400-1,800              |
| HDT, °C @ 0.45MPa     | D-648-06 | °C      | 40-45  | 40-43                    |
| Izod notched impact   | D-256-06 | J/m     | 22-35  | 25-35                    |
| Shore hardness (D)    | D2240-05 | Scale D | 81.1-85.5  | 79.5-83.5                |

## SIMULATED POLYPROPYLENE MATERIALS

PRIMARY MATERIAL: DURUSWHITE™ RGD430  
SECONDARY MATERIAL: VEROWHITEPLUS RGD835, VEROBLEUE RGD840,  
VEROBLACKPLUS RGD875 OR RGD720

| PROPERTY              | ASTM     | UNITS | RGD4310-DM<br>RGD4410-DM<br>RGD4510-DM<br>RGD4710-DM |
|-----------------------|----------|-------|--|
| Tensile strength      | D-638-03 | MPa   | 30-40  |
| Elongation at break   | D-638-05 | %     | 40-50  |
| Modulus of elasticity | D-638-04 | MPa   | 1200-1600  |
| Flexural strength     | D-790-03 | MPa   | 40-50  |
| Flexural modulus      | D-790-04 | MPa   | 1300-1700  |
| HDT, °C @ 0.45MPa     | D-648-06 | °C    | 40-45  |
| Izod notched impact   | D-256-06 | J/m   | 35-45  |

PRIMARY MATERIAL: VEROWHITEPLUS RGD835  
SECONDARY MATERIAL: TANGOPLUS FLX930 / TANGOBLACKPLUS FLX980

| PROPERTY              | ASTM     | UNITS   | RGD8430-DM<br>RGD8530-DM |
|-----------------------|----------|---------|--------------------------|
| Tensile strength      | D-638-03 | MPa     | 29-38                    |
| Elongation at break   | D-638-05 | %       | 25-35                    |
| Modulus of elasticity | D-638-04 | MPa     | 1100-1700                |
| Flexural strength     | D-790-03 | MPa     | 35-45                    |
| Flexural modulus      | D-790-04 | MPa     | 1200-1500                |
| HDT, °C @ 0.45MPa     | D-648-06 | °C      | 38-41                    |
| Izod notched impact   | D-256-06 | J/m     | 21-40                    |
| Shore hardness (D)    | D2240-05 | Scale D | 76.1-81.7                |

## SIMULATED POLYPROPYLENE MATERIALS

| PRIMARY MATERIAL: VEROLACKPLUS RGD875<br>SECONDARY MATERIAL: TANGOPLUS FLX930 / TANGOBLOCKPLUS FLX980 |          |         |                          |
|---|----------|---------|--------------------------|
| PROPERTY  | ASTM     | UNITS   | RGD8460-DM<br>RGD8560-DM |
| Tensile strength  | D-638-03 | MPa     | 29-38                    |
| Elongation at break   | D-638-05 | %       | 25-35                    |
| Modulus of elasticity   | D-638-04 | MPa     | 1100-1700                |
| Flexural strength   | D-790-03 | MPa     | 35-45                    |
| Flexural modulus  | D-790-04 | MPa     | 1200-1500                |
| HDT, °C @ 0.45MPa   | D-648-06 | °C      | 38-41                    |
| Izod notched impact   | D-256-06 | J/m     | 21-40                    |
| Shore hardness (D)  | D2240-05 | Scale D | 76.1-81.7                |

| PRIMARY MATERIAL: RIGUR™<br>SECONDARY MATERIAL: TANGOBLOCKPLUS FLX980 |          |         |  |
|---|----------|---------|--|
| PROPERTY  | ASTM     | UNITS   | RGD4805-DM<br>RGD4810-DM<br>RGD4815-DM<br>RGD4820-DM |
| Tensile strength  | D-638-03 | MPa     | 25-45  |
| Elongation at break   | D-638-05 | %       | 35-45  |
| Modulus of elasticity   | D-638-04 | MPa     | 1200-1800  |
| Flexural strength   | D-790-03 | MPa     | 30-40  |
| Flexural modulus  | D-790-04 | MPa     | 1000-1400  |
| HDT, °C @ 0.45MPa   | D-648-06 | °C      | 43-48  |
| Izod notched impact   | D-256-06 | J/m     | 50-70  |
| Shore hardness (D)  | D2240-05 | Scale D | 81.1-85.5  |

| PRIMARY MATERIAL: VEROCLEAR RGD810<br>SECONDARY MATERIAL: TANGOPLUS FLX930 / TANGOBLOCKPLUS FLX980 |          |         |                          |
|--|----------|---------|--------------------------|
| PROPERTY   | ASTM     | UNITS   | RGD8630-DM<br>RGD8730-DM |
| Tensile strength   | D-638-03 | MPa     | 29-38                    |
| Elongation at break  | D-638-05 | %       | 25-35                    |
| Modulus of elasticity  | D-638-04 | MPa     | 1100-1700                |
| Flexural strength  | D-790-03 | MPa     | 35-45                    |
| Flexural modulus   | D-790-04 | MPa     | 1200-1500                |
| HDT, °C @ 0.45MPa  | D-648-06 | °C      | 38-41                    |
| Izod notched impact  | D-256-06 | J/m     | 21-40                    |
| Shore hardness (D)   | D2240-05 | Scale D | 76.1-81.7                |

| PRIMARY MATERIAL: RIGUR<br>SECONDARY MATERIAL: TANGOPLUS FLX930 / TANGOBLOCKPLUS FLX980 |          |         |  |
|---|----------|---------|--|
| PROPERTY  | ASTM     | UNITS   | RGD4825-DM<br>RGD4830-DM<br>RGD4625-DM<br>RGD4630-DM |
| Tensile strength  | D-638-03 | MPa     | 25-35  |
| Elongation at break   | D-638-05 | %       | 35-45  |
| Modulus of elasticity   | D-638-04 | MPa     | 900-1500   |
| Flexural strength   | D-790-03 | MPa     | 20-35  |
| Flexural modulus  | D-790-04 | MPa     | 800-1200   |
| HDT, °C @ 0.45MPa   | D-648-06 | °C      | 43-46  |
| Izod notched impact   | D-256-06 | J/m     | 50-70  |
| Shore hardness (D)  | D2240-05 | Scale D | 79.5-83.5  |

## RUBBER-LIKE MATERIALS

| PRIMARY MATERIAL: TANGOBLOCKPLUS FLX980 / TANGOPLUS FLX930<br>SECONDARY MATERIAL: VEROWHITEPLUS RGD835 |        |         |                          |                          |                          |                          |                          |                          |
|--|--------|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| PROPERTY   | ASTM   | UNITS   | FLX9840-DM<br>FLX9740-DM | FLX9850-DM<br>FLX9750-DM | FLX9860-DM<br>FLX9760-DM | FLX9870-DM<br>FLX9770-DM | FLX9885-DM<br>FLX9785-DM | FLX9895-DM<br>FLX9795-DM |
| Tensile strength   | D-412  | MPa     | 1.3-1.8                  | 1.9-3.0                  | 2.5-4.0                  | 3.5-5.0                  | 5.0-7.0                  | 8.5-10.0                 |
| Elongation at break  | D-412  | %       | 110-130                  | 95-110                   | 75-85                    | 65-80                    | 55-65                    | 35-45                    |
| Shore hardness (A)   | D-2240 | Scale A | 35-40                    | 45-50                    | 57-63                    | 68-72                    | 80-85                    | 92-95                    |
| Tensile tear resistance  | D-624  | Kg/cm   | 5.5-7.5                  | 7.5-9.5                  | 11-13                    | 15.5-17.5                | 23-25                    | 41-44                    |

| PRIMARY MATERIAL: TANGOBLOCKPLUS FLX980 / TANGOPLUS FLX930<br>SECONDARY MATERIAL: VEROCLEAR RGD810 |        |         |                          |                          |                          |                          |                          |                          |
|--|--------|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| PROPERTY   | ASTM   | UNITS   | FLX9040-DM<br>FLX9940-DM | FLX9050-DM<br>FLX9950-DM | FLX9060-DM<br>FLX9960-DM | FLX9070-DM<br>FLX9970-DM | FLX9085-DM<br>FLX9985-DM | FLX9095-DM<br>FLX9995-DM |
| Tensile strength   | D-412  | MPa     | 1.3-1.8                  | 1.9-3.0                  | 2.5-4.0                  | 3.5-5.0                  | 5.0-7.0                  | 8.5-10.0                 |
| Elongation at break  | D-412  | %       | 110-130                  | 95-110                   | 75-85                    | 65-80                    | 55-65                    | 35-45                    |
| Shore hardness (A)   | D-2240 | Scale A | 35-40                    | 45-50                    | 57-63                    | 68-72                    | 80-85                    | 92-95                    |
| Tensile tear resistance  | D-624  | Kg/cm   | 5.5-7.5                  | 7.5-9.5                  | 11-13                    | 15.5-17.5                | 23-25                    | 41-44                    |

## RUBBER-LIKE MATERIALS (CONT.)

PRIMARY MATERIAL: TANGOGRAY™ FLX950  
SECONDARY MATERIAL: VEROLBLACKPLUS RGD875

| PROPERTY                | ASTM   | UNITS   | FLX9610-DM |
|-------------------------|--------|---------|------------|
| Tensile strength        | D-412  | MPa     | 9-13       |
| Elongation at break     | D-412  | %       | 45-55      |
| Shore hardness (A)      | D-2240 | Scale A | 75-85      |
| Tensile tear resistance | D-624  | Kg/cm   | 45-50      |

PRIMARY MATERIAL: TANGOGRAY FLX950  
SECONDARY MATERIAL: TANGOLBLACK FLX973

| PROPERTY                | ASTM   | UNITS   | FLX9510-DM |
|-------------------------|--------|---------|------------|
| Tensile strength        | D-412  | MPa     | 1-3        |
| Elongation at break     | D-412  | %       | 35-45      |
| Shore hardness (A)      | D-2240 | Scale A | 60-70      |
| Tensile tear resistance | D-624  | Kg/cm   | 5.0-7.0    |

PRIMARY MATERIAL: TANGOPLUS FLX930 / TANGOLBLACKPLUS FLX980  
SECONDARY MATERIAL: HIGH TEMPERATURE RGD525

| PROPERTY                | ASTM   | UNITS   | FLX9540-DM<br>FLX9640-DM | FLX9550-DM<br>FLX9650-DM | FLX9560-DM<br>FLX9660-DM | FLX9570-DM<br>FLX9670-DM | FLX9585-DM<br>FLX9685-DM | FLX9595-DM<br>FLX9695-DM |
|-------------------------|--------|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Tensile strength        | D-412  | MPa     | 1.3-1.8                  | 2.0-2.8                  | 2.8-4.0                  | 3.8-4.9                  | 6.0-7.3                  | 9.0-12                   |
| Elongation at break     | D-412  | %       | 100-130                  | 80-100                   | 60-80                    | 50-70                    | 35-50                    | 27-40                    |
| Shore hardness (A)      | D-2240 | Scale A | 39-41                    | 52-55                    | 60-67                    | 70-78                    | 85-87                    | 95-96                    |
| Tensile tear resistance | D-624  | Kg/cm   | 5.0-7.0                  | 8.0-10.0                 | 10.5-12.5                | 13-15                    | 22.5-24.5                | 45-47                    |

PRIMARY MATERIAL: TANGOLBLACKPLUS FLX980 / TANGOPLUS FLX930  
SECONDARY MATERIAL: VEROLBLACKPLUS RGD875

| PROPERTY                | ASTM   | UNITS   | FLX2140-DM<br>FLX2040-DM | FLX2150-DM<br>FLX2050-DM | FLX2160-DM<br>FLX2060-DM | FLX2170-DM<br>FLX2070-DM | FLX2185-DM<br>FLX2085-DM | FLX2195-DM<br>FLX2095-DM |
|-------------------------|--------|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Tensile strength        | D-412  | MPa     | 1.3-1.8                  | 1.9-3.0                  | 2.5-4.0                  | 3.5-5                    | 5.5-7.0                  | 8.5-10                   |
| Elongation at break     | D-412  | %       | 110-130                  | 95-110                   | 75-85                    | 65-80                    | 55-65                    | 35-45                    |
| Shore hardness (A)      | D-2240 | Scale A | 35-40                    | 45-50                    | 57-63                    | 68-72                    | 80-85                    | 92-95                    |
| Tensile tear resistance | D-624  | Kg/cm   | 5.5-7.5                  | 7.5-9.5                  | 11.0-13.0                | 15.5-17.5                | 23-25                    | 41-44                    |

PRIMARY MATERIAL: TANGOLBLACK FLX973  
SECONDARY MATERIAL: VEROWHITEPLUS RGD835(I),  
VEROLBLUE RGD840(III), VEROLBLACKPLUS RGD875(IIII), RGD720(II)

| PROPERTY                | ASTM   | UNITS   | FLX9110-DM(I)<br>FLX9410-DM (II)<br>FLX9210-DM (III)<br>FLX9310-DM (IIII) | FLX9120-DM (I)<br>FLX9420-DM (II)<br>FLX9220-DM (III)<br>FLX9320-DM (IIII) | FLX9130-DM (I)<br>FLX9430-DM (II)<br>FLX9230-DM (III)<br>FLX9330-DM (IIII) |
|-------------------------|--------|---------|---|--|--|
| Tensile strength        | D-412  | MPa     | 2-4.  | 3-5  | 7-11   |
| Elongation at break     | D-412  | %       | 45-55   | 35-45  | 35-45  |
| Shore hardness (A)      | D-2240 | Scale A | 75-85   | 80-90  | 90-100   |
| Tensile tear resistance | D-624  | Kg/cm   | 7-9   | 13-17  | 45-50  |

PRIMARY MATERIAL: TANGOLBLACKPLUS FLX930 / TANGOPLUS FLX980  
SECONDARY MATERIAL: DIGITAL ABS™ IVORY

| PROPERTY                | ASTM   | UNITS   | FLX95540-DM<br>FLX95040-DM | FLX95550-DM<br>FLX95050-DM | FLX95560-DM<br>FLX95060-DM | FLX95570-DM<br>FLX95070-DM | FLX95585-DM<br>FLX95085-DM | FLX2195-DM<br>FLX2095-DM |
|-------------------------|--------|---------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|--------------------------|
| Tensile strength        | D-412  | MPa     | 2.3-2.5                    | 3.2-3.5                    | 3.8-4.3                    | 4.7-5.0                    | 7.0-7.7                    | 9.8-10.6                 |
| Elongation at break     | D-412  | %       | 145-155                    | 125-135                    | 95-110                     | 80-90                      | 50-65                      | 40-50                    |
| Shore hardness (A)      | D-2240 | Scale A | 35-45                      | 45-55                      | 55-65                      | 65-75                      | 80-90                      | 90-100                   |
| Tensile tear resistance | D-624  | Kg/cm   | 5.5-6.5                    | 8.5-10.5                   | 10.0-12.0                  | 13-15                      | 22-26                      | 42-52                    |

## RUBBER-LIKE MATERIALS (CONT.)

PRIMARY MATERIAL: TANGOPLUS FLX930 / TANGOBLOCKPLUS FLX980  
 SECONDARY MATERIAL: RIGUR

| PROPERTY                | ASTM   | UNIT    | FLX4640-DM<br>FLX4840-DM | FLX4650-DM<br>FLX4850-DM | FLX4660-DM<br>FLX4860-DM | FLX4670-DM<br>FLX4870-DM | FLX4685-DM<br>FLX4885-DM | FLX4695-DM<br>FLX4895-DM |
|-------------------------|--------|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Tensile strength        | D-412  | MPa     | 1.3-1.8                  | 1.9-3.0                  | 2.5-4.0                  | 3.5-5.0                  | 5.0-7.0                  | 8.5-10.0                 |
| Elongation at break     | D-412  | %       | 110-130                  | 95-110                   | 75-85                    | 65-80                    | 55-65                    | 35-45                    |
| Shore hardness (A)      | D-2240 | Scale A | 35-40                    | 45-50                    | 57-63                    | 68-72                    | 80-85                    | 92-95                    |
| Tensile tear resistance | D-624  | Kg/cm   | 5.5-7.5                  | 7.5-9.5                  | 11-13                    | 15.5-17.5                | 23-25                    | 41-44                    |

